Department of Commerce National Oceanic & Atmospheric Administration National Weather Service

NATIONAL WEATHER SERVICE EASTERN REGION SUPPLEMENT 01-2006
APPLICABLE TO NWSI 10-940
March 31, 2014

Operations and Services
Hydrologic Services Program, NWSPD 10-9
Hydrologic Data Network Services, NWSI 10-940

IMPACT OF GAGE CLOSURES/OUTAGES ON RIVER FORECAST SERVICES

NOTICE: This publication is available at:
http://www.nws.noaa.gov/directives/.

OPR: W/ER2x2 (A. Matte) **Certified by:** W/ER2x1 (G. McKillop)
Type of Issuance: Routine

SUMMARY OF REVISIONS:

This Supplement supersedes Eastern Region Supplement 01-2006 recertified on December 4, 2008. The following noteworthy revisions were made to this supplement:

1. Document restructured and reformatted to better highlight the roles of individual operational units and place roles in a more logical sequence.
2. In section 4 added reference to ERS 08-2004, *Authorization for New or Changes to Hydrologic Services.*

<signed> March 17, 2014
Jason Tuell Date
Director, Eastern Region

Table of Contents: **Page**

1. Purpose. The purpose of this supplement is to state regional policy on the impact of gage closures and outages on river forecast services.

2. Background. The National Weather Service (NWS), Eastern Region (ER) prepares daily and high water river forecasts for approximately 800 locations. In order to assure accuracy and integrity of forecast information, automated or manual real-time observed stream gage data must be available on a daily and criteria basis, at a minimum, to support River Forecast Centers (RFC)/Weather Forecast Offices (WFO) in their forecast operations. The U.S. Geological Survey (USGS) in cooperation with other sponsoring agencies support, operate, and maintain the bulk of the nation's river gaging network. On occasion, the status of the support for an individual gage or gages may change. This may force closure of stations and discontinuation of river gage operations. Gage closures may have a direct effect on river forecast and warning operations.

These effects include:

No river observations for monitoring and forecasting services at WFOs and RFCs.

No archived stream flow information for hydrologic model calibration and procedural development activities at the RFC

No discharge measurements to keep rating curves representative at the forecast location

The NWS has a responsibility to follow-up on proposed gage closures that affect river forecast points.

These responsibilities include:

Evaluation of closure impacts to NWS services and opportunities to mitigate these impacts on NWS operations.

Determine the modifications to forecast and warning services that will result from the closure.

Communicate to the local emergency management community and public how the gage closures will impact NWS monitoring, forecast, and warning services.

Temporary or short term outages should not be considered for reduction in services unless the outages develop into a long-term (6 months or more) duration. For short-term outages at river forecast points, forecasts should continue to be released. An estimated stage may be provided, where practical and when coordinated with the servicing RFC. Public hydrology text products and web pages containing this information should note that the stream gage data is unavailable, missing, or estimated as appropriate. Public issuances should note that current data is unavailable or missing.

3. Gage Closures. RFCs and WFOs should alert ER Hydrologic Services Division (HSD) upon receiving notification of proposed gage discontinuations at river forecast points.

ER HSD will:

Coordinate with sponsoring agencies at both the regional and national levels on the impacts of proposed stream gage closures on the ER hydrology program.

Provide guidance to the local office on how to locally highlight the importance of real-time gages to NWS forecast and warning operations.

The affected Hydrologic Service Area (HSA) will coordinate with local sponsoring agencies.

The WFO will:

Draft a letter to affected hydrologic users (emergency managers, water resource managers, community officials, basin commissions, etc.) alerting them to the possibility that forecast and warning services may be reduced or terminated due to pending gage closures (refer to the template letters in Appendix A and the sample letter in Appendix B for the required format the letter will follow).

Send the draft letter to ER HSD for review and approval prior to transmission to users.

Notification of potential loss of forecast and warning services should be done immediately following the first published announcement of potential gage closure by the gage owner. Coordinating with ERH HSD prior to the public announcement will provide the maximum amount of time to develop any specific response strategies and communicate impacts of service changes to local users. It will also provide maximum amount of lead time for users to prepare for loss of service and/or consider other actions to support their need for information.

4. Evaluation of Forecast and Warning Services due to Gage Closures. The WFO in coordination with the RFC will be responsible for evaluating the impact of the closure of a stream gaging station(s) on forecast and warning services. The following procedure will be followed for requesting approval for reduced services as a result of gage closures or extended outages.

The WFO will:

a. Initiate coordination with the servicing RFC on any impacts the gage closure(s) will have prior to submitting a request for reduced forecast and warning services to HSD. The RFC should provide their written comments on any impact(s) and their recommendations on the level of reduced service.

b. Submit a request to ERH HSD for reduced forecast and warning services as a result

of gage closures within its HSA. The request will be made in writing electronically **(in MS Word format)** by or through the MIC of the office with HSA responsibility. Hard copies sent via US mail are no longer required. (see ERS 08-2004, *Authorization for New or Changes to Hydrologic Services*).

The evaluation in the request should include consideration of:

Continued interest for forecast and warning services at the existing location
Stability in stream channels
Availability of other river observations
RFC technical evaluations
Categorical forecast options

c. Determine if appropriate, options for alternative stream gage readings (e.g., the installation of a staff gage at the gage site and/or the recruitment of a cooperative observer to take river observations if a staff gage is already available). Any options should be coordinated between the WFO and the servicing RFC.

d. After regional approval communicate the service changes to the affected hydrologic users (e.g. emergency managers, community officials, water resource managers, etc.) through the most appropriate means, e.g., phone calls, letters, press releases, announcements on the AHPS web pages, information appended to NWS hydrology text products, town hall meetings, public information statements, etc.

e. Update WFO data and software to reflect services changes.

ERH HSD will:

a. Coordinate an evaluation of the request with the appropriate NWS offices (RFC, WFO, OCWWS HSD, other regional HSD, etc.) as necessary.

b. Issue a letter of authorization on the request for reduced services to the office with HSA responsibility and the appropriate RFC. The level of reduced services will be directly related to the type and frequency of data available at the location in question. Reduced service may include categorical (Major, Moderate, Minor) forecasts.

Appendix A - Template for Letter on Multiple Stream Gage Closures

Name
Address

Dear *Name*,

The proposed discontinuation for stream gages supported by the U.S. Geological Survey (USGS) Federal cooperative hydrologic data collection program is expected to have a major impact on the National Weather Service (NWS) river and flood forecasting capabilities for the state of *state name*. If this action is taken, NWS services will be seriously affected, including our ability to provide timely and accurate warnings and forecasts of floods for the city of *Name of city* as well as additional communities downstream, including *Name of city* and *Name of city*.

[Discuss a recent hydrologic event when the USGS stream gage(s) proposed for closure were instrumental in providing NWS forecast and warning services. Describe the causes for the event, where the flooding occurred (e.g., basins), the magnitude of the event, and how data from the threatened stream gages were used to provide timely and accurate flood forecasts.]

Real-time streamflow data is essential to the issuance of accurate river, flood stage, and water supply forecasts that are issued by the NWS. Without real-time data from these gages that are scheduled to be closed, the NWS will be forced to discontinue the issuance of warning and forecast services at those locations. River warning and forecast services that will be provided will be limited based on precipitation alone rather than both precipitation data and observed river stages.

If you require additional information about the effect of discontinuing these gages and what it would mean to the people in your *Jurisdiction*, please feel free to contact me at *Phone number*.

Sincerely yours,

Meteorologist-in-Charge, *Name of WFO*
Date Signed

Appendix B – Example Letter on Single Stream Gage Closure

Name
Address

Dear *Name*,

We have been notified by the United States Geological Survey (USGS) that the Pawtuxet River gage at Cranston might be discontinued. This would have a major impact on the National Weather Service (NWS) river and flood forecasting capabilities for the state of Rhode Island. Our ability to provide timely and accurate flood warnings and forecasts for the cities of Warwick and Cranston is highly dependent on the hydrometeorological information provided by this USGS river gage.

The Pawtuxet River has flooded in Warwick and Cranston as recently as April 4th of this year. During this flood, the Pawtuxet River rose to 10.5 feet, 1.5 feet above the 9 foot flood stage. Another notable flood event was on March 31st 2001, when the Pawtuxet River rose to 11.9 feet at the Cranston gage. At this stage, residential and business structures are impacted in sections of Cranston and Warwick. The flood of record for this gage occurred back in June 1982, at a crest of 14.5 feet.

Past crest history has shown that significant flooding is possible on the Pawtuxet River during any time of the year. Floods have been more common in the winter and spring. During the summer and fall the possibility exists for tropical systems, which historically have produced very heavy rainfall resulting in devastating flooding in southern New England.

Real-time stream flow data is essential to the issuance of accurate river, flood stage, crest, low flow and water supply forecasts that are issued by the NWS. Without real-time stream flow data from the Cranston gage, the NWS will be forced to discontinue the issuance of river stage forecasts on the Pawtuxet River. Subsequently, we will only be able to provide limited services based on precipitation data alone rather than both precipitation data and observed river stages. The National Weather Service will do all that it can to provide weather and flood warnings with information that is available. If the gage is discontinued, we will continue to issue the more general Flood and Flash Flood Warnings as warranted for ungaged streams and rivers. Nevertheless, the absence of real-time river gage data on the Pawtuxet River at Cranston will seriously hamper our ability to forecast flooding and provide advanced warning to protect lives and property.

If you require additional information about the effect of discontinuing this gage and what it would mean to the residents and businesses of the Cranston River community, please feel free to contact us at (xxx) xxx-xxxx.

Signature
Date Signed