The State of New Hampshire
Department of Environmental Services

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Robert S. Scott, Commissioner

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September 14, 2018

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

REQUESTED ACTION

Authorize the Department of Environmental Services to enter into a **SOLE SOURCE** agreement with the University of New Hampshire, Sponsored Programs Administration (VC #177867-B046) (UNH), Durham, NH, in the amount of $30,000 for the Peter T. Paul College of Business and Economics to conduct an analysis of the economic benefits of alternative drinking water and groundwater standards for arsenic, effective upon approval of Governor and Council through September 30, 2019. The funding source is 100% Federal Funds.

Funding is available in the account as follows.

	FY 2019
03-44-44-441018-4718-072-500575	$30,000

Dept. Environmental Services, Drinking Water State Revolving Fund, Grants – Federal

EXPLANATION

This agreement is **SOLE SOURCE** because the faculty at the Peter T. Paul College of Business and Economics at the University of New Hampshire (UNH) will provide specialized expertise the areas of environmental economics and health economics, are familiar with the requirements of HB 1592, pursuant to which this study is being conducted, and are able to complete the study in the time required by HB 1592.

HB 1592, enacted June 8, 2018, requires the Commissioner of the Department of Environmental Services (the Department) to review the groundwater standard for arsenic to determine whether it should be lowered, taking into account factors including the costs and benefits to affected entities, and to submit a report of findings to the Legislature by January 1, 2019. The drinking water standard for arsenic is linked to the groundwater standard. The Department is conducting the required review in house but lacks the required expertise in cost-benefit analysis with respect to the benefits of reducing the health risks associated with arsenic exposure. The Department wishes to enter into a Cooperative Project Agreement with UNH to conduct an analysis of such benefits, enabling the Department to complete the review required by HB 1592 by the January 1, 2019 deadline.

The total projected cost for the project is $30,000. A budget breakdown is provided in Attachment A. In the event that federal funds become no longer available, general funds will not be requested to support the project.

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

We respectfully request your approval.

Robert R. Scott, Commissioner

COOPERATIVE PROJECT AGREEMENT
between the
STATE OF NEW HAMPSHIRE, **Department of Environmental Services**
and the
University of New Hampshire of the UNIVERSITY SYSTEM OF NEW HAMPSHIRE

A. This Cooperative Project Agreement (hereinafter "Project Agreement") is entered into by the State of New Hampshire, **Dept of Environmental Serivces**, (hereinafter "State"), and the University System of New Hampshire, acting through **University of New Hampshire**, (hereinafter "Campus"), for the purpose of undertaking a project of mutual interest. This Cooperative Project shall be carried out under the terms and conditions of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, except as may be modified herein.

B. This Project Agreement and all obligations of the parties hereunder shall become effective on the date the Governor and Executive Council of the State of New Hampshire approve this Project Agreement ("Effective date") and shall end on **09/30/19**. If the provision of services by Campus precedes the Effective date, all services performed by Campus shall be performed at the sole risk of Campus and in the event that this Project Agreement does not become effective, State shall be under no obligation to pay Campus for costs incurred or services performed; however, if this Project Agreement becomes effective, all costs incurred prior to the Effective date that would otherwise be allowable shall be paid under the terms of this Project Agreement.

C. The work to be performed under the terms of this Project Agreement is described in the proposal identified below and attached to this document as Exhibit A, the content of which is incorporated herein as a part of this Project Agreement.

Project Title: **The Economic Benefits of Lowering the Arsenic Maximum Contaminant Levels in New Hampshire Municipal Water Supplies**

D. The Following Individuals are designated as Project Administrators. These Project Administrators shall be responsible for the business aspects of this Project Agreement and all invoices, payments, project amendments and related correspondence shall be directed to the individuals so designated.

State Project Administrator	**Campus Project Administrator**
Name: Paul Susca	Name: Dianne Hall
Address: Department of Environmental Services 29 Hazen Dr. Concord NH 03301	Address: University of New Hampshire Sponsored Programs Administration 51 College Rd. Rm 116 Durham, NH 03824
Phone: 603-271-7061	Phone: 603-862-1942

E. The Following Individuals are designated as Project Directors. These Project Directors shall be responsible for the technical leadership and conduct of the project. All progress reports, completion reports and related correspondence shall be directed to the individuals so designated.

State Project Director	**Campus Project Director**
Name: Sarah Pillsbury	Name: Dr. John Halstead
Address: Department of Environmental Services 29 Hazen Dr. Concord, NH 03301	Address: University of New Hampshire Natural Resources and the Environment James Hall Rm 114A Durham, NH 03824
Phone: 603-271-1168	Phone: 603-862-3914

Campus Authorized Official KJ
Date 9/11/19

F. Total State funds in the amount of **$30,000** have been allotted and are available for payment of allowable costs incurred under this Project Agreement. State will not reimburse Campus for costs exceeding the amount specified in this paragraph.

Check if applicable

☐ Campus will cost-share % of total costs during the term of this Project Agreement.

☒ Federal funds paid to Campus under this Project Agreement are from Grant/Contract/Cooperative Agreement No. **FS99115017** from **U.S. Environmental Protection Agency** under CFDA# **66.468**. Federal regulations required to be passed through to Campus as part of this Project Agreement, and in accordance with the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, are attached to this document as Exhibit B, the content of which is incorporated herein as a part of this Project Agreement.

G. Check if applicable

☐ Article(s) of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002 is/are hereby amended to read:

H. ☒ State has chosen **not to take** possession of equipment purchased under this Project Agreement.
☐ State has chosen **to take** possession of equipment purchased under this Project Agreement and will issue instructions for the disposition of such equipment within 90 days of the Project Agreement's end-date. Any expenses incurred by Campus in carrying out State's requested disposition will be fully reimbursed by State.

This Project Agreement and the Master Agreement constitute the entire agreement between State and Campus regarding this Cooperative Project, and supersede and replace any previously existing arrangements, oral or written; all changes herein must be made by written amendment and executed for the parties by their authorized officials.

IN WITNESS WHEREOF, the University System of New Hampshire, acting through the **University of New Hampshire** and the State of New Hampshire, **Department of Environmental Services** have executed this Project Agreement.

By An Authorized Official of:
University of New Hampshire
Name: Karen M. Jensen
Title: Manager, Sponsored Programs Administration
Signature and Date: 9/11/18

By An Authorized Official of:
Department of Environmental Services
Name: Robert R. Scott
Title: Commissioner
Signature and Date: 9/14/18

By An Authorized Official of: the New Hampshire Office of the Attorney General
Name: Gordon P. Lawrence
Title: Assistant Attorney General
Signature and Date: 9/17/18

By An Authorized Official of: the New Hampshire Governor & Executive Council
Name:
Title:
Signature and Date:

Campus Authorized Official KJ
Date 9/11/18

EXHIBIT A

A. Project Title: The Economic Benefits of Lowering the Arsenic Maximum Contaminant Levels in New Hampshire Municipal Water Supplies

B. Project Period: October 1, 2018 - September 30, 2019

C. Objectives: To provide estimates of the total economic value generated by: a) avoided cases of bladder cancer (value of fatal and non-fatal cases) over a 70-year period at four alternative MCLs, b) avoided cases of lung cancer (value of fatal and non-fatal cases) over a 70-year period at four alternative MCLs, c) avoided cases of cardiovascular disease over a 70-year period (value of fatal and non-fatal cases) - at four alternative MCLs, and d) avoided 5 to 6 point reduction in the IQ of children in grades 3-5, as measured by Wechsler Intelligence Scale for Children (WISC-IV)

D. Scope of Work: In general, reduced incidences of cancers and cardiovascular diseases are valued for several reasons. These include the economic value of the years not lost to mortalities, the reductions in treatment costs, the economic value associated with the good health not lost to disease morbidity, and especially for cancer, the value generated by the reduced uncertainty about getting sick in some unspecified future.

1. Accordingly Campus will survey 500 to 1,000 NH adults served by municipal water systems to ascertain their willingness to pay higher water bills to reduce their mortality and morbidity risks of bladder and lung cancers and cardiovascular disease. These willingness to pay estimates will be converted into an estimated value of a statistical life (VSL).

These VSLs will be current, unique to NH and directly related to the perceived risks associated with arsenic in municipal water supplies. Moreover, they reflect an inclusive estimates of the value of reduced mortality and morbidity (including quality of life following incidence), and anticipated out-of-pocket medical expenses and indirect costs such as lost productivity.

Details of the proposed survey are attached as Appendix 1.

NOTE: The introductory material provided to each participant in this survey will an explanation of the reductions in relative risk of the two cancers and cardiovascular diseases associated with each of the four MCL-reduction proposals. We also anticipate NHDES's support in constructing a graphic comparing these risks to common life-events.

2. We propose to review and update the 2000 EPA Benefits Analysis (EPA, 2000) for lowered arsenic levels, as well as review an associated report from the EPA's Science Advisory Board (SAB, 2000). The review will highlight the degree to which EPA's methodology and sensitivity analyses can be replicated using newer data and morbidity and mortality forecasts specific to the State of New Hampshire. We will then update the EPA methodology by adjusting the valuation of reduced bladder and lung cancer cases based on the more recent literature in economics, which provides insight into adjusting valuations for factors like age, quality-adjusted life years, or a "cancer premium." Finally, the review and update of the EPA's study and methodology will seek to identify potential benefits, beyond bladder and lung cancer that for which economics valuations could not be quantified in the year 2000 but that might be quantified using information from the more recent literature. The benefits

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associated with reductions of arsenic in drinking water arise primarily from a reduction in adverse human health effects, including: avoidance of medical costs and productivity losses associated with illness; avoidance of the pain and suffering associated with illness; losses associated with risk and uncertainty, also called the "risk premium;" and reduction in risk of premature mortality.

3. Campus proposes to review the medical literature and various medical data sets for information about several aspects inherent in this proposal. Information to be gleaned will include:

a. The additional lifetime medical costs incurred by third party payers associated with the incidence of bladder and lung cancers and cardiovascular disease. We are optimistic about finding the costs of initial treatments. We will also seek to identify any higher long term medical expenditures statistically associated with the onset of bladder and lung cancer and cardiovascular diseases.

Direct measurement of indirect costs, such as time costs and costs due to lost productivity, are beyond the scope of this project. We know of no reliable data sources for comparing such cancer-specific indirect costs. Of course, the value of these indirect costs will show up within the VSLs calculated from survey in #1.

b. The cost and/or value of an avoided 5 to 6 point reduction in the IQ of children in grades 3-5, as measured by Wechsler Intelligence Scale for Children (WISC-IV).

Campus proposes to apply VSL estimates (from the survey described in #1) and the medical expenditures reductions (discovered in #3) to the morbidity and mortality counts provided by NHDES for each of the four reduced arsenic MCLs.

Campus proposes to address with the uncertainties associated with estimates that we and NHDES provide with a series of sensitivity analyses. For example, there appear to be no estimates of cessation-lag, the time span between the reduction in arsenic and the consequential reduction in cancer incidences. We will follow the recommendations of the 8/30/2001 report of the EPA's Scientific Advisory Board [].

Campus also proposes sensitivity analyses to estimate the importance of discount rates of 1%, 3%, and 5% over the 70 years.

E. Deliverables Schedule:

Submit Draft Report 11/1/18
Submit Final Report 12/1/18

F. Budget and Invoicing Instructions:

Campus will submit invoices to State on regular Campus invoice forms no more frequently than monthly and no less frequently than quarterly. Invoices will be based on actual project expenses incurred during the invoicing period, and shall show current and cumulative expenses by major cost categories as shown below. State will pay Campus within 30 days of receipt of each invoice. Campus will submit its final invoice not later than 60 days after the Project Period end date.

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Budget Items	State Funding	Cost Sharing(if required)	Total
1. Salaries & Wages	12,740	0	12,740
2. Employee Fringe Benefits	1,070	0	1,070
3. Travel	3,000	0	3,000
4. Supplies and Services	7,000	0	7,000
5. Equipment	0	0	0
6. Facilities & Admin Costs	6,190	0	6,190
Subtotals	30,000	0	30,000
Total Project Costs:			30,000

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EXHIBIT B

This Project Agreement is funded under a Grant/Contract/Cooperative Agreement to State from the Federal sponsor specified in Project Agreement article F. All applicable requirements, regulations, provisions, terms and conditions of this Federal Grant/Contract/Cooperative Agreement are hereby adopted in full force and effect to the relationship between State and Campus, except that wherever such requirements, regulations, provisions and terms and conditions differ for INSTITUTIONS OF HIGHER EDUCATION, the appropriate requirements should be substituted (e.g., OMB Circulars A-21 and A-110, rather than OMB Circulars A-87 and A-102). References to Contractor or Recipient in the Federal language will be taken to mean Campus; references to the Government or Federal Awarding Agency will be taken to mean Government/Federal Awarding Agency or State or both, as appropriate.

Special Federal provisions are listed here: ☒ None or **Uniform Guidance issued by the Office of Management and Budget (OMB) in lieu of Circulars listed in paragraph above.**.

Campus Authorized Official LS
Date 9/11/18