The State of New Hampshire

Department of Environmental Services

Robert R. Scott, Commissioner

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April 19, 2023

His Excellency, Governor Christopher T. Sununu
and the Honorable Council
State House
Concord NH 03301

REQUESTED ACTION

Authorize the New Hampshire Department of Environmental Services (NHDES) to enter into a **SOLE SOURCE** agreement with the U.S. Geological Survey (USGS), Pembroke, NH, (VC# 175772-R001), in the amount of $21,400 to measure stream flow to develop rating curves at three gage locations effective as of July 1, 2023 through June 30, 2025, and upon Governor and Council approval. 100% General Funds.

Funding is available in the following accounts with the authority to adjust encumbrances in each of the state fiscal years through the Budget Office, if needed and justified. Funding for FY 2024 and 2025 are contingent upon continuing appropriation and availability of funds.

	FY 2024	FY 2025
03-44-44-442010-1518-102-500731	$10,400	$11,000

Department of Environmental Services, Lakes-Rivers Management, Contracts for Program Services

EXPLANATION

This agreement is **SOLE SOURCE** because USGS is the national leader in stream flow measurement. The NHDES Instream Flow Program uses daily stream flow data to evaluate protected instream flow conditions and for applying management strategies. Public confidence in the data quality is important to water users because these measurements will define the management of New Hampshire's water resources. USGS is uniquely qualified to carry out this project with a high degree of accuracy that has earned the public's trust.

This Memorandum of Agreement funds the maintenance of stage rating curves derived from field measurements of streamflow and stage at each gage location for two years. Rating curves require continued updates because of changes to the stream beds.

The agreement has been approved by the Office of the Attorney General as to form, execution, and content.

We respectfully request your approval.

Robert R. Scott, Commissioner

www.des.nh.gov
29 Hazen Drive • PO Box 95 • Concord, NH 03302-0095
(603) 271-3503 • Fax: 271-2867 • TDD Access: Relay NH 1-800-735-2964

Form 9-1366
(May 2018)

U.S. Department of the Interior
U.S. Geological Survey
Joint Funding Agreement
FOR
Water Resource Investigations

Customer #: 6000000093
Agreement #: 23LGJFANH000008
Project #:
TIN #: 02-6000618

Fixed Cost Agreement YES[X] NO[ ]

THIS AGREEMENT is entered into as of the July 1, 2023, by the U.S. GEOLOGICAL SURVEY, New England Water Science Center, UNITED STATES DEPARTMENT OF THE INTERIOR, party of the first part, and the New Hampshire Department of Environmental Services party of the second part.

1. The parties hereto agree that subject to the availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation the operation and maintenance of three staff gages, 01090812 Piscataquog River below Gorham Brook, 01136350 Ammonoosuc River above Halfway Brook, 01137940 Ammonoosuc River below Lisbon Dam and to develop amd maintain stage-discharge ratings (per attachment), herein called the program. The USGS legal authority is 43 USC 36C; 43 USC 50, and 43 USC 50b.

2. The following amounts shall be contributed to cover all of the cost of the necessary field and analytical work directly related to this program. 2(b) include In-Kind-Services in the amount of $0.00

(a) $0 by the party of the first part during the period July 1, 2023 to June 30, 2025

(b) $21,400 by the party of the second part during the period July 1, 2023 to June 30, 2025

(c) Contributions are provided by the party of the first part through other USGS regional or national programs, in the amount of: $0

Description of the USGS regional/national program:

(d) Additional or reduced amounts by each party during the above period or succeeding periods as may be determined by mutual agreement and set forth in an exchange of letters between the parties.

(e) The performance period may be changed by mutual agreement and set forth in an exchange of letters between the parties.

3. The costs of this program may be paid by either party in conformity with the laws and regulations respectively governing each party.

4. The field and analytical work pertaining to this program shall be under the direction of or subject to periodic review by an authorized representative of the party of the first part.

5. The areas to be included in the program shall be determined by mutual agreement between the parties hereto or their authorized representatives. The methods employed in the field and office shall be those adopted by the party of the first part to insure the required standards of accuracy subject to modification by mutual agreement.

6. During the course of this program, all field and analytical work of either party pertaining to this program shall be open to the inspection of the other party, and if the work is not being carried on in a mutually satisfactory manner, either party may terminate this agreement upon 60 days written notice to the other party.

7. The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other party.

8. The maps, records or reports resulting from this program shall be made available to the public as promptly as possible. The maps, records or reports normally will be published by the party of the first part. However, the party of the second part reserves the right to publish the results of this program, and if already published by the party of the first part shall, upon request, be furnished by the party of the first part, at cost, impressions suitable for purposes of reproduction similar to that for which the original copy was prepared. The maps, records or reports published by either party shall contain a statement of the cooperative relations between the parties. The Parties acknowledge that scientific information and data developed as a result of the Scope of Work (SOW) are subject to applicable USGS review, approval, and release requirements, which are available on the USGS Fundamental Science Practices website (https://www2.usgs.gov/fsp/).

United States Department of the Interior

U.S. GEOLOGICAL SURVEY
New England Water Science Center
New Hampshire Office
331 Commerce Way
Pembroke, NH 03275-3718

March 6, 2023

Wayne Ives
Hydrogeologist
New Hampshire Department of Environmental Services
29 Hazen Drive
Concord, NH 03302

Dear Mr. Ives,

Enclosed is a digitally signed verison of our standard joint-funding agreement for the operation and maintenance of three staff stage gages and to develop and maintain stage-discharge ratings during the period July 1, 2023 through June 30, 2025 in the amount of $21,400 from your agency. Please sign and return one fully-executed original to Laurie Beley by email, lbeley@usgs.gov.

Federal law requires that we have a signed agreement before we start or continue work. Please return the signed agreement by **July 1, 2023**. If, for any reason, the agreement cannot be signed and returned by the date shown above, please contact Richard Kiah by phone number (603) 226-7819 or email rkiah@usgs.gov to make alternative arrangements.

This is a fixed cost agreement to be billed quarterly via Down Payment Request (automated Form DI-1040). Please allow 30-days from the end of the billing period for issuance of the bill. If you experience any problems with your invoice(s), please contact at phone number or email at .

The results of all work performed under this agreement will be available for publication by the U.S. Geological Survey. We look forward to continuing this and future cooperative efforts in these mutually beneficial water resources studies.

Sincerely,

Richard Kiah

Richard Kiah
Supervisory Hydrologic Technician

Enclosure
23LGJFANH000008

Form 9-1366
(May 2018)

U.S. Department of the Interior
U.S. Geological Survey
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FOR
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9. Biing for this agreement will be rendered **quarterly**. Invoices not paid within 60 days from the billing date will bear Interest, Penalties, and Administrative cost at the annual rate pursuant the Debt Collection Act of 1982, (codified at 31 U.S.C. § 3717) established by the U.S. Treasury.

USGS Technical Point of Contact

Name:	Richard Kiah Supervisory Hydrologic Technician
Address:	331 Commerce Way Suite #2 Pembroke, NH 03275-3718
Telephone:	(603) 226-7819
Fax:	(603) 226-7894
Email:	rkiah@usgs.gov

Customer Technical Point of Contact

Name:	Wayne Ives Hydrogeologist
Address:	29 Hazen Drive Concord, NH 03302
Telephone:	(603) 271-3548
Fax:	
Email:	wayne.ives@des.nh.gov

USGS Billing Point of Contact

Name:	Laurie Beley Budget Analyst
Address:	101 Pitkin Street East Hartford, CT 06108
Telephone:	(860) 291-6750
Fax:	(860) 291-6799
Email:	lbeley@usgs.gov

Customer Billing Point of Contact

Name:	Wayne Ives Hydrogeologist
Address:	29 Hazen Drive Concord, NH 03302
Telephone:	(603) 271-3548
Fax:	
Email:	wayne.ives@des.nh.gov

U.S. Geological Survey
United States
Department of Interior

Signature

By JOHNATHAN BUMGARNER Digitally signed by JOHNATHAN BUMGARNER Date: 2023.03.07 10:04:42 -05'00' Date: 3/07/2023
Name: Johnathan Bumgarner
Title: Director, New England Water Science Center

New Hampshire Department of Environmental Services

Signatures

By _____ Date: 4/13/23
Name: Robert R. Scott
Title: Commissioner, NHDES

By _____ Date: _____
Name:
Title: NH Attorney General's office:

By _____ Date: 5/24/2023
Name: Joshua Harrison
Title: Assistant Attorney General
As to form, substance, and execution.

Attachment A

USGS

Development of stage-discharge ratings at select sites in New Hampshire

July 1, 2023 to June 30, 2025

U.S. Geological Survey, New England Water Science Center, NH-VT Office in cooperation with New Hampshire Department of Environmental Services

Background

The New Hampshire Department of Environmental Services (NHDES) Instream Flow Program requires streamflow data at select locations to manage Designated Rivers. As demands on streamflow in the form of regulation, withdrawals, and diversions increase, it is critical to ensure that there is adequate streamflow to meet various objectives, such as public water supply, agricultural and industrial water usage, recreation, and aquatic habitat protection. Typically, streamflows are determined at U.S. Geological Survey (USGS) streamgages. However, it is impractical to gage all streams in New Hampshire and at many sites where streamflow data is needed, streamgages do not exist. In 2018 USGS, in cooperation with NHDES, evaluated methods to estimate streamflow by employing record extension techniques used to reconstruct historic records of streamflow by correlating between streamflows at the site of interest and concurrent streamflows at a nearby long-term USGS streamgage (Olson and Meyerhofer, 2019). From July 1, 2020 to June 30, 2023, alternative methods for providing streamflow data at select locations were implemented by 1) installing and maintaining USGS staff gages at three select sites in New Hampshire and 2) collecting field measurements of discharge for the development of stage-discharge ratings. The workplan to follow proposes a continuation of this work for State Fiscal Years 2024 and 2025.

Objectives

The purpose of this proposed workplan is to continue the collection of field measurements of discharge and maintain the stage-discharge ratings established at the three selected locations (table 1) for State Fiscal Years 2024 and 2025.

Table 1. Select locations for USGS staff gages in New Hampshire [TBD, to be determined].

Site Number	Name	Drainage Area (sqmi)	Period of continuous record
01090812	Piscataquog R blw Gorham Bk, near Goffstown, NH	75.9	
01136350	Ammonoosuc R ab Halfway Br, nr Twin Mtn, NH	14.2	
01137940	Ammonoosuc R blw Lisbon Dam, at Lisbon, NH	288	2009-2011

Approach

Staff gages have been established at three locations, one of which was previously maintained as USGS streamgages (table 1). Field measurements will continue to be collected over a range of conditions with emphasis given to normal and below-normal streamflow's (less than 75-percent flow duration). Six to ten discharge measurements will be collected annually to establish and maintain the stage-discharge rating at each location. Discharge measurements will not be collected during periods affected by backwater from ice. Stage-discharge ratings will not be developed for periods of temporary backwater from ice or debris. Streamflow data are collected and finalized in accordance with USGS techniques and methods as published in the following documents:

A) Discharge Measurements at Gaging Stations, https://pubs.usgs.gov/tm/tm3-a8/

B) Stage Measurement at Gaging Stations, https://pubs.er.usgs.gov/publication/tm3A7

C) Levels at Gaging Stations, https://pubs.usgs.gov/tm/tm3A19/

D) Computation of Continuous Records of Streamflow, https://pubs.er.usgs.gov/publication/twri03A13

Additional references in surface water techniques and methods can be viewed at https://www.usgs.gov/mission-areas/water-resources/science/science-topics/techniques-and-methods

Relevance and Benefits

Results from this study will provide data that are critical to the wise management of New Hampshire's water resources. The information can be used by New Hampshire water-resource managers for planning, management, and permitting decisions to help ensure adequate water for consumptive use, water-quality standards, recreation, and aquatic habitat protection.

Products

Field measurements and ratings will be quality assured according to USGS protocol. Field measurements will be published and publicly available through the USGS National Water Information System: Web Interface. Stage-discharge ratings will be provided through the USGS ratings depot at https://waterdata.usgs.gov/nwisweb/get_ratings?site_no=XXXXXXXX&file_type=exsa where XXXXXXXX refers to the eight digit USGS streamgage identifier (table 1).

Project Staffing, Costs, and Funding

Work required to meet the objectives will be carried out by hydrologic technicians from the USGS. These USGS staff will collaborate, as needed, with state officials. The total cost of the project is $21,400 to be provided by NHDES with rating development and maintenance costs of $10,400 in State Fiscal Year 2024 and $11,000 in State Fiscal Year 2025.

Reference

Olson, S.A., and Meyerhofer, A.J., 2019, Development and evaluation of a record extension technique for estimating discharge at selected stream sites in New Hampshire: U.S. Geological Survey Scientific Investigations Report 2019–5066, 23 p., https://doi.org/10.3133/sir20195066.

For further information contact:

Richard Kiah, rkiah@usgs.gov, or (603) 226-7819