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The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

May 20, 2019

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

REQUESTED ACTION

Authorize the New Hampshire Department of Environmental Services (NHDES) to enter into a contract with Gomez and Sullivan Engineers, P.C. (Gomez and Sullivan), (VC# 174969) of Henniker, NH in the amount of $295,381 to conduct protected instream flow studies on the Cold and Warner Rivers, effective upon Governor and Council approval through September 30, 2021. 100% General Funds.

Funding is available in the account as follows with the authority to adjust encumbrances in each of the State Fiscal Years through the Budget Office, if needed and justified. Funding for FY 20-21 is contingent upon continuing appropriation and availability of funding.

	FY 2019	FY 2020	FY 2021
03-44-44-442010-1518-102-500731	$ 114,500	$ 102,256	$ 78,625

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

EXPLANATION

Under this contract, Gomez and Sullivan will conduct tasks to complete two instream flow studies. The contract implements RSA 483 that requires protected instream flows on all of the State's Designated Rivers. The studies would be conducted to determine protected instream flows, document the results and provide technical support to NHDES during the public review process. Gomez and Sullivan would conduct field and computer assessments of the river conditions including dimensions, flow velocities, and habitat conditions. Using these assessments combined with daily stream flow records, Gomez and Sullivan would apply computer models to determine stream flows necessary to support habitat conditions. Protected instream flows would be documented with these assessments and model results for public review and comment.

Gomez & Sullivan was selected by a four-person review team consisting of experienced DES personnel who independently scored the proposals in terms of staff qualifications and experience, adequacy of approach, overall project understanding, total cost, and survey completion times. See Attachment A for the ranking of the proposals submitted. Gomez & Sullivan was selected by the review team due to having the top ranking proposal and interview presentation. Gomez & Sullivan demonstrated their staff's ability to conduct these studies and their clear understanding of the work to be done. They also had the lowest proposed cost and are a New Hampshire company. This contract has been approved by the Office of the Attorney General as to form, substance and execution.

We respectfully request your approval.

Robert R. Scott
Commissioner

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(603) 271-3503 • Fax: 271-2867 • TDD Access: Relay NH 1-800-735-2964

Notice: This agreement and all of its attachments shall become public upon submission to Governor and Executive Council for approval. Any information that is private, confidential or proprietary must be clearly identified to the agency and agreed to in writing prior to signing the contract.

AGREEMENT

The State of New Hampshire and the Contractor hereby mutually agree as follows:

GENERAL PROVISIONS

1. IDENTIFICATION.

1.1 State Agency Name New Hampshire Department of Environmental Services		1.2 State Agency Address 29 Hazen Drive Concord, NH 03301	
1.3 Contractor Name Gomez and Sullivan Engineers, D.P.C.		1.4 Contractor Address 288 Genesee Street Utica, NY 13502	
1.5 Contractor Phone Number (603) 428-4960	1.6 Account Number 03-44-44-442010-1518-102-500731	1.7 Completion Date September 30, 2021	1.8 Price Limitation $295,381
1.9 Contracting Officer for State Agency Wayne Ives, Instream Flow Specialist		1.10 State Agency Telephone Number 603-271-3548	
1.11 Contractor Signature [signature]		1.12 Name and Title of Contractor Signatory Thomas J Sullivan Vice President	

1.13 Acknowledgement: State of NH, County of Merrimack

On 5/16/19, before the undersigned officer, personally appeared the person identified in block 1.12, or satisfactorily proven to be the person whose name is signed in block 1.11, and acknowledged that s/he executed this document in the capacity indicated in block 1.12.

1.13.1 Signature of Notary Public or Justice of the Peace

[signature] [Seal]

Chaffon Boisvert
Notary Public, State of New Hampshire
My Commission Expires Sept. 5th, 2023

1.13.2 Name and Title of Notary or Justice of the Peace

Chaffon Boisvert, Notary

1.14 State Agency Signature [signature] Date: 5/21/19	1.15 Name and Title of State Agency Signatory Robert R. Scott, Commissioner, NHDES

1.16 Approval by the N.H. Department of Administration, Division of Personnel *(if applicable)*

By: Director, On:

1.17 Approval by the Attorney General (Form, Substance and Execution) *(if applicable)*

By: [signature] On: 5/23/19

1.18 Approval by the Governor and Executive Council *(if applicable)*

By: On:

2. EMPLOYMENT OF CONTRACTOR/SERVICES TO BE PERFORMED. The State of New Hampshire, acting through the agency identified in block 1.1 ("State"), engages contractor identified in block 1.3 ("Contractor") to perform, and the Contractor shall perform, the work or sale of goods, or both, identified and more particularly described in the attached EXHIBIT A which is incorporated herein by reference ("Services").

3. EFFECTIVE DATE/COMPLETION OF SERVICES.
3.1 Notwithstanding any provision of this Agreement to the contrary, and subject to the approval of the Governor and Executive Council of the State of New Hampshire, if applicable, this Agreement, and all obligations of the parties hereunder, shall become effective on the date the Governor and Executive Council approve this Agreement as indicated in block 1.18, unless no such approval is required, in which case the Agreement shall become effective on the date the Agreement is signed by the State Agency as shown in block 1.14 ("Effective Date").
3.2 If the Contractor commences the Services prior to the Effective Date, all Services performed by the Contractor prior to the Effective Date shall be performed at the sole risk of the Contractor, and in the event that this Agreement does not become effective, the State shall have no liability to the Contractor, including without limitation, any obligation to pay the Contractor for any costs incurred or Services performed. Contractor must complete all Services by the Completion Date specified in block 1.7.

4. CONDITIONAL NATURE OF AGREEMENT.
Notwithstanding any provision of this Agreement to the contrary, all obligations of the State hereunder, including, without limitation, the continuance of payments hereunder, are contingent upon the availability and continued appropriation of funds, and in no event shall the State be liable for any payments hereunder in excess of such available appropriated funds. In the event of a reduction or termination of appropriated funds, the State shall have the right to withhold payment until such funds become available, if ever, and shall have the right to terminate this Agreement immediately upon giving the Contractor notice of such termination. The State shall not be required to transfer funds from any other account to the Account identified in block 1.6 in the event funds in that Account are reduced or unavailable.

5. CONTRACT PRICE/PRICE LIMITATION/ PAYMENT.
5.1 The contract price, method of payment, and terms of payment are identified and more particularly described in EXHIBIT B which is incorporated herein by reference.
5.2 The payment by the State of the contract price shall be the only and the complete reimbursement to the Contractor for all expenses, of whatever nature incurred by the Contractor in the performance hereof, and shall be the only and the complete compensation to the Contractor for the Services. The State shall have no liability to the Contractor other than the contract price.
5.3 The State reserves the right to offset from any amounts otherwise payable to the Contractor under this Agreement those liquidated amounts required or permitted by N.H. RSA 80:7 through RSA 80:7-c or any other provision of law.
5.4 Notwithstanding any provision in this Agreement to the contrary, and notwithstanding unexpected circumstances, in no event shall the total of all payments authorized, or actually made hereunder, exceed the Price Limitation set forth in block 1.8.

6. COMPLIANCE BY CONTRACTOR WITH LAWS AND REGULATIONS/ EQUAL EMPLOYMENT OPPORTUNITY.
6.1 In connection with the performance of the Services, the Contractor shall comply with all statutes, laws, regulations, and orders of federal, state, county or municipal authorities which impose any obligation or duty upon the Contractor, including, but not limited to, civil rights and equal opportunity laws. This may include the requirement to utilize auxiliary aids and services to ensure that persons with communication disabilities, including vision, hearing and speech, can communicate with, receive information from, and convey information to the Contractor. In addition, the Contractor shall comply with all applicable copyright laws.
6.2 During the term of this Agreement, the Contractor shall not discriminate against employees or applicants for employment because of race, color, religion, creed, age, sex, handicap, sexual orientation, or national origin and will take affirmative action to prevent such discrimination.
6.3 If this Agreement is funded in any part by monies of the United States, the Contractor shall comply with all the provisions of Executive Order No. 11246 ("Equal Employment Opportunity"), as supplemented by the regulations of the United States Department of Labor (41 C.F.R. Part 60), and with any rules, regulations and guidelines as the State of New Hampshire or the United States issue to implement these regulations. The Contractor further agrees to permit the State or United States access to any of the Contractor's books, records and accounts for the purpose of ascertaining compliance with all rules, regulations and orders, and the covenants, terms and conditions of this Agreement.

7. PERSONNEL.
7.1 The Contractor shall at its own expense provide all personnel necessary to perform the Services. The Contractor warrants that all personnel engaged in the Services shall be qualified to perform the Services, and shall be properly licensed and otherwise authorized to do so under all applicable laws.
7.2 Unless otherwise authorized in writing, during the term of this Agreement, and for a period of six (6) months after the Completion Date in block 1.7, the Contractor shall not hire, and shall not permit any subcontractor or other person, firm or corporation with whom it is engaged in a combined effort to perform the Services to hire, any person who is a State employee or official, who is materially involved in the procurement, administration or performance of this

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Agreement. This provision shall survive termination of this Agreement.
7.3 The Contracting Officer specified in block 1.9, or his or her successor, shall be the State's representative. In the event of any dispute concerning the interpretation of this Agreement, the Contracting Officer's decision shall be final for the State.

8. EVENT OF DEFAULT/REMEDIES.
8.1 Any one or more of the following acts or omissions of the Contractor shall constitute an event of default hereunder ("Event of Default"):
8.1.1 failure to perform the Services satisfactorily or on schedule;
8.1.2 failure to submit any report required hereunder; and/or
8.1.3 failure to perform any other covenant, term or condition of this Agreement.
8.2 Upon the occurrence of any Event of Default, the State may take any one, or more, or all, of the following actions:
8.2.1 give the Contractor a written notice specifying the Event of Default and requiring it to be remedied within, in the absence of a greater or lesser specification of time, thirty (30) days from the date of the notice; and if the Event of Default is not timely remedied, terminate this Agreement, effective two (2) days after giving the Contractor notice of termination;
8.2.2 give the Contractor a written notice specifying the Event of Default and suspending all payments to be made under this Agreement and ordering that the portion of the contract price which would otherwise accrue to the Contractor during the period from the date of such notice until such time as the State determines that the Contractor has cured the Event of Default shall never be paid to the Contractor;
8.2.3 set off against any other obligations the State may owe to the Contractor any damages the State suffers by reason of any Event of Default; and/or
8.2.4 treat the Agreement as breached and pursue any of its remedies at law or in equity, or both.

9. DATA/ACCESS/CONFIDENTIALITY/ PRESERVATION.
9.1 As used in this Agreement, the word "data" shall mean all information and things developed or obtained during the performance of, or acquired or developed by reason of, this Agreement, including, but not limited to, all studies, reports, files, formulae, surveys, maps, charts, sound recordings, video recordings, pictorial reproductions, drawings, analyses, graphic representations, computer programs, computer printouts, notes, letters, memoranda, papers, and documents, all whether finished or unfinished.
9.2 All data and any property which has been received from the State or purchased with funds provided for that purpose under this Agreement, shall be the property of the State, and shall be returned to the State upon demand or upon termination of this Agreement for any reason.
9.3 Confidentiality of data shall be governed by N.H. RSA chapter 91-A or other existing law. Disclosure of data requires prior written approval of the State.

10. TERMINATION. In the event of an early termination of this Agreement for any reason other than the completion of the Services, the Contractor shall deliver to the Contracting Officer, not later than fifteen (15) days after the date of termination, a report ("Termination Report") describing in detail all Services performed, and the contract price earned, to and including the date of termination. The form, subject matter, content, and number of copies of the Termination Report shall be identical to those of any Final Report described in the attached EXHIBIT A.

11. CONTRACTOR'S RELATION TO THE STATE. In the performance of this Agreement the Contractor is in all respects an independent contractor, and is neither an agent nor an employee of the State. Neither the Contractor nor any of its officers, employees, agents or members shall have authority to bind the State or receive any benefits, workers' compensation or other emoluments provided by the State to its employees.

12. ASSIGNMENT/DELEGATION/SUBCONTRACTS. The Contractor shall not assign, or otherwise transfer any interest in this Agreement without the prior written notice and consent of the State. None of the Services shall be subcontracted by the Contractor without the prior written notice and consent of the State.

13. INDEMNIFICATION. The Contractor shall defend, indemnify and hold harmless the State, its officers and employees, from and against any and all losses suffered by the State, its officers and employees, and any and all claims, liabilities or penalties asserted against the State, its officers and employees, by or on behalf of any person, on account of, based or resulting from, arising out of (or which may be claimed to arise out of) the acts or omissions of the Contractor. Notwithstanding the foregoing, nothing herein contained shall be deemed to constitute a waiver of the sovereign immunity of the State, which immunity is hereby reserved to the State. This covenant in paragraph 13 shall survive the termination of this Agreement.

14. INSURANCE.
14.1 The Contractor shall, at its sole expense, obtain and maintain in force, and shall require any subcontractor or assignee to obtain and maintain in force, the following insurance:
14.1.1 comprehensive general liability insurance against all claims of bodily injury, death or property damage, in amounts of not less than $1,000,000 per occurrence and $2,000,000 aggregate ; and
14.1.2 special cause of loss coverage form covering all property subject to subparagraph 9.2 herein, in an amount not less than 80% of the whole replacement value of the property.
14.2 The policies described in subparagraph 14.1 herein shall be on policy forms and endorsements approved for use in the State of New Hampshire by the N.H. Department of Insurance, and issued by insurers licensed in the State of New Hampshire.

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14.3 The Contractor shall furnish to the Contracting Officer identified in block 1.9, or his or her successor, a certificate(s) of insurance for all insurance required under this Agreement. Contractor shall also furnish to the Contracting Officer identified in block 1.9, or his or her successor, certificate(s) of insurance for all renewal(s) of insurance required under this Agreement no later than thirty (30) days prior to the expiration date of each of the insurance policies. The certificate(s) of insurance and any renewals thereof shall be attached and are incorporated herein by reference. Each certificate(s) of insurance shall contain a clause requiring the insurer to provide the Contracting Officer identified in block 1.9, or his or her successor, no less than thirty (30) days prior written notice of cancellation or modification of the policy.

15. WORKERS' COMPENSATION.

15.1 By signing this agreement, the Contractor agrees, certifies and warrants that the Contractor is in compliance with or exempt from, the requirements of N.H. RSA chapter 281-A *("Workers' Compensation")*.

15.2 To the extent the Contractor is subject to the requirements of N.H. RSA chapter 281-A, Contractor shall maintain, and require any subcontractor or assignee to secure and maintain, payment of Workers' Compensation in connection with activities which the person proposes to undertake pursuant to this Agreement. Contractor shall furnish the Contracting Officer identified in block 1.9, or his or her successor, proof of Workers' Compensation in the manner described in N.H. RSA chapter 281-A and any applicable renewal(s) thereof, which shall be attached and are incorporated herein by reference. The State shall not be responsible for payment of any Workers' Compensation premiums or for any other claim or benefit for Contractor, or any subcontractor or employee of Contractor, which might arise under applicable State of New Hampshire Workers' Compensation laws in connection with the performance of the Services under this Agreement.

16. WAIVER OF BREACH. No failure by the State to enforce any provisions hereof after any Event of Default shall be deemed a waiver of its rights with regard to that Event of Default, or any subsequent Event of Default. No express failure to enforce any Event of Default shall be deemed a waiver of the right of the State to enforce each and all of the provisions hereof upon any further or other Event of Default on the part of the Contractor.

17. NOTICE. Any notice by a party hereto to the other party shall be deemed to have been duly delivered or given at the time of mailing by certified mail, postage prepaid, in a United States Post Office addressed to the parties at the addresses given in blocks 1.2 and 1.4, herein.

18. AMENDMENT. This Agreement may be amended, waived or discharged only by an instrument in writing signed by the parties hereto and only after approval of such amendment, waiver or discharge by the Governor and Executive Council of the State of New Hampshire unless no such approval is required under the circumstances pursuant to State law, rule or policy.

19. CONSTRUCTION OF AGREEMENT AND TERMS. This Agreement shall be construed in accordance with the laws of the State of New Hampshire, and is binding upon and inures to the benefit of the parties and their respective successors and assigns. The wording used in this Agreement is the wording chosen by the parties to express their mutual intent, and no rule of construction shall be applied against or in favor of any party.

20. THIRD PARTIES. The parties hereto do not intend to benefit any third parties and this Agreement shall not be construed to confer any such benefit.

21. HEADINGS. The headings throughout the Agreement are for reference purposes only, and the words contained therein shall in no way be held to explain, modify, amplify or aid in the interpretation, construction or meaning of the provisions of this Agreement.

22. SPECIAL PROVISIONS. Additional provisions set forth in the attached EXHIBIT C are incorporated herein by reference.

23. SEVERABILITY. In the event any of the provisions of this Agreement are held by a court of competent jurisdiction to be contrary to any state or federal law, the remaining provisions of this Agreement will remain in full force and effect.

24. ENTIRE AGREEMENT. This Agreement, which may be executed in a number of counterparts, each of which shall be deemed an original, constitutes the entire Agreement and understanding between the parties, and supersedes all prior Agreements and understandings relating hereto.

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Exhibit A
Scope of Services

Gomez and Sullivan Engineers, D.P.C. (Gomez and Sullivan) shall perform the following tasks as described in the detailed proposal titled "Proposal for Protected Instream Flow Studies for the Cold and Warner Designated Rivers", submitted to New Hampshire Department of Environmental Services (NHDES) on January 31, 2019, along with the document titled "Modification to proposal for Protected Instream Flow Studies for the Cold and Warner Designated Rivers" submitted to NHDES on March 8, 2019. The scope of work has been divided into different contract sections based on funds predicted to be available to NHDES for Gomez and Sullivan to perform tasks on this project. The schedule is subject to change based on the actual availability of funds. The schedule is also subject to change given environmental factors such as weather and flow rates that affect the ability to perform various subtasks.

Project Goal:

The goals of the project are to perform Protected Instream Flow Studies on the Cold and Warner Rivers, and to provide recommendations for the Protected Instream Flows on each river.

Scope of Work:

The Protected Instream Flow Studies will be performed on the Cold and Warner Designated Rivers. The primary tasks for each river includes: 1) completion of a Protected Entity Identification and River Survey; 2) development of Protected Instream Flow Criteria; and 3) completion of a public process by participating in a public information meeting, public hearing, and providing comment responses with a final report.

Project Tasks:

The project tasks are described in detail below based on the scope in the proposal and modification to the proposal provided to NHDES on January 31, 2019 and March 8, 2019, respectively. Though the tasks in the proposal were organized sequentially, the scope of work was divided in this contract based on the amount of available funding expected from three different funding cycles, as shown below.

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Deliverables:

Gomez and Sullivan will notify NHDES by email upon completion of each subtask as components of the overall task; as such, the notification for a subtask will be considered as the deliverable for that subtask. These notifications are to be included as deliverables because considerable work needs to be completed prior to the final physical deliverables (i.e. reports and presentations) for the studies. The specific subtasks to be defined as deliverables are listed as follows and are described in the following scope of services. Each subtask has been assigned to three contract sections based on funds predicted to be available to perform the study tasks.

Contract Portion 1
Subtask 1.1 for the Cold River - Information Gathering and Review
Subtask 1.2 for the Cold River - On-stream Reconnaissance Survey
Subtask 1.3 for the Cold River - Reconnaissance Data Processing
Subtask 2.1 for the Cold River - Reference Stream Flow Record Review and Modification
Subtask 2.2(A) for the Cold River - Fish Habitat Assessment (Field Assessment Portion)
Subtask 2.2(B) for the Cold River - Fish Habitat Assessment (Modeling/Analysis Portion)
Subtask 2.3(A) for the Cold River - Riparian Vegetation and Wildlife Flow Assessments (Literature Review and Surveys 1-3)
Subtask 2.3(B) for the Cold River - Riparian Vegetation and Wildlife Flow Assessments (Surveys 4-6 and Analyses)

Contract Portion 2
Subtask 2.4(A) for the Cold River - Recreational Assessment (Surveys 1-4)
Subtask 2.4(B) for the Cold River - Recreational Assessment (Surveys 5-8)
Subtask 2.5 for the Cold River - Proposed Protected Instream Flow Report
Subtask 3.1 for the Cold River - Public Information Meeting
Subtask 3.2 for the Cold River - Public Hearing
Subtask 3.3 for the Cold River - Comment Response and Final Report Submittal
Subtask 1.1 for the Warner River - Information Gathering and Review
Subtask 1.2 for the Warner River - On-stream Reconnaissance Survey
Subtask 1.3 for the Warner River - Reconnaissance Data Processing
Subtask 2.1 for the Warner River - Reference Stream Flow Record Review and Modification
Subtask 2.3(A) for the Warner River - Riparian Vegetation and Wildlife Flow Assessments (Literature Review and Surveys 1-3)
Subtask 2.3(B) for the Warner River - Riparian Vegetation and Wildlife Flow Assessments (Surveys 4-6 and Analyses)
Subtask 2.4(A) for the Warner River - Recreational Assessment (Surveys 1-4)
Subtask 2.4(B) for the Warner River - Recreational Assessment (Surveys 5-8)

Contract Portion 3
Subtask 2.2(A) for the Warner River - Fish Habitat Assessment (Field Assessment Portion)
Subtask 2.2(B) for the Warner River - Fish Habitat Assessment (Modeling/Analysis Portion)
Subtask 2.5 for the Warner River - Proposed Protected Instream Flow Report
Subtask 3.1 for the Warner River - Public Information Meeting
Subtask 3.2 for the Warner River - Public Hearing
Subtask 3.3 for the Warner River - Comment Response and Final Report Submittal

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1. Scope of Services – Contract Portion 1

The tasks outlined in this section are included for funds available prior to June 30, 2019

Cold River

Task 1 - Protected Entity Identification and River Survey - Cold River

Subtask 1.1 - Information Gathering and Review - Cold River

Readily-available information will be gathered by Gomez and Sullivan from various sources, including published river-specific reports, GRANIT GIS layers, resource inventory data (e.g. National Wetland Inventory Maps; Natural Heritage Inventory) and potentially other online resources, along with collaboration with NHDES to obtain existing information available from the State of New Hampshire. Based on the information found, a variety of maps and descriptions will be developed. This information will be used to prioritize locations for which the existence and occurrence of flow-dependent instream public uses and Clean Water Act designated uses will be verified.

Subtask 1.2 - On-stream Reconnaissance Survey - Cold River

The entire Designated River will be traversed either on foot, by canoe/kayak, or both. The purpose of the reconnaissance survey will be to:

- Confirm the presence and occurrence of flow-dependent instream public uses and Clean Water Act designated uses;
- Develop an initial mesohabitat map of the entire Designated River; and
- Select preliminary locations for habitat assessment.

Though the survey is not intended to be an exhaustive identification and cataloguing of flow-dependent entities, Gomez and Sullivan believes that traversing the length of the entire stream is necessary to determine where shifts in river character and habitat occur. Though the Cold and Warner Rivers were not divided into sections based on the Target Fish Community Assessment, these rivers will require a full on-the-ground survey to divide the river into reaches and select representative assessment segments for the hydraulic-habitat modeling portion of the study. Additionally, characterization of the mesohabitats along the entire Designated River will ensure that there is robust information available for defending the representativeness of assessment segments within each reach of the river, and whether there is a particular reach or group of reaches that could be the driver(s) of flow needs throughout the river. To ensure a thorough survey, Gomez and Sullivan staff that will perform the reconnaissance survey will be experienced and knowledgeable in aquatic, terrestrial, and wetland biology, along with the identification of fish, mussels, stream macroinvertebrates, wildlife, and wetland and riparian plants.

The reconnaissance level mapping will be performed during the early summer during relatively low flow conditions when it is anticipated that the mesohabitat heterogeneity in the stream will be relatively high. Surveying at higher flows could be less effective due to the increased amounts of run habitats that would typically occur in rivers of this size, resulting in fewer mesohabitats and less potential for finding the correct breakpoints in the river.

During the reconnaissance survey, priority locations (other than aquatic habitat) identified during Subtask 1.1 will be visited to confirm their presence or occurrence. For aquatic habitat, mesohabitats will be delineated linearly along the stream using a field computer or tablet equipped with GPS and aerial imagery. Representative measurements/characteristics will be recorded along the stream at each

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mesohabitat, including thalweg depth, stream width, dominant substrate type, dominant cover type/density, and presence of overhead cover. Visual observations of fish, wildlife, wetlands, and plant communities will also be recorded, with an emphasis on identifying the locations of rare, threatened, or endangered (RTE) species and exemplary communities.

Subtask 1.3 – Reconnaissance Data Processing – Cold River

To effectively perform the hydraulic-habitat portions of the study, the data collected during the reconnaissance survey will be consolidated, checked for quality, and processed. A linear mesohabitat map will be developed; based on the mesohabitat map, the longitudinal river profile[1], site visits, and consultation with the NHDES, river segments will be delineated and representative reaches within each segment will be identified. River segments will be delineated on a large scale, where major changes in riverine character occurs (e.g. drastic changes in size, shape, slope, or proportion of mesohabitats present). Representative reaches within each river segment will contain similar characteristics when compared to the entire river segment. Transects to be used as part of the Floodplain-Transect Method will be located at or near at least four areas where RTE species or exemplary communities are found during the reconnaissance survey.

The approach for developing Protected Instream Flow Criteria will follow the same underlying framework as the Lamprey and Souhegan studies, by integrating flow needs from flow-dependent protected entities within the concept of the Natural Flow Paradigm. As such, bioperiods will be developed that pertain to the flow-dependent protected entities year-round; the protected entities that are determined to provide protective flows for all other protected entities in a given bioperiod will be the driver of flow recommendations for that bioperiod.

After the reconnaissance survey, Gomez and Sullivan will provide NHDES with proposed bioperiods for assessment, the flow-dependent entities that will be evaluated for each bioperiod, and the specific methods that will be applied to each flow-dependent entity. Based on the results of the Lamprey and Souhegan, the Target Fish Community in the Cold and Warner Rivers, and species of greatest conservation need, we anticipate that the needs of fish species will be the primary drivers of Protected Instream Flows for specific bioperiods within the spring (e.g. spawning anadromous or resident fish), summer (rearing and growth for resident fish), and fall (e.g. Atlantic Salmon spawning, or rearing and growth for resident fish). Gomez and Sullivan will focus on species within the Target Fish Community that are expected to make up greater than 5% of the fish community, along with potential diadromous fish that NHDES may want to include in the study (even if they are not currently accessing the rivers). Species of greatest conservation need, along with other aquatic species encountered during the reconnaissance survey (i.e. mussels) will also be considered for inclusion after consulting with NHDES. Winter habitat will likely focus on the needs of fish and aquatic life, but will be evaluated using wetted area in the absence of species-specific habitat criteria. The needs of riparian and wetland species are anticipated to be the drivers of flow needs during periods with relatively high flows (i.e. spring freshet). However, the final decisions for which flow-dependent resources will be the drivers of Instream Protected Flow Rates will be evaluated during the course of the study.

Task 2 – Protected Instream Flow Criteria Development – Cold River

Subtask 2.1 – Reference Stream Flow Record Review and Modification – Cold River

NHDES will be providing daily stream flow data for use on this project, which will include at least 30 years of data. A flow record longer than 30 years, if available, would improve the results of the aquatic

[1] Flood Insurance Studies performed by FEMA contain transects and longitudinal profiles of the streambed. Though the information tends to be dated, it is still useful for defining where breaks in slope and large changes in river character would occur.

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hydraulic-habitat modeling by increasing the sample size of daily flows across years; however, obtaining greater than 30 years is not considered critical to our proposed analyses. The dataset will ultimately be used to develop a habitat timeseries. Because the data are meant to represent a relatively unimpacted condition, Gomez and Sullivan will review the datasets and any information available on water withdrawals, diversions, or dam operations. If it is determined that the dataset needs adjustment to reflect reference conditions, Gomez and Sullivan will adjust the record, when possible based on measured or readily-quantifiable values, to more closely represent unmanaged streamflow conditions. If the flow record is strongly affected by water withdrawals, returns, or dam operations, Gomez and Sullivan will develop a reference flow record in consultation with NHDES.

Subtask 2.2(A) – Fish Habitat Assessment (Field Assessment Portion) – Cold River

The hydraulic-habitat model for aquatic target species and/or groups of species (guilds) will be developed using a combination of 1D and 2D approaches. In general, 2D modeling will occur in the more complex areas of the rivers where 1D model accuracy is limited due to ineffective flow areas, losses from channel bends, and areas with highly variable bathymetry. Likewise, 1D modeling approaches will be used on less complex areas of the river. This combination of modeling approaches is similar to how Gomez and Sullivan completed a large Instream Flow Incremental Methodology (IFIM) study on the Connecticut River downstream of Turners Falls Dam. This approach requires the selection of target species or groups of species (guilds), selection of representative segments of the river for evaluation, habitat mapping (i.e. bathymetry, topography, velocity, and substrate), hydraulic modeling, calibration, and validation, and analyses of habitat and flow based on a reference stream flow record.

Identification of Target Species and Habitat Use Criteria

Target species or guilds will ultimately be used to represent different bioperiods over the course of the year. The selection criteria for identifying the target species or guild during a given bioperiod will be based on a combination of the findings from the reconnaissance survey and available community data (e.g. Target Fish Community, existing fisheries surveys, species of greatest conservation need). The habitat criteria and flow requirements for each target species or guild will be determined based on a literature review. Gomez and Sullivan routinely uses criteria developed by literature review as part of habitat evaluation for IFIM studies. These criteria and associated literature/citations will be provided to NHDES for review prior to incorporation into hydraulic-habitat models.

Hydraulic-Habitat Model Development

Once representative reaches have been identified (Subtask 1.3), the selection of a 1D or 2D model will be made through an assessment of the topographic features within the reach (e.g. channel width/depth, the presence of oxbows and braided channels, overbank geometry, zones of expansion and contraction). A preliminary assessment suggests that the representative reaches for each the Cold and Warner Rivers will consist of 2 to 3 areas modeled using 2D methods (each area approximately 0.5 miles long), and 1 to 2 areas modeled using 1D methods (each area with 3 to 5 transects obtained in the field).

Field data collected within the 2D modeling region will include detailed bathymetry, topography, and substrate data. Recent LiDAR data (2015-2016) will be incorporated into the model as well. Additionally, depth and velocity data will be collected at transects identified for model calibration/validation at two flows.

Water level recorders will be installed at the upstream and downstream extents for the 2D modeling regions, as well as at several locations within each 2D modeling area. Water level recorders will also be installed at each transect used for the 1D modeling. It is anticipated that the water level recorders will be in place for several months to allow the capture of water level elevations under a large range of flows. Flows from nearby United States Geological Survey gages will be prorated to each representative

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area using a drainage area ratio methodology. The combined flow and water level data will be used in the calibration and validation of the hydraulic models.

Subtask 2.2(B) – Fish Habitat Assessment (Modeling/Analysis Portion) – Cold River

Gomez and Sullivan intends to utilize the latest version of the Hydraulic Engineering Center's River Analysis System (HEC-RAS) computer software to develop the 1D[2] and 2D hydraulic models and Physical Habitat Simulation (PHABSIM) will also be used for the 1D areas. After hydraulic model development, calibration, and validation, a series of production runs will be analyzed. These production runs will consist of modeling a range of flows pertinent to the target species/guild within each bioperiod and for each representative location. The results from these production runs will be incorporated with the habitat suitability criteria to develop the habitat vs. flow relationships for the target species and/or guilds.

Evaluation of Hydraulic-Habitat Model Results

Habitat time series data will be developed for each of the target species and life stages that represent aquatic habitat bioperiods. The habitat time series will then be used to develop UCUT curves for interpretation. All UCUT curves would be developed based on incremental habitat thresholds, with all curves plotted together; the y-axis would represent the continuous duration below the habitat threshold, and the x-axis would represent the cumulative continuous duration represented as a percentage of the total studied duration. The UCUT curves will be used to develop Protected Instream Flow magnitudes and durations in the same manner as was completed for the Souhegan and Lamprey River studies by:

- Determining the magnitude of flows that would result in common, critical, and rare habitat events. This will be completed by evaluating the area between the habitat-based UCUT curves. Changes in area indicates a change in frequency of events associated with a habitat increase to the next habitat threshold level. These breaks in habitat levels will be identified, and the flow that yields that habitat level will be back-calculated using the habitat vs. flow relationship.

- Determining the critical duration of the identified flows. This would be completed by evaluating the slope and by identifying inflection points of the curves. The shortest persistent durations would typically be along the portion of the curve indicated by the lowest inflection point, whereas longer-duration catastrophic events would be indicated by an inflection point further up the curve. The goal will be to define persistent and catastrophic durations, as completed for the Lamprey and Souhegan Rivers. No back-calculation will be necessary to select the duration, as the data will be taken directly from the UCUT curves.

Winter Habitat Assessment

Habitat for fish and aquatic life during the winter is poorly understood. However, the Protected Instream Flows for winter periods can be developed by analyzing UCUT curves of wetted area; these curves will be developed using information from the 1D and 2D hydraulic models. Even in the absence of detailed species-specific habitat data, maintaining wetted area consistent with the natural flow regime will be protective of aquatic species during the winter months. The advantages of using wetted area for this type of analysis are that it: 1) maintains a constant relationship with discharge assuming consistent channel morphology over time; 2) always increases with increasing discharge; 3) can be measured and modeled, and is not based on subjective opinion.

[2] On similar projects, Gomez and Sullivan has used 1D HEC-RAS to create model output (depth, velocity, and user entered substrate) for use with HABTAE, the habitat model embedded within PHABSIM.

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For this analysis, a wetted area time series will be developed using information from the hydraulic-habitat models and the flow time series. UCUT curves will be developed and interpreted for the wetted area time series data in the same manner as for species-specific aquatic habitat.

Subtask 2.3(A) – Riparian Vegetation and Wildlife Flow Assessments (Literature Review and Surveys 1-3) – Cold River

Protected Instream Flows for riparian vegetation and wildlife will be performed using a combination of literature review, transect-specific evaluations (Floodplain Transect Method), and by analyzing water level UCUT curves, as described below.

Literature Review of Habitat Needs

Based on the findings of the reconnaissance survey, the needs of riparian vegetation and wildlife that are to be assessed further will be thoroughly researched prior to further field assessment, such that the effects of flow and water level on these species can be accurately assessed using the Floodplain Transect Method.

Floodplain Transect Methods Surveys

Protected Instream Flows for specific riparian vegetation, wildlife[3], and exemplary communities will be assessed using the Floodplain Transect Method. Based on the results of the reconnaissance survey, Gomez and Sullivan will select at least four representative transects on each of the Designated Rivers where RTE species or exemplary communities were documented. The transect cross-section at each location will be surveyed using a survey-grade total station; additionally, available LiDAR could be used to extend transects to greater distances, as necessary. At least one benchmark will be installed at each transect, to be used for elevation standardization among site visits. Benchmarks will be surveyed to the NAVD88 datum, such that the survey elevation data could be used for other purposes.

Six site visits will be made to each transect to survey and document water levels at various flows. This subtask includes the first half of site visits (Surveys 1-3). The goal will be to collect data at flows ranging from spring-freshet conditions to late summer low flow conditions. Additionally, water level recorders will be installed at each transect for better development of flow vs. water surface elevation relationships. These recorders will be secured to the substrate such that they are resilient to high flow events; however, flooding could result in the loss of some water level recorders, and they will not be considered critical to the study given the multiple site visits and surveys that will be performed. For development of Protected Instream Flows, water levels will be compared to the locations and needs of the RTE species and exemplary communities that were identified on that river.

Subtask 2.3(B) – Riparian Vegetation and Wildlife Flow Assessments (Surveys 4-6 and Analyses) – Cold River

Floodplain Transect Methods Surveys

Protected Instream Flows for specific riparian vegetation, wildlife[4], and exemplary communities will be assessed using the Floodplain Transect Method. Based on the results of the reconnaissance survey, Gomez and Sullivan will select at least four representative transects on each of the Designated Rivers where RTE species or exemplary communities were documented. The transect cross-section at each

[3] Habitat for some wildlife (i.e. hibernating turtles) will also be protected based on aquatic habitat and wetted area metrics that are proposed for fish/aquatic species.

[4] Habitat for some wildlife (i.e. hibernating turtles) will also be protected based on aquatic habitat and wetted area metrics that are proposed for fish/aquatic species.

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location will be surveyed using a survey-grade total station; additionally, available LiDAR could be used to extend transects to greater distances, as necessary. At least one benchmark will be installed at each transect, to be used for elevation standardization among site visits. Benchmarks will be surveyed to the NAVD88 datum, such that the survey elevation data could be used for other purposes.

Six site visits will be made to each transect to survey and document water levels at various flows. This subtask includes the second half of site visits (Surveys 4-6). The goal will be to collect data at flows ranging from spring-freshet conditions to late summer low flow conditions. Additionally, water level recorders will be installed at each transect for better development of flow vs. water surface elevation relationships. These recorders will be secured to the substrate such that they are resilient to high flow events; however, flooding could result in the loss of some water level recorders, and they will not be considered critical to the study given the multiple site visits and surveys that will be performed. For development of Protected Instream Flows, water levels will be compared to the locations and needs of the RTE species and exemplary communities that were identified on that river.

Evaluation of Flow and Habitat Needs

Similar to the Lamprey and Souhegan River studies, we anticipate that the needs of specific riparian plants, wildlife, and exemplary communities will provide recommendations that pertain to the flow regime, rather than providing specific base flow rates. However, this could depend on the RTE species and exemplary communities found, and such a determination would be made during the analyses for development of the Protected Instream Flow Report.

In addition to the recommendations provided by specific species and exemplary communities, Gomez and Sullivan will develop Protected Instream Flows for riparian vegetation and wildlife using UCUT analyses. For the UCUT analysis, a water level time series will be developed using information from the hydraulic-habitat models and the flow time series. UCUT curves will be developed and interpreted for the water level time series data in the same manner as for species-specific aquatic habitat and winter habitat.

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The tasks outlined in this section are included for funds available on or after July 1, 2019

Cold River

Task 2 – Protected Instream Flow Criteria Development – Cold River

Subtask 2.4(A) – Recreational Assessment (Surveys 1-4) – Cold River

Gomez and Sullivan will identify flow-dependent recreational uses and the locations for recreational access during the research and reconnaissance survey in Task 1. The purpose of this task will be to identify commonly-preferred flow conditions for flow-dependent recreational uses. Opinion surveys will be completed by visiting access points during different periods within the recreation season(s) and interviewing recreationalists observed on-site. Specific types of flow-dependent recreationalists (including boaters) will be targeted for interviews. Potential questions will be similar to those asked in previous studies, and will be designed to gather information regarding:

- Locations of access and sections of the river typically utilized
- Frequency and timing of specific types of recreation
- Minimum and optimal flow and/or water level conditions for specific types of recreation
- How they determined when to visit (i.e. if and how they monitored river and/or flow conditions)
- What locations (zip codes) visitors are from
- What they found attractive about the Designated River for specific recreational resources

Gomez and Sullivan has budgeted for eight site visits to the Cold River to perform opinion surveys. This subtask includes the first half of site visits (Surveys 1-4). Protected Instream Flows for recreation or navigational boating will be identified by evaluating the results of the opinion surveys, along with other flow-related observations made during the various site visits for other tasks. However, similar to the results on the Lamprey River, we anticipate that the needs of recreationalists will be met by following the Natural Flow Paradigm for ecological flow-dependent resources. For example, boating that requires high flow is not sustainable all year on most rivers; however, supporting a flow regime that maintains the magnitude, frequency, and timing of flows consistent with the Natural Flow Paradigm will ensure that the recreational resources that are naturally provided by the river are also supported.

Subtask 2.4(B) – Recreational Assessment (Surveys 5-8) – Cold River

Gomez and Sullivan will identify flow-dependent recreational uses and the locations for recreational access during the research and reconnaissance survey in Task 1. The purpose of this task will be to identify commonly-preferred flow conditions for flow-dependent recreational uses. Opinion surveys will be completed by visiting access points during different periods within the recreation season(s) and interviewing recreationalists observed on-site. Specific types of flow-dependent recreationalists (including boaters) will be targeted for interviews. Potential questions will be similar to those asked in previous studies, and will be designed to gather information regarding:

- Locations of access and sections of the river typically utilized
- Frequency and timing of specific types of recreation

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- Minimum and optimal flow and/or water level conditions for specific types of recreation
- How they determined when to visit (i.e. if and how they monitored river and/or flow conditions)
- What locations (zip codes) visitors are from
- What they found attractive about the Designated River for specific recreational resources

Gomez and Sullivan has budgeted for eight site visits to the Cold River to perform opinion surveys. This subtask includes the second half of site visits (Surveys 5-8). Protected Instream Flows for recreation or navigational boating will be identified by evaluating the results of the opinion surveys, along with other flow-related observations made during the various site visits for other tasks. However, similar to the results on the Lamprey River, we anticipate that the needs of recreationalists will be met by following the Natural Flow Paradigm for ecological flow-dependent resources. For example, boating that requires high flow is not sustainable all year on most rivers; however, supporting a flow regime that maintains the magnitude, frequency, and timing of flows consistent with the Natural Flow Paradigm will ensure that the recreational resources that are naturally provided by the river are also supported.

Subtask 2.5 - Proposed Protected Instream Flow Report - Cold River

Gomez and Sullivan will develop a draft Proposed Protected Instream Flow Report, which clearly describes the evaluation methods, results, and the proposed Protected Instream Flow Criteria. Gomez and Sullivan will integrate the Protected Instream Flow Criteria for the various flow-dependent instream public uses in a manner that defines a natural pattern of streamflow. The criteria will be described in terms of flow magnitudes, durations, timing, and frequency, as applicable to the flow-dependent resources. Criteria involving rates of change will also be provided, if applicable flow-dependent resources are identified during the study. The report will provide detailed justification for the Proposed Instream Flow Criteria, providing support for the Commissioner's decision to establish the Protected Instream Flows based on the requirements under Env-WQ 1904.05.

Gomez and Sullivan will submit four paper copies and electronic copies (in word and PDF formats) to NHDES for review and comment. Gomez and Sullivan will revise the draft report in consultation with NHDES. Once all revisions have been completed, and at least 30 days prior to the date of the public information meeting, Gomez and Sullivan will submit four paper copies and electronic versions of the revised report to NHDES, which NHDES will then distribute.

The proposed report will include the NHDES report number and electronic NHDES logo, will follow NHDES publications guidelines, as provided by NHDES, and will meet the Americans with Disabilities Act (ADA) 508 requirements and Web Content Accessibility Guidelines (WCAG) AAA standards as needed.

Task 3 - Protected Instream Flow Public Hearing and Final Report - Cold River

Subtask 3.1 - Public Information Meeting - Cold River

NHDES will hold a public information meeting regarding the Proposed Protected Instream Flow Report. Gomez and Sullivan will develop a slide presentation describing the proposed Protected Instream Flow Criteria and its development, and by answering questions.

Subtask 3.2 - Public Hearing - Cold River

NHDES will hold a public hearing, to be held in a community through or past which the Designated River flows. Gomez and Sullivan will prepare and give a presentation describing the proposed Protected Instream Flow Criteria and its development, and by answering questions.

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Subtask 3.3 - Comment Response and Final Report Submittal - Cold River

NHDES will provide comments received during the public hearing and the 30-day public comment period to Gomez and Sullivan, after which NHDES and Gomez and Sullivan will review and develop responses to comments. Gomez and Sullivan, in coordination with NHDES, will make any necessary revisions to the Proposed Protected Instream Flow report and document the responses to the comments. Gomez and Sullivan will consolidate all information, including the revised Proposed Protected Instream Flow Report, comments, and responses into final report, which will be submitted to NHDES for approval. Four paper copies and electronic versions in word and pdf formats will be provided to NHDES.

The final report will include the NHDES report number and electronic NHDES logo, will follow NHDES publications guidelines, as provided by NHDES, and will meet the Americans with Disabilities Act (ADA) 508 requirements and Web Content Accessibility Guidelines (WCAG) AAA standards, as needed.

Gomez and Sullivan will provide NHDES with data files containing all measurements collected and data used in these assessments, and for the development of Protected Instream Flow Criteria. The data will be in commonly-used formats approved by NHDES. Potential dataset and analysis files are anticipated to include excel spreadsheets, GIS shapefiles, R-scripts, and modeling files. These will be organized into descriptive folders, and will be provided to NHDES using Gomez and Sullivan's Sharepoint job site, which NHDES has accessed and successfully retrieved large files from the Target Fish Community Study. Data quality will be ensured throughout the data collection and analysis process by various reviews, cross-checks, and quality assurance/quality control procedures performed by the Gomez and Sullivan Quality Assurance and Quality Control Officer. See Section VI for an overview of our Quality Assurance Program.

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Warner River

Task 1 - Protected Entity Identification and River Survey - Warner River

Subtask 1.1 - Information Gathering and Review - Warner River

Readily-available information will be gathered by Gomez and Sullivan from various sources, including published river-specific reports, GRANIT GIS layers, resource inventory data (e.g. National Wetland Inventory Maps; Natural Heritage Inventory) and potentially other online resources, along with collaboration with NHDES to obtain existing information available from the State of New Hampshire. Based on the information found, a variety of maps and descriptions will be developed. This information will be used to prioritize locations for which the existence and occurrence of flow-dependent instream public uses and Clean Water Act designated uses will be verified.

Subtask 1.2 - On-stream Reconnaissance Survey - Warner River

The entire Designated River will be traversed either on foot, by canoe/kayak, or both. The purpose of the reconnaissance survey will be to:

- Confirm the presence and occurrence of flow-dependent instream public uses and Clean Water Act designated uses;
- Develop an initial mesohabitat map of the entire Designated River; and
- Select preliminary locations for habitat assessment.

Though the survey is not intended to be an exhaustive identification and cataloguing of flow-dependent entities, Gomez and Sullivan believes that traversing the length of the entire stream is necessary to determine where shifts in river character and habitat occur. Though the Cold and Warner Rivers were not divided into sections based on the Target Fish Community Assessment, these rivers will require a full on-the-ground survey to divide the river into reaches and select representative assessment segments for the hydraulic-habitat modeling portion of the study. Additionally, characterization of the mesohabitats along the entire Designated River will ensure that there is robust information available for defending the representativeness of assessment segments within each reach of the river, and whether there is a particular reach or group of reaches that could be the driver(s) of flow needs throughout the river. To ensure a thorough survey, Gomez and Sullivan staff that will perform the reconnaissance survey will be experienced and knowledgeable in aquatic, terrestrial, and wetland biology, along with the identification of fish, mussels, stream macroinvertebrates, wildlife, and wetland and riparian plants.

The reconnaissance level mapping will be performed during the early summer during relatively low flow conditions when it is anticipated that the mesohabitat heterogeneity in the stream will be relatively high. Surveying at higher flows could be less effective due to the increased amounts of run habitats that would typically occur in rivers of this size, resulting in fewer mesohabitats and less potential for finding the correct breakpoints in the river.

During the reconnaissance survey, priority locations (other than aquatic habitat) identified during Subtask 1.1 will be visited to confirm their presence or occurrence. For aquatic habitat, mesohabitats will be delineated linearly along the stream using a field computer or tablet equipped with GPS and aerial imagery. Representative measurements/characteristics will be recorded along the stream at each mesohabitat, including thalweg depth, stream width, dominant substrate type, dominant cover type/density, and presence of overhead cover. Visual observations of fish, wildlife, wetlands, and plant communities will also be recorded, with an emphasis on identifying the locations of rare, threatened, or endangered (RTE) species and exemplary communities.

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Subtask 1.3 - Reconnaissance Data Processing - Warner River

To effectively perform the hydraulic-habitat portions of the study, the data collected during the reconnaissance survey will be consolidated, checked for quality, and processed. A linear mesohabitat map will be developed; based on the mesohabitat map, the longitudinal river profile[5], site visits, and consultation with the NHDES, river segments will be delineated and representative reaches within each segment will be identified. River segments will be delineated on a large scale, where major changes in riverine character occurs (e.g. drastic changes in size, shape, slope, or proportion of mesohabitats present). Representative reaches within each river segment will contain similar characteristics when compared to the entire river segment. Transects to be used as part of the Floodplain-Transect Method will be located at or near at least four areas where RTE species or exemplary communities are found during the reconnaissance survey.

The approach for developing Protected Instream Flow Criteria will follow the same underlying framework as the Lamprey and Souhegan studies, by integrating flow needs from flow-dependent protected entities within the concept of the Natural Flow Paradigm. As such, bioperiods will be developed that pertain to the flow-dependent protected entities year-round; the protected entities that are determined to provide protective flows for all other protected entities in a given bioperiod will be the driver of flow recommendations for that bioperiod.

After the reconnaissance survey, Gomez and Sullivan will provide NHDES with proposed bioperiods for assessment, the flow-dependent entities that will be evaluated for each bioperiod, and the specific methods that will be applied to each flow-dependent entity. Based on the results of the Lamprey and Souhegan, the Target Fish Community in the Cold and Warner Rivers, and species of greatest conservation need, we anticipate that the needs of fish species will be the primary drivers of Protected Instream Flows for specific bioperiods within the spring (e.g. spawning anadromous or resident fish), summer (rearing and growth for resident fish), and fall (e.g. Atlantic Salmon spawning, or rearing and growth for resident fish). Gomez and Sullivan will focus on species within the Target Fish Community that are expected to make up greater than 5% of the fish community, along with potential diadromous fish that NHDES may want to include in the study (even if they are not currently accessing the rivers). Species of greatest conservation need, along with other aquatic species encountered during the reconnaissance survey (i.e. mussels) will also be considered for inclusion after consulting with NHDES. Winter habitat will likely focus on the needs of fish and aquatic life, but will be evaluated using wetted area in the absence of species-specific habitat criteria. The needs of riparian and wetland species are anticipated to be the drivers of flow needs during periods with relatively high flows (i.e. spring freshet). However, the final decisions for which flow-dependent resources will be the drivers of Instream Protected Flow Rates will be evaluated during the course of the study.

Task 2 - Protected Instream Flow Criteria Development - Warner River

Subtask 2.1 - Reference Stream Flow Record Review and Modification - Warner River

NHDES will be providing daily stream flow data for use on this project, which will include at least 30 years of data. A flow record longer than 30 years, if available, would improve the results of the aquatic hydraulic-habitat modeling by increasing the sample size of daily flows across years; however, obtaining greater than 30 years is not considered critical to our proposed analyses. The dataset will ultimately be used to develop a habitat timeseries. Because the data are meant to represent a relatively unimpacted condition, Gomez and Sullivan will review the datasets and any information available on water withdrawals, diversions, or dam operations. If it is determined that the dataset needs adjustment to

[5] Flood Insurance Studies performed by FEMA contain transects and longitudinal profiles of the streambed. Though the information tends to be dated, it is still useful for defining where breaks in slope and large changes in river character would occur.

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reflect reference conditions, Gomez and Sullivan will adjust the record, when possible based on measured or readily-quantifiable values, to more closely represent unmanaged streamflow conditions. If the flow record is strongly affected by water withdrawals, returns, or dam operations, Gomez and Sullivan will develop a reference flow record in consultation with NHDES.

Subtask 2.3(A) – Riparian Vegetation and Wildlife Flow Assessments (Literature Review and Surveys 1-3) – Warner River

Protected Instream Flows for riparian vegetation and wildlife will be performed using a combination of literature review, transect-specific evaluations (Floodplain Transect Method), and by analyzing water level UCUT curves, as described below.

Literature Review of Habitat Needs

Based on the findings of the reconnaissance survey, the needs of riparian vegetation and wildlife that are to be assessed further will be thoroughly researched prior to further field assessment, such that the effects of flow and water level on these species can be accurately assessed using the Floodplain Transect Method.

Floodplain Transect Methods Surveys

Protected Instream Flows for specific riparian vegetation, wildlife[6], and exemplary communities will be assessed using the Floodplain Transect Method. Based on the results of the reconnaissance survey, Gomez and Sullivan will select at least four representative transects on each of the Designated Rivers where RTE species or exemplary communities were documented. The transect cross-section at each location will be surveyed using a survey-grade total station; additionally, available LiDAR could be used to extend transects to greater distances, as necessary. At least one benchmark will be installed at each transect, to be used for elevation standardization among site visits. Benchmarks will be surveyed to the NAVD88 datum, such that the survey elevation data could be used for other purposes.

Six site visits will be made to each transect to survey and document water levels at various flows. This subtask includes the first half of the site visits (Surveys 1-3). The goal will be to collect data at flows ranging from spring-freshet conditions to late summer low flow conditions. Additionally, water level recorders will be installed at each transect for better development of flow vs. water surface elevation relationships. These recorders will be secured to the substrate such that they are resilient to high flow events; however, flooding could result in the loss of some water level recorders, and they will not be considered critical to the study given the multiple site visits and surveys that will be performed. For development of Protected Instream Flows, water levels will be compared to the locations and needs of the RTE species and exemplary communities that were identified on that river.

Subtask 2.3(B) – Riparian Vegetation and Wildlife Flow Assessments (Surveys 4-6 and Analyses) – Warner River

Floodplain Transect Methods Surveys

Protected Instream Flows for specific riparian vegetation, wildlife[7], and exemplary communities will be assessed using the Floodplain Transect Method. Based on the results of the reconnaissance survey, Gomez and Sullivan will select at least four representative transects on each of the Designated Rivers

[6] Habitat for some wildlife (i.e. hibernating turtles) will also be protected based on aquatic habitat and wetted area metrics that are proposed for fish/aquatic species.

[7] Habitat for some wildlife (i.e. hibernating turtles) will also be protected based on aquatic habitat and wetted area metrics that are proposed for fish/aquatic species.

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where RTE species or exemplary communities were documented. The transect cross-section at each location will be surveyed using a survey-grade total station; additionally, available LiDAR could be used to extend transects to greater distances, as necessary. At least one benchmark will be installed at each transect, to be used for elevation standardization among site visits. Benchmarks will be surveyed to the NAVD88 datum, such that the survey elevation data could be used for other purposes.

Six site visits will be made to each transect to survey and document water levels at various flows. This subtask includes the second half of the site visits (Surveys 4-6). The goal will be to collect data at flows ranging from spring-freshet conditions to late summer low flow conditions. Additionally, water level recorders will be installed at each transect for better development of flow vs. water surface elevation relationships. These recorders will be secured to the substrate such that they are resilient to high flow events; however, flooding could result in the loss of some water level recorders, and they will not be considered critical to the study given the multiple site visits and surveys that will be performed. For development of Protected Instream Flows, water levels will be compared to the locations and needs of the RTE species and exemplary communities that were identified on that river.

Evaluation of Flow and Habitat Needs

Similar to the Lamprey and Souhegan River studies, we anticipate that the needs of specific riparian plants, wildlife, and exemplary communities will provide recommendations that pertain to the flow regime, rather than providing specific base flow rates. However, this could depend on the RTE species and exemplary communities found, and such a determination would be made during the analyses for development of the Protected Instream Flow Report.

In addition to the recommendations provided by specific species and exemplary communities, Gomez and Sullivan will develop Protected Instream Flows for riparian vegetation and wildlife using UCUT analyses on water level time series data.

Subtask 2.4(A) – Recreational Assessment (Surveys 1-4) – Warner River

Gomez and Sullivan will identify flow-dependent recreational uses and the locations for recreational access during the research and reconnaissance survey in Task 1. The purpose of this task will be to identify commonly-preferred flow conditions for flow-dependent recreational uses. Opinion surveys will be completed by visiting access points during different periods within the recreation season(s) and interviewing recreationalists observed on-site. Specific types of flow-dependent recreationalists (including boaters) will be targeted for interviews. Potential questions will be similar to those asked in previous studies, and will be designed to gather information regarding:

- Locations of access and sections of the river typically utilized
- Frequency and timing of specific types of recreation
- Minimum and optimal flow and/or water level conditions for specific types of recreation
- How they determined when to visit (i.e. if and how they monitored river and/or flow conditions)
- What locations (zip codes) visitors are from
- What they found attractive about the Designated River for specific recreational resources

Gomez and Sullivan has budgeted for eight site visits in total to the Warner River to perform opinion surveys. This subtask includes the first half of site visits (Surveys 1-4). Protected Instream Flows for

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recreation or navigational boating will be identified by evaluating the results of the opinion surveys, along with other flow-related observations made during the various site visits for other tasks. However, similar to the results on the Lamprey River, we anticipate that the needs of recreationalists will be met by following the Natural Flow Paradigm for ecological flow-dependent resources. For example, boating that requires high flow is not sustainable all year on most rivers; however, supporting a flow regime that maintains the magnitude, frequency, and timing of flows consistent with the Natural Flow Paradigm will ensure that the recreational resources that are naturally provided by the river are also supported.

Subtask 2.4(B) – Recreational Assessment (Surveys 5-8) – Warner River

Gomez and Sullivan will identify flow-dependent recreational uses and the locations for recreational access during the research and reconnaissance survey in Task 1. The purpose of this task will be to identify commonly-preferred flow conditions for flow-dependent recreational uses. Opinion surveys will be completed by visiting access points during different periods within the recreation season(s) and interviewing recreationalists observed on-site. Specific types of flow-dependent recreationalists (including boaters) will be targeted for interviews. Potential questions will be similar to those asked in previous studies, and will be designed to gather information regarding:

- Locations of access and sections of the river typically utilized
- Frequency and timing of specific types of recreation
- Minimum and optimal flow and/or water level conditions for specific types of recreation
- How they determined when to visit (i.e. if and how they monitored river and/or flow conditions)
- What locations (zip codes) visitors are from
- What they found attractive about the Designated River for specific recreational resources

Gomez and Sullivan has budgeted for eight site visits in total to the Warner River to perform opinion surveys. This subtask includes the second half of site visits (Surveys 5-8). Protected Instream Flows for recreation or navigational boating will be identified by evaluating the results of the opinion surveys, along with other flow-related observations made during the various site visits for other tasks. However, similar to the results on the Lamprey River, we anticipate that the needs of recreationalists will be met by following the Natural Flow Paradigm for ecological flow-dependent resources. For example, boating that requires high flow is not sustainable all year on most rivers; however, supporting a flow regime that maintains the magnitude, frequency, and timing of flows consistent with the Natural Flow Paradigm will ensure that the recreational resources that are naturally provided by the river are also supported.

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The tasks outlined in this section are included for funds available on or after July 1, 2020

Warner River

Subtask 2.2(A) – Fish Habitat Assessment (Field Assessment Portion) – Warner River

The hydraulic-habitat model for aquatic target species and/or groups of species (guilds) will be developed using a combination of 1D and 2D approaches. In general, 2D modeling will occur in the more complex areas of the rivers where 1D model accuracy is limited due to ineffective flow areas, losses from channel bends, and areas with highly variable bathymetry. Likewise, 1D modeling approaches will be used on less complex areas of the river. This combination of modeling approaches is similar to how Gomez and Sullivan completed a large Instream Flow Incremental Methodology (IFIM) study on the Connecticut River downstream of Turners Falls Dam. This approach requires the selection of target species or groups of species (guilds), selection of representative segments of the river for evaluation, habitat mapping (i.e. bathymetry, topography, velocity, and substrate), hydraulic modeling, calibration, and validation, and analyses of habitat and flow based on a reference stream flow record.

Identification of Target Species and Habitat Use Criteria

Target species or guilds will ultimately be used to represent different bioperiods over the course of the year. The selection criteria for identifying the target species or guild during a given bioperiod will be based on a combination of the findings from the reconnaissance survey and available community data (e.g. Target Fish Community, existing fisheries surveys, species of greatest conservation need). The habitat criteria and flow requirements for each target species or guild will be determined based on a literature review. Gomez and Sullivan routinely uses criteria developed by literature review as part of habitat evaluation for IFIM studies. These criteria and associated literature/citations will be provided to NHDES for review prior to incorporation into hydraulic-habitat models.

Hydraulic-Habitat Model Development

Once representative reaches have been identified (Subtask 1.3), the selection of a 1D or 2D model will be made through an assessment of the topographic features within the reach (e.g. channel width/depth, the presence of oxbows and braided channels, overbank geometry, zones of expansion and contraction). A preliminary assessment suggests that the representative reaches for each the Cold and Warner Rivers will consist of 2 to 3 areas modeled using 2D methods (each area approximately 0.5 miles long), and 1 to 2 areas modeled using 1D methods (each area with 3 to 5 transects obtained in the field).

Field data collected within the 2D modeling region will include detailed bathymetry, topography, and substrate data. Recent LiDAR data (2015-2016) will be incorporated into the model as well. Additionally, depth and velocity data will be collected at transects identified for model calibration/validation at two flows.

Water level recorders will be installed at the upstream and downstream extents for the 2D modeling regions, as well as at several locations within each 2D modeling area. Water level recorders will also be installed at each transect used for the 1D modeling. It is anticipated that the water level recorders will be in place for several months to allow the capture of water level elevations under a large range of flows. Flows from nearby United States Geological Survey gages will be prorated to each representative area using a drainage area ratio methodology. The combined flow and water level data will be used in the calibration and validation of the hydraulic models.

Contractor Initials JB

Date 5/16/19

Subtask 2.2(B) – Fish Habitat Assessment (Modeling/Analysis Portion) – Warner River

Gomez and Sullivan intends to utilize the latest version of the Hydraulic Engineering Center's River Analysis System (HEC-RAS) computer software to develop the 1D[8] and 2D hydraulic models and Physical Habitat Simulation (PHABSIM) will also be used for the 1D areas. After hydraulic model development, calibration, and validation, a series of production runs will be analyzed. These production runs will consist of modeling a range of flows pertinent to the target species/guild within each bioperiod and for each representative location. The results from these production runs will be incorporated with the habitat suitability criteria to develop the habitat vs. flow relationships for the target species and/or guilds.

Evaluation of Hydraulic-Habitat Model Results

Habitat time series data will be developed for each of the target species and life stages that represent aquatic habitat bioperiods. The habitat time series will then be used to develop UCUT curves for interpretation. All UCUT curves would be developed based on incremental habitat thresholds, with all curves plotted together; the y-axis would represent the continuous duration below the habitat threshold, and the x-axis would represent the cumulative continuous duration represented as a percentage of the total studied duration. The UCUT curves will be used to develop Protected Instream Flow magnitudes and durations in the same manner as was completed for the Souhegan and Lamprey River studies by:

- Determining the magnitude of flows that would result in common, critical, and rare habitat events. This will be completed by evaluating the area between the habitat-based UCUT curves. Changes in area indicates a change in frequency of events associated with a habitat increase to the next habitat threshold level. These breaks in habitat levels will be identified, and the flow that yields that habitat level will be back-calculated using the habitat vs. flow relationship.

- Determining the critical duration of the identified flows. This would be completed by evaluating the slope and by identifying inflection points of the curves. The shortest persistent durations would typically be along the portion of the curve indicated by the lowest inflection point, whereas longer-duration catastrophic events would be indicated by an inflection point further up the curve. The goal will be to define persistent and catastrophic durations, as completed for the Lamprey and Souhegan Rivers. No back-calculation will be necessary to select the duration, as the data will be taken directly from the UCUT curves.

Winter Habitat Assessment

Habitat for fish and aquatic life during the winter is poorly understood. However, the Protected Instream Flows for winter periods can be developed by analyzing UCUT curves of wetted area; these curves will be developed using information from the 1D and 2D hydraulic models. Even in the absence of detailed species-specific habitat data, maintaining wetted area consistent with the natural flow regime will be protective of aquatic species during the winter months. The advantages of using wetted area for this type of analysis are that it: 1) maintains a constant relationship with discharge assuming consistent channel morphology over time; 2) always increases with increasing discharge; 3) can be measured and modeled, and is not based on subjective opinion. For this analysis, a wetted area time series will be developed using information from the hydraulic-habitat models and the flow time series. UCUT curves will be developed and interpreted for the wetted area time series data in the same manner as for species-specific aquatic habitat.

[8] On similar projects, Gomez and Sullivan has used 1D HEC-RAS to create model output (depth, velocity, and user entered substrate) for use with HABTAE, the habitat model embedded within PHABSIM.

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Date 5/16/19

Subtask 2.5 – Proposed Protected Instream Flow Report – Warner River

Gomez and Sullivan will develop a draft Proposed Protected Instream Flow Report, which clearly describes the evaluation methods, results, and the proposed Protected Instream Flow Criteria. Gomez and Sullivan will integrate the Protected Instream Flow Criteria for the various flow-dependent instream public uses in a manner that defines a natural pattern of streamflow. The criteria will be described in terms of flow magnitudes, durations, timing, and frequency, as applicable to the flow-dependent resources. Criteria involving rates of change will also be provided, if applicable flow-dependent resources are identified during the study. The report will provide detailed justification for the Proposed Instream Flow Criteria, providing support for the Commissioner's decision to establish the Protected Instream Flows based on the requirements under Env-WQ 1904.05.

Gomez and Sullivan will submit four paper copies and electronic copies (in word and PDF formats) to NHDES for review and comment. Gomez and Sullivan will revise the draft report in consultation with NHDES. Once all revisions have been completed, and at least 30 days prior to the date of the public information meeting, Gomez and Sullivan will submit four paper copies and electronic versions of the revised report to NHDES, which NHDES will then distribute.

The proposed report will include the NHDES report number and electronic NHDES logo, will follow NHDES publications guidelines, as provided by NHDES, and will meet the Americans with Disabilities Act (ADA) 508 requirements and Web Content Accessibility Guidelines (WCAG) AAA standards as needed.

Task 3 – Protected Instream Flow Public Hearing and Final Report – Warner River

Subtask 3.1 – Public Information Meeting – Warner River

NHDES will hold a public information meeting regarding the Proposed Protected Instream Flow Report. Gomez and Sullivan will develop a slide presentation describing the proposed Protected Instream Flow Criteria and its development, and by answering questions.

Subtask 3.2 – Public Hearing – Warner River

NHDES will hold a public hearing, to be held in a community through or past which the Designated River flows. Gomez and Sullivan will prepare and give a presentation describing the proposed Protected Instream Flow Criteria and its development, and by answering questions.

Subtask 3.3 – Comment Response and Final Report Submittal – Warner River

NHDES will provide comments received during the public hearing and the 30-day public comment period to Gomez and Sullivan, after which NHDES and Gomez and Sullivan will review and develop responses to comments. Gomez and Sullivan, in coordination with NHDES, will make any necessary revisions to the Proposed Protected Instream Flow report and document the responses to the comments. Gomez and Sullivan will consolidate all information, including the revised Proposed Protected Instream Flow Report, comments, and responses into final report, which will be submitted to NHDES for approval. Four paper copies and electronic versions in word and pdf formats will be provided to NHDES.

The final report will include the NHDES report number and electronic NHDES logo, will follow NHDES publications guidelines, as provided by NHDES, and will meet the Americans with Disabilities Act (ADA) 508 requirements and Web Content Accessibility Guidelines (WCAG) AAA standards, as needed.

Gomez and Sullivan will provide NHDES with data files containing all measurements collected and data used in these assessments, and for the development of Protected Instream Flow Criteria. The data will be in commonly-used formats approved by NHDES. Potential dataset and analysis files are anticipated to include excel spreadsheets, GIS shapefiles, R-scripts, and modeling files. These will be organized into descriptive folders, and will be provided to NHDES using Gomez and Sullivan's Sharepoint job site, which

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NHDES has accessed and successfully retrieved large files from the Target Fish Community Study. Data quality will be ensured throughout the data collection and analysis process by various reviews, cross-checks, and quality assurance/quality control procedures performed by the Gomez and Sullivan Quality Assurance and Quality Control Officer. See Section VI for an overview of our Quality Assurance Program.

Contractor Initials _____

Date 5/16/19

Exhibit B

Method of Payment and Contract Price

The State shall pay to the Contractor the total reimbursable program costs in accordance with the following requirements:

Gomez and Sullivan Engineers, D.P.C. will undertake the services for the lump sum fees presented in the table below. The fees are based on the information and conditions defined in Exhibit A and assumes that all work is awarded. No subtasks shall be eligible for payment until after the subtask has been completed. All services shall be performed to the satisfaction of NHDES before payment will be made. All payments shall be made upon receipt and approval of stated completed subtasks and upon receipt of an associated invoice. Payments shall be made in accordance with the following schedule based upon completion of specific subtasks described in Exhibit A. The schedule for completing these subtasks has been developed based on the predicted availability of funds but is subject to change based on the actual availability of funds. The schedule is also subject to change given environmental factors such as weather and flow rates that affect the ability to perform various subtasks. The total reimbursement for the full scope of work shall not exceed $295,381. No match is required.

Contract Portion 1	
Upon completion and NHDES approval of Subtask 1.1 for the Cold River	$ 4,465
Upon completion and NHDES approval of Subtask 1.2 for the Cold River	$ 21,014
Upon completion and NHDES approval of Subtask 1.3 for the Cold River	$ 9,445
Upon completion and NHDES approval of Subtask 2.1 for the Cold River	$ 2,410
Upon completion and NHDES approval of Subtask 2.2(A) for the Cold River	$ 42,684
Upon completion and NHDES approval of Subtask 2.2(B) for the Cold River	$ 18,000
Upon completion and NHDES approval of Subtask 2.3(A) for the Cold River	$ 8,241
Upon completion and NHDES approval of Subtask 2.3(B) for the Cold River	$ 8,241
	$ 114,500
Contract Portion 2	
Upon completion and NHDES approval of Subtask 2.4(A) for the Cold River	$ 6,092
Upon completion and NHDES approval of Subtask 2.4(B) for the Cold River	$ 6,092
Upon completion and NHDES approval of Subtask 2.5 for the Cold River	$ 12,580
Upon completion and NHDES approval of Subtask 3.1 for the Cold River	$ 3,661
Upon completion and NHDES approval of Subtask 3.2 for the Cold River	$ 2,629
Upon completion and NHDES approval of Subtask 3.3 for the Cold River	$ 3,576
Upon completion and NHDES approval of Subtask 1.1 for the Warner River	$ 4,665
Upon completion and NHDES approval of Subtask 1.2 for the Warner River	$ 20,803
Upon completion and NHDES approval of Subtask 1.3 for the Warner River	$ 9,645
Upon completion and NHDES approval of Subtask 2.1 for the Warner River	$ 5,879
Upon completion and NHDES approval of Subtask 2.3(A) for the Warner River	$ 8,074
Upon completion and NHDES approval of Subtask 2.3(B) for the Warner River	$ 8,074
Upon completion and NHDES approval of Subtask 2.4(A) for the Warner River	$ 5,243
Upon completion and NHDES approval of Subtask 2.4(B) for the Warner River	$ 5,243
	$ 102,256
Contract Portion 3	
Upon completion and NHDES approval of Subtask 2.2(A) for the Warner River	$ 40,568
Upon completion and NHDES approval of Subtask 2.2(B) for the Warner River	$ 18,000
Upon completion and NHDES approval of Subtask 2.5 for the Warner River	$ 11,535
Upon completion and NHDES approval of Subtask 3.1 for the Warner River	$ 3,021
Upon completion and NHDES approval of Subtask 3.2 for the Warner River	$ 1,988
Upon completion and NHDES approval of Subtask 3.3 for the Warner River	$ 3,513
	$ 78,625

Contractor Initials _____

Date 5/16/19

Exhibit C
Special Provisions

The provisions of this Agreement are hereby modified as follows:

5. CONTRACT PRICE/PRICE LIMITATION/ PAYMENT.

5.2 The payment by the State of the contract price shall be the only and the complete reimbursement to the Contractor for all expenses, of whatever nature incurred by the Contractor in the performance hereof, and shall be the only and the complete compensation to the Contractor for the Services. The State shall have no liability to the Contractor, relative to payment for services, other than the contract price.

13. INDEMNIFICATION. The Contractor shall defend, indemnify and hold harmless the State, its officers and employees, from and against losses suffered by the State, its officers and employees, and any and all claims, liabilities or penalties asserted against the State, its officers and employees, by or on behalf of any person, on account of, based or resulting from, to the extent arising out of (or which may be claimed to arise out of) the acts or omissions of the Contractor. Notwithstanding the foregoing, nothing herein contained shall be deemed to constitute a waiver of the sovereign immunity of the State, which immunity is hereby reserved to the State. This covenant in paragraph 13 shall survive the termination of this Agreement.

14. INSURANCE

14.3 The Contractor shall furnish to the Contracting Officer identified in block 1.9, or his or her successor, a certificate(s) of insurance for all insurance required under this Agreement. Contractor shall also furnish to the Contracting Officer identified in block 1.9, or his or her successor, certificate(s) of insurance for all renewal(s) of insurance required under this Agreement no later than thirty (30) days prior to the expiration date of each of the insurance policies. The certificate(s) of insurance and any renewals thereof shall be attached and are incorporated herein by reference. The Contractor is required to provide the Contracting Officer identified in block 1.9, or his or her successor, no less than thirty (30) days prior written notice of cancellation or modification of the policy.

Contractor Initials _____

Date 5/16/19

State of New Hampshire
Department of State

CERTIFICATE

I, William M. Gardner, Secretary of State of the State of New Hampshire, do hereby certify that GOMEZ AND SULLIVAN ENGINEERS, P.C. is a New York Professional Profit Corporation registered to transact business in New Hampshire on January 28, 1994. I further certify that all fees and documents required by the Secretary of State's office have been received and is in good standing as far as this office is concerned.

Business ID: **220344**
Certificate Number: **0004516423**

IN TESTIMONY WHEREOF,
I hereto set my hand and cause to be affixed
the Seal of the State of New Hampshire,
this 16th day of May A.D. 2019.

William M. Gardner
Secretary of State

CERTIFICATE OF AUTHORITY

I, Jerry A. Gomez, P.E., President and Treasurer of Gomez and Sullivan Engineers, D.P.C. do hereby certify that: (1) I am the duly elected and authorized President and Treasurer of Gomez and Sullivan Engineers, D.P.C.; (2) I sign and maintain or cause to be maintained and am familiar with the minutes; (3) I am duly authorized to issue certificates with respect to the contents of such minutes; Gomez and Sullivan Engineers, D.P.C. further authorized Thomas J. Sullivan, Vice-President and Secretary, to execute any documents which may be necessary to effectuate this contract; (4) this authorization has not been revoked, annulled or amended in any manner whatsoever, and remains in full force and effect as of the date hereof:

IN WITNESS WHEREOF, I have hereunto set my hand as the President and Treasurer of Gomez and Sullivan Engineers, D.P.C. this 16th √ day of May √, 2019.

Jerry A. Gomez √
Jerry A. Gomez, P.E., President and Treasurer

STATE OF New York √

County of Oneida √

On this the 16th √ of May √, 2019, before me Amanda R. Crandall [Justice of the Peace/Notary Public] the undersigned officer, personally appeared Jerry A. Gomez √ who acknowledged himself to be the President and Treasurer of Gomez and Sullivan Engineers, D.P.C., being authorized so to do, executed the foregoing instrument for the purpose therein contained.

In witness whereof I hereunto set my hand and official seal.

Amanda R. Crandall √
Notary Public

Commission Expiration Date:

Seal

AMANDA R. CRANDALL
NOTARY PUBLIC, STATE OF NEW YORK
Registration No. 01CR6110963
Qualified in Herkimer County
Commission Expires June 01, 2020

GOMEZ-1 OP ID: MB

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 03/18/2019

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER 585-385-0428 Poole Professional - NY 1160F Pittsford-Victor Rd. Pittsford, NY 14534 Matthew R. Mullard	CONTACT NAME: PHONE (A/C, No, Ext): 585-385-0428 FAX (A/C, No): 585-662-5755 E-MAIL ADDRESS: smiller@poole-ny.com
INSURED Gomez & Sullivan Engineers DPC 288 Genesee St Utica, NY 13502-4620	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A : Charter Oak Fire Ins. Co. — 25615 INSURER B : Phoenix Insurance Company — 25623 INSURER C : Travelers Indemnity Co. — 25658 INSURER D : Phoenix Insurance Company — 25623 INSURER E : INSURER F :

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY							
	[ ] CLAIMS-MADE [X] OCCUR	X	X	6809H013781	03/18/2019	03/18/2020	EACH OCCURRENCE	$ 2,000,000
	Business Owners						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 1,000,000
							MED EXP (Any one person)	$ 10,000
							PERSONAL & ADV INJURY	$ 2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 4,000,000
	[ ] POLICY [X] PRO-JECT [ ] LOC						PRODUCTS - COMP/OP AGG	$ 4,000,000
	[ ] OTHER:							$
B	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	[ ] ANY AUTO	X	X	BA7088X825	03/18/2019	03/18/2020	BODILY INJURY (Per person)	$
	[ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	[X] HIRED AUTOS ONLY [X] NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
C	X UMBRELLA LIAB [X] OCCUR							
	[ ] EXCESS LIAB [ ] CLAIMS-MADE	X	X	CUP7089X139	03/18/2019	03/18/2020	EACH OCCURRENCE	$ 5,000,000
	[ ] DED [X] RETENTION $ 10000						AGGREGATE	$ 5,000,000
								$
D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY						[X] PER STATUTE [ ] OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N [N]	N/A	X	UB0K768733	03/18/2019	03/18/2020	E.L. EACH ACCIDENT	$ 1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

The above listed policies include 30-day notice of cancellation & waiver of subrogation. Blanket additional insured applies to the general liability, auto and umbrella policies. Umbrella follows form on 30-day notice of cancellation.

CERTIFICATE HOLDER NHDEP11

NH Dept of Environmental Services
PO Box 95
29 Hazen Drive
Concord, NH 03302-0095

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Matthew R. Mullard

GOMEZ-1 OP ID: SM

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 03/20/2019

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER 585-385-0428 Poole Professional - NY 1160F Pittsford-Victor Rd. Pittsford, NY 14534 Matthew R. Mullard	CONTACT NAME: PHONE (A/C, No, Ext): 585-385-0428 FAX (A/C, No): 585-662-5755 E-MAIL ADDRESS: smiller@poole-ny.com
	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A : Continental Casualty Company — 20443
INSURED Gomez & Sullivan Engineers DPC 288 Genesee St Utica, NY 13502-4620	INSURER B : INSURER C : INSURER D : INSURER E : INSURER F :

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

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INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$
	☐ CLAIMS-MADE ☐ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
							MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$
	☐ POLICY ☐ PRO-JECT ☐ LOC						PRODUCTS - COMP/OP AGG	$
	OTHER:							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	☐ ANY AUTO						BODILY INJURY (Per person)	$
	☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
	☐ UMBRELLA LIAB ☐ OCCUR						EACH OCCURRENCE	$
	☐ EXCESS LIAB ☐ CLAIMS-MADE						AGGREGATE	$
	☐ DED ☐ RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N						☐ PER STATUTE ☐ OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐ N/A (Mandatory in NH)						E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$
A	Prof. Liability		X	EEH591899111	03/18/2019	03/18/2020	PER CLAIM	5,000,000
	PollutionLiability		X				AGGREGATE	5,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

The above listed policies include 30-day notice of cancellation & waiver of subrogation.

CERTIFICATE HOLDER NHDEP11

NH Dept of Environmental Services
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CANCELLATION

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AUTHORIZED REPRESENTATIVE

Matthew Mullard

Attachment A
Statewide Target Fish Community Proposal Rankings

Requests for Proposals to conduct instream flow studies on the Cold and Warner Rivers were posted online and distributed by targeted email on December 28, 2018. Proposals were accepted until by 4:00 PM on Thursday, January 31, 2019. Four proposals were received by that time. NHDES reviewers agreed that each firm had sufficient credentials to be offered an opportunity to interview with the NHDES reviewers. Interviews were held with each firm on February 20 or 21, 2019 for an hour and a half each.

Following the interviews, the reviewers met on March 11, 2019. The consensus of the reviewers was that Gomez & Sullivan represented the best combination of staff experience, study approach and cost.

The review committee was comprised of Wayne Ives, Instream Flow Specialist, who has over eighteen years of experience with protected instream flows techniques; David Neils, Limnology Center Director, who was formerly the Rivers Coordinator supervising the Instream Flow Specialist, and was also formerly the Biomonitoring Program director; Ted Diers, Watershed Management Bureau Administrator, who has direct involvement with Instream Flow Program for the previous eight years; and Tracie Sales, Rivers and Lakes Program Manager, who has supervised the Instream Flow Program for the previous 3 years.

Rankings After Interviews for Firms Submitting Proposals

	Reviewer 1 Rank	Reviewer 2 Rank	Reviewer 3 Rank	Reviewer 4 Rank
Gomez and Sullivan	1	1	1	1
Normandeau Associates	2	2	2	3
SWCA, Inc.	3	3	3	2
Inter-Fluve	4	4	4	4

NHDES Watershed Management Review Team Members

Name	Title
Ted Diers	Administrator
Tracie Sales	Rivers & Lakes Programs Manager
David Neils	Limnology Center Director
Wayne Ives	Instream Flow Specialist