Hydrologist Senior Service 13

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INTRODUCTION

This position is located in a Weather Forecast Office (WFO) where the incumbent is responsible for providing the primary NWS hydrologic support and interface to the state emergency management and other water resources-related agencies located in the state capital, while simultaneously providing hydrologic support for one of the following: (1) one or more adjacent WFOs (without a Service Hydrologist), or (2) a multiple- (i.e., at least three-) state area of responsibility. The hydrologic functions of the WFO are to mitigate loss of life and property damages caused by floods and drought, conduct the necessary preparation activities for provision and timely use of accurate forecasts and warnings, and make hydrometeorological data and information available for use by emergency management and water resource offices, River Forecast Centers (RFC), and private sector hydrologists. Each WFO has a hydrologic service program for its hydrologic service area (HSA). The HSA corresponds to the area for which the WFO is responsible for issuing site-specific river forecast products, flood warnings, and other specialized hydrologic products to the public. A designated support area for each service hydrologist consists of one or more HSAs.

The new computation and observation technologies of the modernized NWS allow the hydrologic services provided by WFOs to the public to more closely focus on mesoscale hydrometeorological problems. Therefore, in addition to his/her lead role in more traditional service hydrologist functions, the incumbent serves as the "resident expert" on WFO hydrometeorological technologies as they relate to mesoscale hydrologic forecast problems and their application to meeting the diverse requirements existing in the designated support area.

DUTIES

The incumbent exercises a high degree of responsibility and span of authority in leading one or more highly complex and technically advanced WFO hydrologic service programs in his/her designated support area. Specific duties include:

1. Provide leadership at the WFO level for the NWS effort to supply hydrologic services to the public in a complex designated support area which involves high levels of multiple liaison responsibility and a high degree of technical management responsibility.

- Identify, plan, and coordinate programmatic changes in WFO hydrologic products and services which impact both the NWS hydrology program and a technically diverse set of hydrology-related activities at cooperating and supporting agencies.

- Initiate and maintain liaison activities and cooperative support operations with state emergency management and water resources officials located in one or more state capital areas and a geographically or organizationally diverse group of other offices inside and/or outside the NWS.

- Develop, maintain, and update a diverse and sophisticated suite of local hydrometeorologic models, data management procedures, and information exchange activities required to provide hydrologic forecasts and information to a geographically or organizationally diverse group or offices outside the NWS such as state emergency management and water resources agencies and/or to NWS offices such as supported WFOs and RFCs.

2. Provide technical and administrative support for the WFO hydrologic service program(s) in a geographically and/or organizationally complex support area. Program support duties include:

- Determine service requirements of the designated support area and coordinate these requirements with appropriate officials and RFCS. Evaluate sites and areas subject to floods and flash floods. Represent the WFO hydrologic program(s) at public and interagency meetings and establish solutions to complex hydrology-related issues associated with NWS products and services.

- Develop and modify WFO hydrologic procedures, models, techniques, manuals, and dissemination plans to ensure optimal use of technologies and real-time data. Maintain the hydrologic warning procedures and local forecast models and perform parameter calibration as necessary.

- In coordination with the Science and Operations Officer (SOO), coordinate and provide appropriate levels of hydrologic training for WFO staff(s) in the designated support area.

- Maintain hydrometeorological databases and information files, including those for Reports on River Gage Stations (E-19), station rating tables, gage network information, and hydrologic model parameters. Coordinate structure and content of databases with appropriate personnel such as the Data Acquisition Program Manager (DAPM) and those in regional and national headquarters offices, RFCS, and other WFOs. Conduct the hydrologic studies and field work necessary to keep this information up-to-date.

- In cooperation with other NWS offices and local and state officials, review the requirements for establishment of additional forecast services in the designated support area. Perform the necessary hydrologic studies, field work, and data management activities necessary to establish locations for new hydrologic services. Ensure that procedures are in place for new forecast products to reach the appropriate local and state action agencies as well as the media.

- Oversee the WFO portion of the National Flood Verification Program.

- Participate in flood damage assessments and prepare flood reports and monthly reports of river and flood conditions as defined in the Weather Service Operations Manual.

- Serve as a hydrologic representative at seminars and meetings sponsored by Federal, state, and local agencies, as well as professional societies.

- In coordination with Warning Coordination Meteorologist(s) (WCM), lead the NWS effort to encourage flood preparedness activities in local communities. Give presentations on the dangers of flooding to local civic groups and schools.

- In cooperation with local, state, or Federal agencies along with RFC personnel, provide the hydrologic expertise and requirements analysis necessary for the design and implementation of new data sites and networks such as Local Flood Warning Systems (LFWs).

- In cooperation with the DAPM, provide liaison with local, state, and Federal agencies regarding existing hydrologic data networks and data exchange activities. Monitor hydrologic network performance and establish requirements and recommendations for maintenance and network modification to improve network performance during flood situations.

3. Work operational forecast shifts approximately 20 percent of a work month, with allowances to account for varying program management workloads and special circumstances arising during active hydrologic situations. Use experience acquired while working these shifts to continually modify and enhance the operational hydrologic procedures and hydrologic training program for all WFO forecasters.

KNOWLEDGE REQUIRED:

Expert knowledge of hydrologic and meteorologic principles:

Knowledge of theoretical and applied hydrology, especially in the area of hydrology/hydraulic principles as they apply to hydrologic modeling.

Knowledge of theoretical and applied meteorology, especially in the areas of radar meteorology and precipitation studies.

The incumbent may be qualified as a hydrometeorologist through formal education or a combination of education and on-the-job experience.

Exceptional leadership, original planning, and policy implementation skills required to lead the hydrologic service program(s) in a politically, geographically, and/or organizationally complex designated support area.

Exceptional level of operational hydrologic expertise and applied research skills required to recommend, design, and implement solutions for a wide variety of hydrologic problems encountered by state emergency

management offices and numerous water resources agencies.

Mastery of computer technology and communications systems, especially computer-based local flood warning systems, hydrologic models, relational databases, applications programs, and hydrologic procedures.

Exceptional skill and ability to effectively describe highly technical hydrometeorological concepts and operations to non-technical individuals in state emergency management offices
and numerous and diverse types of other political agencies.

Knowledge of NWS/NOAA/DOC policy objectives as they relate to hydrologic services and ability to effectively communicate these and other concepts through technical writing and public speaking.

SUPERVISORY CONTROLS:

The incumbent operates under the direction of the Meteorologist In Charge (MIC). The Senior Service Hydrologist is the foremost hydrologic expert at the WFO and serves as the program leader for the hydrology program(s) in the designated support area. Evaluation of work is based on the overall operation and performance of WFO hydrologic program(s), the degree to which the WFO staff(s) are prepared to produce and disseminate hydrologic products, and the soundness of judgment exercised by the incumbent in the performance of duties and management of diverse responsibilities.

Some activities of the Senior Service Hydrologist are performed in coordination with one or more WCMs. The WCM leads the overall effort at a WFO to ensure the evaluation, adjustment, and improvement of all types of products and services. The WCM relies on the Senior Service Hydrologist to conduct the liaison activities, planning efforts, and service improvement coordination with offices and agencies requiring consultation with an individual who has in-depth hydrologic knowledge and problem solving capability.

The hydrologic training activities of the Senior Service Hydrologist are performed in coordination with one or more SOOs. Along with other functions, the SOO leads the overall training and professional development program for the WFO staff. In cooperation with the SOO, the Senior Service Hydrologist provides the specialized hydrologic training for WFO forecasters to ensure that all staff are prepared to handle hydrologic situations as part of their regular forecast and warning responsibilities.

When working as an operational forecaster, the Senior Service Hydrologist obtains general instructions on shift duties from a station duties manual. He/she works with a senior forecaster during the shift, and their respective forecast products are coordinated for consistency. The incumbent handles work independently according to policies, previous experience and training, and accepted practices. Forecast products conform to guidelines and formats contained in NWS operations manuals and handbooks.

GUIDELINES

In leading the hydrologic program(s) in an organizationally diverse designated support area, the incumbent must exercise considerable initiative in working with a variety of guidelines, including: established policies, forecast procedures, agency regulations and directives, station manuals, and operational precedents. While working operational forecast shifts, additional guidelines exist in the form of real-time meteorological and hydrological forecasts and guidance received from the National Meteorological Center offices and RFCS. Because of the unique hydrometeorologic characteristics, program management responsibilities, and organizational diversity found in the designated support area, the incumbent must use a high degree of judgment in adapting and interpreting these guidelines to address a unique and technically complex set of hydrologic service requirements. In many cases the incumbent is faced with situations for which few or no guidelines exist, which requires him/her to originate solutions based on operational experience and hydrologic expertise.

COMPLEXITY

The designated support area encompasses varied demography, terrain, and river systems. It also contains at least one state capital, with its associated state emergency management and water resources offices, and a geographically or organizationally diverse group of offices in a multiple-WFO or multiple-state area. The assignment encompasses a wide variety of technical and administrative disciplines. A wide variety of user interests are served, and the incumbent must be conversant with a large cross-section of water related interests.

A high level of program leadership complexity exists because the incumbent is required to provide and direct the primary NWS hydrologic support and interface to the state emergency management and other water resources-related agencies located in the state capital, while simultaneously providing hydrologic support for one of the following: (1) one or more adjacent WFOs (without a Service Hydrologist), or (2) a multiple- (i.e., at least three-) state area of responsibility. Liaison activities with state capital agencies add complexity because the new WFO structure of the modernized NWS results in nearly all states being covered by two or more HSAS. Senior

Service Hydrologists located in WFOs which provide the liaison support with state capital agencies will perform this function for all WFOs serving the state area. Support for one or more adjacent WFO areas adds complexity by requiring the Senior Service Hydrologist to maintain a high level of program management coordination with MICs, SOOs, WCMS, and other WFO staff. Multiple WFO support also requires the incumbent to apply a high level of technological and hydrometeorological expertise in the design and oversight of hydrologic procedures and hydrologic training activities tailored to the unique characteristics and user requirements of each WFO area. Support for multiple-state areas adds complexity because of the requirement to design and ensure execution of real-time coordination procedures used at the WFO to support state mitigation activities during adverse hydrologic situations such as floods.

SCOPE AND EFFECT

Accurate, timely and well-conceived river forecasts and warnings offer a means of non-structural flood protection to individuals and property owners. The effectiveness of programs established by the incumbent in responding to flash floods and floods can prevent loss of life and property damage of major economic consequence. Extended forecast information also is of enormous economic value in making critical water management decisions.

The quality of the incumbent's performance has a vital effect on the effectiveness of the hydrologic program(s) in the designated support area. Results of innovative development efforts intended to improve services in his/her complex designated support area are also distributed through an organized process at the regional and national headquarters to RFCs and other WFOS.

PERSONAL CONTACTS

Intra-agency contacts are conducted with operations-oriented field employees in the NWS, including hydrologic and HAS forecasters at RFCs, meteorologists and Service Hydrologists at other WFOS, regional headquarters personnel, and Office of Hydrology personnel.

Interagency contacts with state-level agencies include emergency management, water resources, and civil defense offices. Contacts with Federal agencies include the Federal Emergency Management Agency, U.S. Corps of Engineers, U.S. Bureau of Reclamation, U.S. Soil Conservation Service, and U.S. Geological Survey.

Additional contacts include city, town, or community officials: county disaster preparedness, civil defense, and law enforcement officials; cooperative river and rainfall observers; and school and local volunteer groups.

Contacts are also made with the general public, the news media, and consulting engineers.

PURPOSE OF CONTACTS

Intra-agency contacts are initiated to: (1) coordinate the two-way exchange of hydrometeorological products between dependent offices, (2) achieve consistency in the hydrometeorological products from adjacent WFOS, and (3) coordinate with RFC and regional/national headquarters experts regarding the requirements for, and impacts of, continual improvements in hydrometeorological technologies used in local WFO operations.

Contacts are made with RFC forecasters to coordinate development and enhancement of techniques and procedures designed to enhance the flow of hydrometeorological support between WFOs and RFCS. Contacts are made with other Service Hydrologists to coordinate and/or share techniques and procedures used to support WFO hydrologic operations. Contacts are made with regional headquarters and office of Hydrology personnel regarding operational policies and centrally-developed procedures.

Contacts with local officials and state and Federal agencies involve definition of flood-prone areas, flood and preparedness mitigation efforts, improvement of WFO flood forecast and warning products, LFWSs, and other water resources concerns such as droughts.

Contacts with schools and local civil groups are made to promote education and awareness of flood safety rules and for recruiting volunteer rainfall spotters.

Press, radio and TV contacts are made to address inquiries regarding local hydrologic conditions.

PHYSICAL DEMANDS

The work is generally sedentary, although there is considerable moving about between various desks and equipment. Fairly strenuous outdoor activity may be required during field trips.

All operational forecasters at the WFO are required to work long arduous hours when hazardous conditions are expected or occurring. Such duty requires the ability to make quick and accurate decisions during extended periods of stressful activity.

WORK ENVIRONMENT

The work environment most closely resembles that of an office with added specialized equipment such as that for communications, computation, radar, and NOAA Weather Radio. For approximately 15-25 percent of the time the incumbent is in travel status to conduct liaison activities and field trips in the designated support area.

FAIR LABOR STANDARDS ACT (FLSA)

This position is exempt from the Fair Labor Standards Act in that it meets the criteria for professional positions as defined in 5 CFR 551.206.
