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Operations and Services
Water Resources Services Program, NWSPD 10-9

RIVER FORECAST CENTER PRODUCTS SPECIFICATION

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SUMMARY OF REVISIONS: This directive supersedes NWS Instruction 10-912, “*River Forecast Center Products Specification*,” dated April 10, 2017.

The following revisions were made to this instruction:

- 1) Since the X-SETS application is no longer used at any of the River Forecast Centers, it was removed from Section 2.2.1 as an option for creating Deterministic Hydrologic Forecasts.
- 2) In section 6, the option for River Forecast Centers to issue county Flash Flood Guidance (FFG) has been eliminated.
- 3) In sections 6.2.1 and 7.2.1, HL-RDHM has replaced FFGS as the software used to create FFG and Headwater Flash Flood Guidance.
- 4) In section 8.3.2, River Forecast Centers may make a menu-driven display of data, forecasts, and text or graphical products available on the Web in lieu of a conventional text Hydrometeorological Discussion.
- 5) Updated sections 9 and 9.1 to note that the Hydrometeorological Coordination Message can be produced to communicate internal forecast/support-oriented information to or from the Office of Water Prediction’s National Water Center.
- 6) In section 10.3.2, an updated example of a Significant River Flood Outlook Product has been provided.
- 7) Information applicable to assimilated data fields has been moved to section 13.3.1.

May 10, 2022

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Date

River Forecast Center Products Specification

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1. Introduction

This directive describes issuance guidelines, content, and format of water resources products provided by River Forecast Centers (RFCs). RFC products can be broadly grouped into four categories: (1) forecast products, (2) support/guidance products, (3) data products, and (4) non-Advanced Weather Interactive Processing System (AWIPS)-distributed products such as water supply forecast publications. Forecast and support/guidance products are covered in sections 1 through 11, with a detailed description provided for each one. Data products are

covered in sections 12 through 13 and are described in an aggregated fashion. Non-AWIPS-distributed products are covered in section 14, also in an aggregated fashion. Examples of products covered in this directive are provided in [NWS Manual 10-913, River Forecast Center Product Examples](#).

Most RFC products are distributed to the National Oceanic and Atmospheric Administration's (NOAA's) National Weather Service (NWS) users (e.g., Weather Forecast Offices (WFOs), other RFCs, etc.) and to the public via NWS-supported public dissemination systems such as AWIPS, the Satellite Broadcast Network (SBN) and NOAA Weather Wire. All products distributed over AWIPS follow certain standards for World Meteorological Organization (WMO) headings and AWIPS identifiers. Additional standards for Mass News Dissemination (MND) headers, Universal Geographic Code (UGC), and general format apply to products to be issued through NWS-supported dissemination system. These standards are contained in [NWS Instruction 10-1701, Text Product Formats and Codes](#).

Some RFC products are not distributed over NWS-supported public dissemination pathways or posted on the Internet, but may be made available through secured mechanisms to selected partners. The specific partners and other users for whom RFC products are targeted and/or the level of Internet access given to products are identified in regional and local office policies. If an RFC product is available on the Internet and also serves as input to one or more WFO hydrologic products, the RFC should include a notice indicating the corresponding WFO product(s).

RFC forecast products contain short-term (out to 10 days), medium-term (10 days out to four weeks), and long-term/extended-range (four weeks and beyond) hydrologic forecast information for specific service locations. A service location is defined as a stream location, reservoir, or lake for which any type of RFC forecast is provided. Because RFCs may provide specialized forecasts for external partners, a service location is not always a WFO forecast point. Some service locations may not have current rating tables maintained by a supporting agency such as the U.S. Geological Survey (USGS). Any product produced for such locations should include an annotation addressing the factor(s) (e.g., lack of rating table) which limit forecast accuracy.

2. Deterministic Hydrologic Forecast (RVF)

RFCs use the deterministic hydrologic forecast product to provide routine and event-driven hydrologic forecasts. Information provided in this product includes short-term hydrologic forecasts and river ice forecasts. This product may be distributed over NWS-supported public dissemination pathways and posted on the Internet, but should include a comment/disclaimer indicating that the RVF is a NWS guidance product from the RFC and that official forecasts/warnings are issued only by local NWS WFOs.

2.1 Mission Connection

The RVF product helps the NWS meet its mission by supplying the foundational information used in hydrologic forecasts, flood warnings, flood statements, and other products, thus supporting numerous water management applications which help to protect life and property and enhance the national economy.

2.2 Issuance Guidelines

2.2.1 Creation Software

Create RVF products using the application(s) appropriate to product content.

2.2.2 Issuance Time

Issue the deterministic hydrologic forecast product according to schedules coordinated with supported WFOs and regional headquarters. Issue unscheduled river forecast products and more frequent updates to routine forecast products when significant flows or flooding are occurring or expected. Specific requirement: when a stream or river is at or above flood stage and is still rising or is forecast to rise above flood stage, provide updated forecast values at more frequent intervals than normal, subject to data availability, forecaster judgment, hydrologic characteristics of the streams or rivers involved, and the needs of partners and other users.

2.2.3 Valid Time

As is the case for all RFC forecast products covered in this instruction, this product is a collection of forecast values for one or more individual service locations. An individual forecast value within this product is valid until another value is issued for the same time and service location.

2.3 Technical Description

2.3.1 MND Product Type Line

Use: "RIVER FORECAST".

2.3.2 Content

Content of the RVF product is dictated by partner requirements, the current hydrologic situation, and type of information being conveyed. Plain-language text may be included, but numerical forecast values are encoded in Standard Hydrometeorological Exchange Format (SHEF). If needed by partners and other users, deterministic hydrologic forecast products should include both stage and discharge values.

2.3.3 Format

The generic format is as follows:

```

FGA1A2ii Kccc ddhhmm (BBB)      (WMO Heading)
RVFxxx          (AWIPS ID)

RIVER FORECAST      (MND Product Type Line)
NWS <RFC name> <RFC location> (Issuing Office)
Time am/pm time_zone day mon dd yyyy (Issuance time/date)

: <Headline introducing the information to be presented below>

: <SHEF-encoded forecast information>
  or
  <Narrative information>

$$
    
```

2.4 Updates, Amendments, and Corrections

Provide updates and corrections to RVF products by issuing a new product. Amendments are not applicable to this product.

3. Contingency River Forecast (CRF)

This product is provided for impending flood or high-water events when the future impact of one or more model forcings is uncertain. A model forcing is some type of input such as Quantitative Precipitation Forecast (QPF) or temperature forecast, which substantially impacts forecast output. The CRF product contains river forecasts for one or more locations under one or more model forcing scenarios that are different from the one used in the “official” or “most likely” deterministic forecast. For example, if the official deterministic forecast uses 18 hours of QPF, a CRF could be produced with a full three days of QPF. Alternatively, it could contain a range of QPFs – e.g., 1, 2, 3, 4, and 5 inches. This internal product is not distributed over NWS-supported public dissemination pathways, but may be provided to partners through secure mechanisms.

3.1 Mission Connection

The contingency river forecast product helps the NWS meet its mission by supplying supplemental information needed by partners in evaluating the range of possible actions to take for impending flood events, thus supporting numerous water management applications which help to protect life and property and enhance the national economy.

3.2 Issuance Guidelines

3.2.1 Creation Software

Use the application(s) appropriate to product content.

3.2.2 Issuance Time

The contingency river forecasts are non-scheduled, event-driven products, issued when necessary.

3.2.3 Valid Time

A CRF may be issued for one or more service locations. For a given service location, the contingency forecast is valid for the period indicated for the service location, or until another CRF is issued for that service location.

3.3 Technical Description

Note: since this product is internal to the NWS and selected RFC partners, lowercase letters may be used.

3.3.1 MND Product Type Line

Use: “CONTINGENCY RIVER FORECAST”.

3.3.2 Content

Content of the CRF product is dictated by partner requirements, the current hydrologic situation, and type of information being conveyed. The product may provide contingency forecast

information in plain-language text or SHEF, depending on the requirements of partners. Since the product is only made available through secure mechanisms, lowercase letters and ordinary punctuation may be used.

3.3.3 Format

The generic format is as follows:

```

FGA1A2ii Kccc ddhhmm (BBB)
CRFxxx

CONTINGENCY RIVER FORECAST
NWS <RFC name> <RFC location>
Time am/pm time_zone day mon dd yyyy

: <Headline introducing the information to be presented below>

: <SHEF-encoded forecast information>
  or
  <Narrative information>

$$

```

3.4 Updates, Amendments, and Corrections

Provide updates and corrections to contingency river forecast products by issuing a new product. Amendments are not applicable to this product.

4. Streamflow Guidance (ESG)

The ESG product is generally used by RFCs to provide hydrologic forecast information of an advisory or descriptive nature. Information provided in this product includes flood potential outlooks/guidance and discussions of medium and long-term hydrologic forecasts. This product may be distributed over NWS-supported public dissemination pathways and posted on the Internet.

4.1 Mission Connection

The ESG product helps the NWS meet its mission by supplying hydrologic forecast information used in medium and long-term planning and mitigation activities. These activities include scheduling reservoir operations and preparing for floods and droughts, all of which help to protect life and property and enhance the national economy.

4.2 Issuance Guidelines

4.2.1 Creation Software

Use the application(s) appropriate to product content.

4.2.2 Issuance Time

Issue ESG products according to schedules coordinated with supported WFOs and external partners.

4.2.3 Valid Time

A discussion or individual forecast value in this product is valid until another discussion or value is issued for the same time, time period, and service location.

4.3 Technical Description

4.3.1 MND Product Type Line

Use any term appropriate to the product content.

4.3.2 Content

Content of ESG products is dictated by the type of information needed by partners and other users. Numerical forecast values in these products may be provided in standard tables or encoded in SHEF as required by partners and other users.

4.3.3 Format

The generic format is as follows:

```

FGA1A2ii Kccc ddhhmm (BBB)
ESGxxx

<insert name appropriate to content>
NWS <RFC name> <RFC location>
Time am/pm time_zone day mon dd yyyy

<Headline introducing the information to be presented below>

<Product content>

$$
    
```

4.4 Updates, Amendments, and Corrections

Provide updates and corrections by issuing a new product. Amendments are not applicable to this product.

5. Extended-Range Streamflow Prediction (ESP)

The ESP product is for long-term/extended-range hydrologic forecast information generally of a numeric or probabilistic nature. Information distributed under this category includes water supply forecasts, drought and water resources guidance, and long-term probabilistic forecast information. This product may be distributed over NWS-supported public dissemination pathways and posted on the Internet.

5.1 Mission Connection

The ESP product helps the NWS meet its mission by supplying hydrologic forecast information used in medium- and long-term planning and mitigation activities. These activities include scheduling reservoir operations and preparing for floods and droughts, all of which help to protect life and property and enhance the national economy.

5.2 Issuance Guidelines

5.2.1 Creation Software

Use the application(s) appropriate to product content.

5.2.2 Issuance Time

Issue ESP products according to schedules coordinated with supported WFOs and external partners.

5.2.3 Valid Time

An individual forecast value in this product is valid until another value is issued for the same time, time period, and service location.

5.3 Technical Description

5.3.1 MND Product Type Line

Use any term appropriate to the content.

5.3.2 Content

Content of ESP products is dictated by the type of information needed by partners and other users. Numerical forecast values in these products may be provided in tables or encoded in SHEF as required by partners and other users.

5.3.3 Format

The generic format is as follows:

```

FGA1A2ii Kccc ddhhmm (BBB)
ESPxxx

<insert name appropriate to content>
NWS <RFC name> <RFC location>
Time am/pm time_zone day mon dd yyyy

<Headline introducing the information to be presented below>

<Product content>

$$
    
```

5.4 Updates, Amendments, and Corrections

Provide updates and corrections by issuing a new product. Amendments are not applicable to this product.

6. Flash Flood Guidance (FFG)

Flash flood guidance is a numerical estimate of the average rainfall over a specified area (or predefined grid) and time interval required to initiate flooding on small streams. FFG products may be distributed over NWS-supported public dissemination pathways and posted on the Internet.

6.1 Mission Connection

Flash flood guidance helps the NWS to meet its mission by serving as a critical tool used in the assessment of flood threat and the issuance of watch/warning products. Flash flood guidance allows NWS products to be issued which alert partners and other users of potential or imminent flood threats, thus helping to protect life and property.

6.2 Issuance Guidelines

6.2.1 Creation Software

Use the NWS Hydrology Laboratory-Research Distributed Hydrologic Model (HL-RDHM) or other applications as appropriate.

6.2.2 Issuance Time

Issue flash flood guidance at times coordinated between RFCs, WFOs, and regional headquarters.

6.2.3 Valid Time

An individual flash flood guidance value in this product is valid until another value is issued for the same time, time period, and area/grid.

6.3 Technical Description

6.3.1 MND Product Type Line

Use a term indicating the type of flash flood guidance in the product.

6.3.2 Content

Flash flood guidance may be provided as zone, urban area, and gridded types. For zone flash flood guidance, use NWS forecast zone numbers to identify each area. For urban area flash flood guidance, use a locally-developed code up to 8-characters long to identify each urban area covered in the product. Zone and urban area flash flood guidance are encoded in SHEF. Gridded flash flood guidance is encoded in a standard NWS gridded format (e.g., GRIB). More than one of these types may be provided within a given flash flood guidance product. If more than one RFC is providing flash flood guidance to a WFO, the supporting RFCs should coordinate to provide a common product format for the WFO.

6.3.3 Format

The generic format for zone and urban area FFG is as follows:

```
FOA1A2ii Kccc ddhhmm (BBB)
FFGxxx

<optional descriptive term> FLASH FLOOD GUIDANCE
NWS <RFC name> <RFC location>
Time am/pm time_zone day mon dd yyyy

<Headline introducing the information to be presented below>

<SHEF-encoded content>

$$
```

For gridded FFG, organize information within a product using a format appropriate to the encoding mechanism. The WMO heading and AWIPS identifiers are as follows:

FOA₁A₂ii Kccc ddhhmm (BBB)
FFGxxx

6.4 Updates, Amendments, and Corrections

Provide updates and corrections by issuing a new product. Amendments are not applicable to this product.

7. Headwater Flash Flood Guidance (FFH)

Headwater flash flood guidance is a numerical estimate of the average rainfall over a specified small stream basin and time interval required to initiate flooding on the stream. FFH products may be distributed over NWS-supported public dissemination pathways and posted on the Internet.

7.1 Mission Connection

Headwater flash flood guidance helps the NWS to meet its mission by serving as a critical tool used in the issuance of flood watch/warning products, thus helping to protect life and property.

7.2 Issuance Guidelines

7.2.1 Creation Software

Use the NWS HL-RDHM or other applications as appropriate.

7.2.2 Issuance Time

Issue headwater flash flood guidance at times coordinated between RFCs, WFOs, and regional headquarters.

7.2.3 Valid Time

An individual flash flood guidance value in this product is valid until another value is issued for the same time, time period, and basin.

7.3 Technical Description

7.3.1 MND Product Type Line

Use: "HEADWATER FLASH FLOOD GUIDANCE".

7.3.2 Content

Encode headwater flash flood guidance values in SHEF. Use the NWS location identifier (NWSLI) assigned to the forecast point at the basin outlet to identify the basin, or another code as appropriate.

7.3.3 Format

The generic format is as follows:

```
FOA1A2ii Kccc ddhhmm (BBB)
FFHxxx

HEADWATER FLASH FLOOD GUIDANCE
NWS <RFC name> <RFC location>
Time am/pm time_zone day mon dd yyyy

<Headline introducing the information to be presented below>

<SHEF-encoded content>

$$
```

7.4 Updates, Amendments, and Corrections

Provide updates and corrections by issuing a new product. Amendments are not applicable to this product.

8. Hydrometeorological Discussion (HMD)

Hydrometeorological discussions provide a hydrology-oriented overview of the current and expected hydrometeorological situation across the RFC area. This product is made available over NWS-supported public dissemination pathways and posted on the Internet.

8.1 Mission Connection

The hydrometeorological discussion helps the NWS meet its mission by providing background information which enhances understanding of the current hydrologic situation in large river basins. This helps partners and other users focus their water resources and flood mitigation activities, thus enhancing the national economy.

8.2 Issuance Guidelines

8.2.1 Creation Software

Use appropriate text editor on AWIPS or other applications (e.g., Web software) as appropriate.

8.2.2 Issuance Time

Issue hydrometeorological discussions according to schedules coordinated with supported WFOs and other partners.

8.2.3 Valid Time

This product should be considered valid for a period up to 24 hours from the time of issuance.

8.3 Technical Description

8.3.1 MND Product Type Line

Use: “HYDROMETEOROLOGICAL DISCUSSION”.

8.3.2 Content

Topics discussed in this product may include: (1) antecedent precipitation and other events leading up to the present hydrologic situation; (2) existing streamflow conditions; (3) future

precipitation events of hydrologic interest; and (4) expected river trends and potential for flooding and other hydrologic events. Content and level of detail in each section may vary from day to day according to current needs. Drought and snow pack/soil moisture information may also be included. Note: information of an internal-NWS nature should not be included in hydrometeorological discussions.

In lieu of a conventional text discussion product, a menu-driven display of data, forecasts, and text or graphical products may be made available on the Web.

<p>8.3.3 Format</p> <pre> AGA₁A₂ii Kccc ddhhmm (BBB) HMDxxx HYDROMETEOROLOGICAL DISCUSSION NWS <RFC name> <RFC location> Time am/pm time_zone day mon dd yyyy <Headline introducing the information to be presented below> <Discussion> \$\$ </pre>
--

8.4 Updates, Amendments, and Corrections

Provide updates and corrections by issuing a new product. Amendments are not applicable to this product.

9. Hydrometeorological Coordination Message (HCM)

Hydrometeorological coordination messages are produced by RFCs to communicate any type of internal forecast/support-oriented information between RFCs, associated WFOs, the Office of Water Prediction’s (OWP) National Water Center (NWC), and the National Centers for Environmental Prediction (NCEP). This product is not distributed over NWS-supported public dissemination pathways or posted on the Internet, but may be made available through secured mechanisms to selected partners.

9.1 Mission Connection

The hydrometeorological coordination message helps the NWS meet its mission by providing RFC, WFO, NWC, and NCEP forecasters with a mechanism for communicating sensitive information on potential hydrometeorological activity before it is released to the public in the form of forecasts and warnings.

9.2 Issuance Guidelines

9.2.1 Creation Software

Use appropriate text editor on AWIPS.

9.2.2 Issuance Time

Issue whenever necessary.

9.3 Technical Description

9.3.1 MND Product Type Line

Use: “HYDROMETEOROLOGICAL COORDINATION MESSAGE”.

9.3.2 Content

Topics discussed in this product may include (but are not limited to): contingency planning for future hydrometeorological events, QPF verification information, hydrologic forecast verification information, and problems with gage or radar-based data.

9.3.3 Format

The generic format is as follows:

```

AGA1A2ii Kccc ddhhmm (BBB)
HCMxxx

HYDROMETEOROLOGICAL COORDINATION MESSAGE
NWS <RFC name> <RFC location>
Time am/pm time_zone day mon dd yyyy

<Headline introducing the information to be presented below>

<Discussion>

$$
    
```

9.4 Updates, Amendments, and Corrections

Not applicable.

10. Significant River Flood Outlook Product

This graphical product broadly identifies areas where potential exists for significant river flooding during the next five (5) days. “Significant flooding” is defined as flooding which falls in the moderate and major categories as defined in [NWS Manual 10-950](#). Each RFC posts their significant river flood outlook product on their web server and the CONUS RFCs transmit their product to Weather Prediction Center (WPC) at the NCEP. The national significant river flood outlook is assembled by WPC as a mosaic of individual graphical outlooks from the CONUS RFCs as described in [NWS Instruction 10-932, National Water Resources Web Products Specification](#). The significant river flood outlook product can be used as guidance by WFOs when they prepare local hydrologic outlooks as described in [NWS Instruction 10-922, Weather Forecast Office Water Resources Products Specification](#).

10.1 Mission Connection

The significant river flood outlook product helps the NWS meet its mission by graphically depicting areas of river flood potential. This helps partners and other users focus and optimize their flood mitigation activities, thus enhancing the national economy.

10.2 Issuance Guidelines

10.2.1 Creation Software

Create significant river flood outlook products using the ArcView software on AWIPS or other applications as appropriate.

10.2.2 Issuance Time

Issue this product at least once per day (typically by 1430 Eastern Time for WPC to generate the national mosaic).

10.3 Technical Description

10.3.1 Content

Using the color/patterns shown below in section 10.3.2, characterize flood potential in the graphic according to the following criteria:

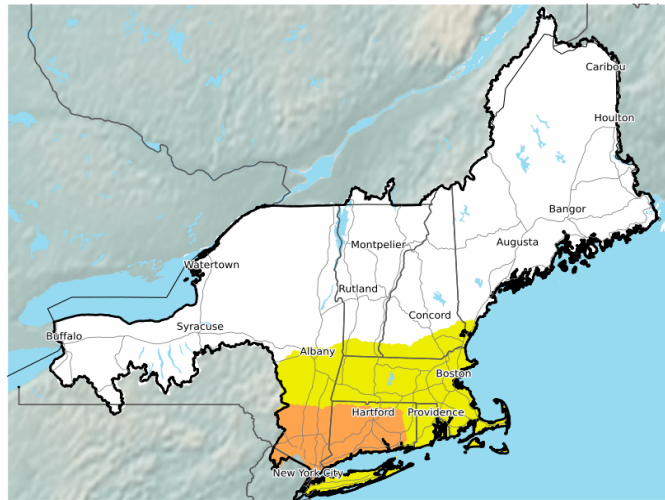
- a. Possible: Hydrometeorological conditions indicate significant flooding could occur. Such flooding is neither certain nor imminent.
- b. Likely: Hydrometeorological conditions indicate significant flooding can be expected during the outlook period.
- c. Occurring/Imminent: Significant flooding is already occurring or is forecast to occur during the outlook period.

For areas with no flood potential, use no color or pattern. Coordinate product content with neighboring RFCs to ensure appropriate consistency across boundaries, using the WPC as the facilitator. At some location within the web display, provide links for access to the latest watches and warnings from associated WFOs.

10.3.2 Format

A sample significant river flood outlook product is shown below:

5-Day Significant River Flood Outlook
 Valid: 09/01/2021 08:00 AM - 09/06/2021 08:00 AM EDT







National Weather Service
Northeast RFC
 09/01/2021 11:55 AM EDT

Follow Us:   
weather.gov/nerfc

Significant River Flooding impacts include road hazards and damage to residential, commercial, and/or agricultural areas. Evacuation may be required. Flash flooding or Minor river flooding are NOT included in this outlook. Check your local weather forecast frequently for the most up-to-date information for your area.

Shaded areas are the forecast region of the Northeast River Forecast Center

- | | | | |
|--|---|--|--|
|  | Significant River Flooding Not Expected |  | Significant River Flooding Possible
Weather conditions indicate, without certainty that significant river flooding could occur |
|  | Significant River Flooding Likely
Weather conditions indicate that significant river flood conditions can be expected |  | Significant River Flooding Occurring
Significant river flooding is occurring at this time |

10.4 Updates, Amendments, and Corrections

Provide updates and corrections by issuing a new product. Amendments are not applicable to this product.

11. Hydrometeorological Data Products (RRx)

These products contain precipitation and other hydrometeorological data from various networks, including the NWS Cooperative Network, flood warning systems, Automated Surface Observing System (ASOS), and networks operated by partnering agencies.

11.1 Mission Connection

RFC hydrometeorological data products contribute to a national information database, which can be used by other governmental agencies, the private sector, and the public to enhance the national economy.

11.2 Issuance Guidelines

11.2.1 Creation Software

Create products using appropriate local applications.

11.2.2 Issuance Time

Issue according to schedules developed with partners and other users.

11.3 Technical Description

11.3.1 MND Product Type Line

Use the MND product type lines shown in Table 1.

WMO Heading	MND Product Type Line	Content
SRA ₁ A ₂ ii Kccc ddhhmm (BBB) RR1xxx	HYDROMETEOROLOGICAL DATA REPORT #1	Locally-collected hydrometeorological data
SRA ₁ A ₂ ii Kccc ddhhmm (BBB) RR2xxx	HYDROMETEOROLOGICAL DATA REPORT #2	Locally-collected hydrometeorological data
SRA ₁ A ₂ ii Kccc ddhhmm (BBB) RR3xxx	HYDROMETEOROLOGICAL DATA REPORT #3	Cooperative observer data
SRA ₁ A ₂ ii Kccc ddhhmm (BBB) RR4xxx	HYDROMETEOROLOGICAL DATA REPORT #4	Cooperative observer special reports
SRA ₁ A ₂ ii Kccc ddhhmm (BBB) RR5xxx	HYDROMETEOROLOGICAL DATA REPORT #5	Locally-collected hydrometeorological data
SRA ₁ A ₂ ii Kccc ddhhmm (BBB) RR8xxx	HYDROMETEOROLOGICAL DATA REPORT #8	Locally-collected hydrometeorological data
SRA ₁ A ₂ ii Kccc ddhhmm (BBB) RR9xxx	HYDROMETEOROLOGICAL DATA REPORT #9	Locally-collected hydrometeorological data
SRA ₁ A ₂ ii Kccc ddhhmm (BBB) RRaxxx	AUTOMATED DATA REPORT	Automated river and rain gage data

Table 1. Header instructions for hydrometeorological data products.

11.3.2 Content

See Table 1 for the type of content in each hydrometeorological data product.

11.3.3 Format

Format hydrometeorological data products in SHEF unless otherwise noted in Table 1. Use the WMO header and MND product type line listed in Table 1. Use of a headline is optional.

11.4 Updates, Amendments, and Corrections

Provide updates and corrections by issuing a new product. Amendments are not applicable to this product.

12. Hydrometeorological Data Summary Products (HYx)

These products contain precipitation and other hydrometeorological data from various networks, including the NWS Cooperative Network, flood warning systems, ASOS, and networks operated by partnering agencies.

12.1 Mission Connection

Daily, weekly, and monthly hydrometeorological data summary products contribute to a national information database, which can be used by other governmental agencies, the private sector, and the public to enhance the national economy.

12.2 Issuance Guidelines

12.2.1 Creation Software

Create hydrometeorological data summary products using appropriate local applications.

12.2.2 Issuance Time

Issue hydrometeorological data summary products on a daily (HYD), weekly (HYW), or monthly (HYM) basis according to schedules developed with local partners and other users.

12.3 Technical Description

12.3.1 MND Product Type Line

Use the MND product type lines shown in Table 2.

WMO Header	MND Product Type Line	Content
SXA ₁ A ₂ ii Kccc ddhhmm (BBB) HYDxxx	DAILY HYDROMETEOROLOGICAL DATA SUMMARY	Quality controlled daily hydromet data summary, SHEF or tabular format
CWA ₁ A ₂ ii Kccc ddhhmm (BBB) HYWxxx	WEEKLY HYDROMETEOROLOGICAL DATA SUMMARY	Quality controlled weekly hydromet data summary, SHEF or tabular format
CSA ₁ A ₂ ii Kccc ddhhmm (BBB) HYMxxx	MONTHLY HYDROMETEOROLOGICAL DATA SUMMARY	Quality controlled monthly hydromet data summary, SHEF or tabular format

Table 2. Header instructions for hydrometeorological data summary products.

12.3.2 Content

See Table 2 for the type of content in each hydrometeorological data summary product.

12.3.3 Format

Format hydrometeorological data products using standard tables or SHEF as coordinated with partners and other users. Use the WMO header and MND product type line listed in Table 2. Use of a headline is optional.

12.4 Updates, Amendments, and Corrections

Provide updates and corrections by issuing a new product. Amendments are not applicable to this product.

13. Miscellaneous Non-AWIPS-Distributed Products

Several RFC products are not disseminated via AWIPS, but nonetheless constitute a significant contribution to the NWS Water Resources Services Program. These include various types of water supply products and publications as well as a variety of observed and forecast hydrologic information provided via RFC Webpages. Content and format of these products will evolve with improvements in technology. RFCs should strive to maximize the provision of such information which is tailored to their local partners and other users.

13.1 Mission Connection

These products help the NWS meet its mission by supplying observed and forecast hydrologic information used in medium- and long-term planning and mitigation activities. These activities include preparing for floods and droughts, scheduling reservoir operations, and allocating water

resources for various consumptive uses, all of which help to protect life and property and enhance the national economy.

13.2 Issuance Guidelines

13.2.1 Creation Software

Create these products using appropriate local applications.

13.2.2 Issuance Time

Provide RFC products not distributed over AWIPS according to schedules coordinated with supported WFOs and external partners and use application(s) appropriate to product content.

13.3 Technical Description

13.3.1 Content

The content of RFC products not distributed over AWIPS varies according to the needs of partners and other users. Some examples of these products and their associated content include:

- a. The "Water Supply Outlook for the Western United States," a.k.a. Westwide Publication - presents a broad outlook for water supply conditions in the western U.S., including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs. This publication includes basic data and streamflow forecasts prepared by cooperating agencies, which include the U.S. Bureau of Reclamation, U.S. Army Corps of Engineers, U.S. Dept. of Agriculture (USDA) Forest Service, U.S. National Park Service, USGS, British Columbia Ministry of the Environment, and the California Dept. of Water Resources. NWS contributors include the California-Nevada, Colorado Basin, Northwest, Missouri Basin, Arkansas-Red Basin, West Gulf, and Alaska-Pacific RFCs. This official publication is issued jointly by the NWS and the USDA Natural Resources Conservation Service, on a once-a-month basis, following the issuance of the monthly water supply forecasts from January through May.
- b. Local Water Supply Publications - produced primarily by western RFCs, contain products information on snowpack and recent precipitation as well as seasonal volumetric forecasts. The products are a combination of text and graphs. These publications are primarily provided to partners and other users via Webpages.
- c. Miscellaneous hydrologic information - produced by the RFCs for use by local partners and other users. This information is most commonly distributed via the Web and includes graphical information on soil moisture accounting model variable states; model inputs such as mean areal precipitation (MAP/MAPX), mean areal temperature (MAT), and freezing levels; graphical observed and forecast hydrographs, historical contextual information such as daily historical peaks, critical stages, and daily historical probabilistic values; graphical rating curves; maps showing topography and soil types, and photographs of hydrologic interest.

- d. Assimilated data fields – assimilated by the RFCs for use in their hydrologic forecast operations. This information may be forwarded to other offices inside and outside the NWS through mutually agreeable mechanisms, may be available on the Internet, and may include remotely-sensed precipitation estimates, QPFs, and other hydrometeorological information.

13.3.2 Format

Use format appropriate to requirements of partners and other users.

13.4 Updates, Amendments, and Corrections

Provide updates and corrections by issuing a new product or by updating the web page.

Amendments are not applicable to this product.

14. Advanced Hydrologic Prediction Service

The hydrologic forecast information and observed data contained in products described in the previous sections, as well as additional output from WFO and RFC hydrologic modeling systems, can be incorporated into graphical products and a forecast information database. These graphical products provided through the Internet and other mechanisms, the forecast information database from which they are derived, and improvements to the underlying hydrologic science and forecasting technology form the core of the Advanced Hydrologic Prediction Service (AHPS). All AHPS products and information provided by an RFC through the Internet will conform to current NWS, NOAA, and Department of Commerce (DOC) policies.