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**NATIONAL WEATHER SERVICE INSTRUCTION 10-914  
JULY 26, 2019**

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

**RIVER FORECAST CENTER REPORTING**

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**SUMMARY OF REVISIONS:** This directive supersedes NWS Instruction 10-914, “*River Forecast Center Reporting*,” dated April 5, 2017. The following revisions were made to this instruction:

1. Fixed the *Table of Contents* to allow for page navigation to the respective sections.
2. Shortened the *Introduction* to focus on NWS needs and created a new section *Database Responsibilities* to describe RFCs’ responsibilities.
3. Clarified the automated and manually processes in the section *Relationship to the National River Location Database*.
4. Made minor edits to the section *River Forecast Services Description Information*,
5. Formatted *Appendix A* to better delineate the key database tables and associated attributes.

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**River Forecast Center Reporting**

<u>Table of Contents:</u>	<u>Page</u>
1. Introduction	2
2. Database Responsibilities	2
3. Relationship to the National River Location Database	3
4. River Forecast Services Description Information	3

Appendix:

A. IHFS-DB Fields Required to Describe RFC Hydrologic Forecast Services	<a href="#">A-1</a>
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**1. Introduction.** The National Weather Service (NWS) needs centrally collected logistical information describing the hydrologic forecast services from the NWS River Forecast Centers (RFC) to manage agency operations and support the Water Resources Services Program. The main goal of collecting this information is to have it readily accessible in a centralized location – the National River Location Database (NRLDB) – for use whenever local, regional, and national information on NWS water resources services is needed. Logistical information, coupled with comprehensive river forecast verification information, is also used to quantify the benefits of NWS water resources services, evaluate the efficiency at which those services are delivered, and aid decisions on resource allocation, research directions, and implementation strategies.

**2. Database Responsibilities.** This directive provides instructions to the RFCs on populating, maintaining, and storing logistical information pertaining to their forecast services for all river/stream, lake, and reservoir locations into their Integrated Hydrologic Forecasting System Database (IHFS-DB) tables and fields. It applies to all such locations used in RFC forecast services and for supporting those services. These locations are sometimes separated into two categories – forecast points and data points, which are specifically defined in [NWS Instruction 10-950, Definitions and General Terminology](#) as:

- a) Forecast Points – locations along a river or stream for which hydrologic forecast and/or warning services are provided by a WFO.
- b) Data Points – locations along a river or stream for which observed data is input to RFC or WFO hydrologic forecast procedures, or included in public hydrologic products. Flood forecasts and warnings are not issued for data points.

Each RFC is responsible for fully populating, maintaining, and ensuring the accuracy of the database tables and fields, which store logistical information for both types of points.

Basic location information (e.g., latitude, longitude, flood stage) for most forecast locations in the RFC’s IHFS-DB is obtained from the supported NWS Weather Forecast Offices (WFOs). The supported database fields, which WFOs are required to populate in the WFO’s IHFS-DB, are listed

in [NWS Instruction 10-924, \*Weather Forecast Office Hydrologic Reporting\*](#). Quality control of the information in each RFC's IHFS-DB is a collaborative effort between the RFC and its supported WFOs. For example, if a WFO updates the latitude and longitude for a location in its WFO IHFS-DB, it will notify the RFC responsible for that location. Similarly, RFCs and WFOs should collaborate in determining the historical and forecast services information to be entered into their respective portions of the IHFS-DB.

**3. Relationship to the National River Location Database.** NWS hydrologic forecasts, produced for river/streams, lakes, and reservoirs, can be grouped into three general categories according to where the forecast generation process occurs (i.e., model execution and forecaster review) and the point of issuance for the official forecast:

- a) Forecasts generated and issued by RFCs for use by partners and other users (e.g., water supply forecasts).
- b) Forecasts initially generated by RFCs and then forwarded in river forecast (e.g., RVF) products to WFOs for official issuance and inclusion in event-based hydrologic products (outlook/watch/warning/advisory) when necessary. These are the most common type of forecast location. If a category (a) location is also a WFO forecast point (e.g., has flood forecasts issued for it), it also qualifies as a category (b) location. WFO site-specific points supported by an RFC also fall into this category.
- c) Forecasts generated and issued only by WFOs for use by partners and other users (i.e., non-RFC supported forecast points).

This directive applies to logistical information on RFC forecast services for river/stream, lake, and reservoir locations falling into categories (a) and (b) above. The forecast information may be generated using a deterministic model, water supply procedure, or ensemble modeling system.

The National River Location Database (NRLDB) forecast services tables for category (a) and (b) locations are populated manually from RFC's IHFS-DB via an Advanced Weather Interactive Processing System (AWIPS) script executed by Central Processing upon request. Station reference tables for category (b) and (c) locations are routinely transmitted from each WFO's IHFS-DB to the NRLDB daily. The combined information is then stored as a national database.

**4. River Forecast Services Description Information.** Appendix A identifies the required database fields for a specific location to be populated within the RFC's IHFS-DB. Each RFC should ensure the descriptive information stored in the database is current and accurate for each river location. Maintenance of this database should be conducted at a minimum of once a year to ensure all data is up-to-date. Updates should be made within 30 days after significant events or discontinuation of a forecast service. When an RFC adds a new river forecast or data point, or when a new service is added or modified for an existing point, the RFC should populate the appropriate hydrologic forecast services fields of IHFS-DB as identified in Appendix A within 60 days of when the service change is implemented.

APPENDIX A

**IHFS-DB Fields Required to Describe RFC Hydrologic Forecast Services**

The logistical information in the database fields describes the attributes of the NWS services for specific river/stream/lake/reservoir locations. These database fields need to be populated for all river locations used by the NWS to measure water levels or flows (e.g. for rivers, reservoirs) regardless of who owns the gage. For additional help in populating these IHFS-DB database fields, please consult *Forecast Services Users Guide* on the RFC Field Support Group’s web page. Note: for fields that are not pertinent to a given data/forecast point, and/or the required data are unavailable, “None” or “other” may be entered.

**Data Point Service Table.** This table holds information regarding locations on a river/stream for which observed data is input to RFC or WFO hydrologic forecast procedures, or included in public hydrologic products. For the purposes of logistical verification, all locations along a river or stream for which hydrologic forecast and warning services are provided (i.e., forecast points) should be included as a data service. The attributes for Data Point Services are identified in Table 1.

Note : Primary keys are bold and italicized.

**Table 1: (FcstPtService) Data Point Service Attributes**

<b>Column Name</b>	<b>Type</b>	<b>Column Description</b>
<b><i>Lid</i></b>	<b><i>Varchar</i></b>	<b><i>location id</i></b>
flood_thres	Float	A single user defined flood threshold used in conjunction with exceed_prob (see next row) to estimate the frequency in which this threshold is exceeded. <sup>1</sup>
exceed_prob	int2	From a historical analysis, the probability of exceeding the user defined flood threshold (see previous row) during a given year. <sup>2</sup> (%)
Service_type	Varchar	Service type (data or forecast service)
anal_start_date	Date	Start date( used to compute the exceedance probability for a given flood threshold if End Date is also known) <sup>3</sup>
anal_end_date	Date	End date (used to compute the exceedance probability for a given flood threshold if Start Date is also known) <sup>3</sup>
impl_date	Date	Date observed data first used as input to RFC hydrologic procedures <sup>4</sup>
web_date	Date	Date observed hydrograph first available on web through AHPS <sup>3</sup>
verif_resp_type	Varchar	Verification response type
drainage_area	Float	Drainage area of basin (units are mi <sup>2</sup> )

<sup>1</sup> For example, for a gage with a 40 year record, if it went above the flood threshold (e.g., flood stage) during 20 of those years, the annual exceedance probability would be 50%.

<sup>2</sup>If the location id is a datapoint, flood\_threshold is null.

<sup>3</sup> If date is unknown, leave as a null value.

<sup>4</sup> If date is unknown, use best available estimate (e.g., date RFC opened) or leave as a null value.

**Deterministic Forecast Service Table.** This table holds all forecast points for which a single-value forecast is produced. The attributes to describe Deterministic Forecast Services are shown in Table 2.

Note: Primary keys are bold and italicized.

**Table 2: (FcstPtDeterm) Deterministic Forecast Services Attributes**

<b>Column Name</b>	<b>Type</b>	<b>Column Description</b>
<i>Lid</i>	<i>Varchar</i>	<i>location id</i>
<i>snow_method</i>	<i>Varchar</i>	<i>Snow computational method for the segment</i>
<i>hydrol_method</i>	<i>Varchar</i>	<i>Hydrologic computation method for the segment</i>
<i>Reservoir_model</i>	<i>Varchar</i>	<i>Reservoir model for the segment</i>
<i>Upstream_seg</i>	<i>Varchar</i>	<i>Location id of upstream point - may be forecast or data point. If point is a headwater point, then this value is set to 'xxxxx'. If more than one upstream point is being routed down to this location, set this value to 'multiple.'</i>
<i>Hydraul_method</i>	<i>Varchar</i>	<i>Routing computational method for the segment</i>
<i>def_issue_crit</i>	<i>Varchar</i>	<i>Minimum issuance criteria for the forecast service</i>
<i>hours_qpf</i>	<i>int2</i>	<i>Hours of QPF normally used in streamflow forecast</i>
Frequpd_normal	Varchar	Normal operations update frequency
Frequpd_flood	Varchar	Flood operations update frequency (typical)
Frequpd_drought	Varchar	Drought operations update frequency (typical)
fcst_horizon	Varchar	Forecast horizon (typical)
hours_qtf	int2	Hours of temperature forecast normally used in streamflow forecast
hours_qzf	int2	Hours of freezing level forecast normally used in streamflow forecast
num_elev_zones	int2	Number of elevation zones in mountainous area - may be 1, 2 or 3; else should be set to 1
consumptive_use	Varchar	Indicates consumptive use model is used for the segment (Y or N)
Channel_loss	Varchar	Indicates channel loss model is used for the segment (Y or N)
fcst_gen_method	Varchar	Forecast generation method (i.e., IFPS or batch)
impl_date	Date	Date service was first produced <sup>1</sup>
web_date	Date	Date official forecast hydrograph first available on AHPS website <sup>1</sup>
var_usage	Varchar	Is VAR used for this segment (Y or N)

<sup>1</sup> If date is unknown, use best available estimate or leave as a null value.

**Water Supply Service Table.** This table holds all forecast points for which water supply forecasts are provided. The attributes to describe Water Supply Forecast Services are shown in Table 3.

Note: Primary keys are bold and italicized.

**Table 3: (FcstPtWatSup) Water Supply Forecast Services Attributes**

<b>Column Name</b>	<b>Type</b>	<b>Column Description</b>
<i>Lid</i>	<i>Varchar</i>	<i>location id</i>
<i>watsup_method</i>	<i>Varchar</i>	<i>Computational method used to produce the water supply forecast</i>
<i>watsup_coord_agency</i>	<i>Varchar</i>	<i>Coordinating agency for the water supply forecast</i>
<i>frequpd_normal</i>	<i>Varchar</i>	<i>Normal operations period of issuance</i>
<i>period_req</i>	<i>Varchar</i>	<i>Forecast period (e.g., April-July)</i>
<i>watsup_crit</i>	<i>Varchar</i>	<i>Water supply criteria or interest</i>
watsup_resp_agency	Varchar	Agency(s) responsible for issuing the water supply forecast
customer_desc	Varchar	Description of partners and other users interested in the water supply forecast Names of partners and other users interested in the water supply forecast (list all, separated by commas)
impl_date	Date	Date service was first produced <sup>1</sup>
web_date	Date	Date graphical products first available on web <sup>1</sup>

<sup>1</sup> If date is unknown, use best available estimate (e.g., date RFC opened) or leave as a null value.

**Ensemble Forecast Service Table.** This table holds all forecast points for which ensemble forecasting is used to generate forecasts and associated uncertainty information. The attributes to describe Ensemble Forecast Services are shown in Table 4.

Note: Primary keys are bold and italicized.

**Table 4: (FcstPtEsp) Ensemble Forecast Services Attributes**

<b>Column Name</b>	<b>Type</b>	<b>Column Description</b>
<i>lid</i>	<i>Varchar</i>	<i>Location id</i>
<i>snow_method</i>	<i>Varchar</i>	<i>Snow computation method for the segment</i>
<i>hydrol_method</i>	<i>Varchar</i>	<i>Hydrologic computation method for the segment</i>
<i>reservoir_model</i>	<i>Varchar</i>	<i>Reservoir model for the segment</i>
<i>upstream_seg</i>	<i>Varchar</i>	<i>Location id of upstream point - may be forecast or data point. If point is a headwater point, then this value is set to 'xxxxx'. If more than one upstream point is being routed down to this location, set this value to 'multiple.'</i>
<i>hydraul_method</i>	<i>Varchar</i>	<i>Routing computation method for the segment</i>
<i>flowtype</i>	<i>Varchar</i>	<i>Flow type</i>
<i>fcsttype</i>	<i>Varchar</i>	<i>Forecast time horizon type (typical)</i>
frequpd_normal	Varchar	Normal operations period of issuance
frequpd_flood	Varchar	Flood operations period of issuance (typical)
frequpd_drought	Varchar	Drought operations period of issuance (typical)
fcst_horizon	Varchar	Forecast horizon (typical)
nummonclim	int2	Number of months climatological forecasts are used in streamflow forecast 0 – N/A
numdayhyd	int2	Number of days hydrometeorological forecasts are used in streamflow forecast 0 – N/A
num_elev_zones	int2	Number of elevation zones in mountainous area may be 1,2 or 3 else should be set to 1
consumptive_use	Varchar	Indicates consumptive use model is used for the segment (Y or N)
channel_loss	Varchar	Indicates channel loss model is used for the segment (Y or N)
post_processor	Varchar	Post processing model used to create the forecast
impl_date	Date	Date service was first produced
external_date	Date	Date product first available the external partners and other users <sup>1</sup>
web_date	Date	Date graphical products first available on web <sup>1</sup>
var_usage	Varchar	Is VAR used for this station (Y or N)

<sup>1</sup> If date is unknown, use best available estimate (e.g., date RFC opened) or leave as a null value.