



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Thomas S. Burack, Commissioner

January 31, 2013

Her Excellency, Governor Margaret Wood Hassan
and The Honorable Council
State House
Concord, NH 03301

REQUESTED ACTION

Authorize the Department of Environmental Services to enter into a Cooperative Project Agreement with the University of New Hampshire (VC #177867-BO46) in the amount of \$52,265 to complete the *College & Reservoir Brook Watershed Management Plan Development Phase I: Salt Reduction Demonstration Project*, effective upon Governor and Council approval through December 31, 2014. 100% Federal Funds.

Funding is available in the account as follows:

	<u>FY 2013</u>
03-44-44-442010-7602-073-500583	\$52,265
Dept. Environmental Services, Surface Water Quality PPG, Grants-Federal	

EXPLANATION

The Department of Environmental Services issued a Request For Proposals (RFP) for the 2012 Watershed Assistance and Restoration Grants Program. The proposal process is a two-part process involving pre-proposals, and full proposals. Twenty-one pre-proposals were received. The pre-proposals were ranked based on the criteria included in the RFP: water quality benefits; commitment of local support; clarity of project outcomes; tasks matching goals; and, overall quality of the proposal. The eleven highest ranking organizations were invited to attend an interview with DES staff to further discuss the proposed project. Based on results of the interview and available federal grant funding levels, seven projects were selected to submit comprehensive full project proposals. Based on the review of the full proposals, all seven were selected to receive funding. Please see Attachment B for a list of project rankings and review team members.

The DES Watershed Assistance Section focuses on the reduction of nonpoint source (NPS) pollution. NPS pollution occurs when rainfall, snowmelt, or irrigation water runs over land or through the ground, transporting materials which are then deposited into rivers, lakes, and coastal waters, or introduced into the groundwater. Pollutants can include chemicals, sediments, nutrients, and toxics. These materials can have harmful effects on drinking water supplies, recreation, fisheries, and wildlife. Land development or changes in land use can also cause NPS pollution by disrupting the natural hydrology of

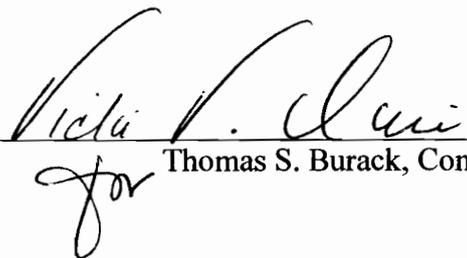
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a water body, increasing impervious surfaces, and contributing to the loss of aquatic habitat. Watershed Assistance programs address NPS pollution by managing land use and drainage on a watershed scale.

The College and Reservoir Brook Watersheds are located entirely in Durham, NH. Water quality in the watershed is currently impaired by high chloride levels. The cause of the impairment is primarily from winter ice treatment activities conducted by Town, University, DOT, and contracted maintenance crews. The UNH Technology Transfer Center (T2) proposes to work in partnership with the Town, UNH and NHDOT to develop a watershed-based plan to address chloride loading and to demonstrate selected Best Management Practices (BMPs) for chloride loading reduction. The BMPs will focus primarily on the large network of sidewalks and parking lots on the UNH Durham campus.

The watershed-based plan will quantify annual reduction goals and proposed BMPs to achieve those goals (e.g. equipment calibration, use of pre-wetting, ground speed oriented spreaders). Demonstration BMPs will include equipment upgrades, operator and supervisor education and hands on training, quantification of existing application rates and demonstration of salt accounting practices to document usage and reductions. Success shall be verified during the project period by documenting salt reduction achieved by demonstration BMPs, and in the long-term through adoption of BMPs recommended in the watershed-based plan by UNH and the Town of Durham

A budget breakdown is provided in Attachment C. In the event that federal funds become no longer available, general funds will not be requested to support this program. The agreement has been approved by the Office of the Attorney General as to form, execution, and content. We respectfully request your approval.



for Thomas S. Burack, 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, **Department of Environmental Services**, (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 **12/31/14**. 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: **College & Reservoir Brook Watershed Management Plan Development Phase I: Salt Reduction Demonstration Project**

- 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

Name: Jeffrey Marcoux
 Address: NH DES
29 Hazen Drive
Concord, NH 03302

Phone: (603) 271-8862

Campus Project Administrator

Name: Dianne Hall
 Address: University of New Hampshire
Sponsored Programs Administration
51 College Rd. Rm 116
Durham, NH 03824

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

Name: Eric Williams
 Address: NH DES
29 Hazen Drive
Concord, NH 03302

Phone: (603) 271-2358

Campus Project Director

Name: Charles Goodspeed
 Address: UNH Civil Engineering Dept.
33 Academic Way
Durham, NH 03824

Phone: (603) 862-1443

F. Total State funds in the amount of **\$52,265** 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. **BG99127309-4** from **the U.S. Environmental Protection Agency** under CFDA# **66.605**. 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.

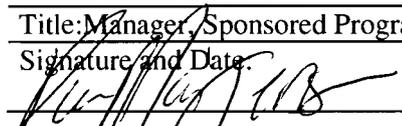
G. Check if applicable

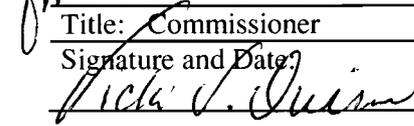
Article(s) _____ of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002 is/are hereby amended to read:

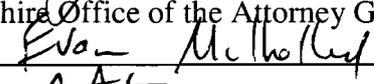
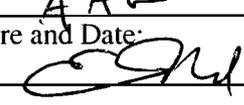
H. State has chosen **not to take** possession of equipment purchased under this Project Agreement.
 State has chosen **to take** possession of equipment purchased under this Project Agreement and will issue instructions for the disposition of such equipment within 90 days of the Project Agreement's 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:  1/23/13

By An Authorized Official of:
Department of Environmental Services
Name: Thomas S. Burack
Title: Commissioner
Signature and Date: 

By An Authorized Official of: the New Hampshire Office of the Attorney General
Name: 
Title: **AG**
Signature and Date:  2/26/13

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

EXHIBIT A

- A. Project Title:** College & Reservoir Brook Watershed Management Plan Development Phase I: Salt Reduction Demonstration Project
- B. Project Period:** Upon G&C approval through December 31, 2014
- C. Objectives:** The College and Reservoir Brook Watersheds located entirely in Durham, NH are impaired by chlorides primarily from winter maintenance activities conducted by: The Town of Durham, The University of New Hampshire (UNH), NHDOT, and private sector contractors. The Technology Transfer Center (T2) proposes to work in partnership with the Town, UNH and NHDOT to develop a watershed-based plan and to demonstrate selected Best Management Practicess (BMPs) for use primarily on the over 24 miles of sidewalks and parking lots. Demonstration BMPs will include equipment upgrades, operator and supervisor education and hands on training, quantification of existing application rates and demonstration of salt accounting practices to document usage and reductions. The watershed-based plan will quantify annual reduction goals and proposed BMPs to achieve those goals (e.g. equipment calibration, use of anti-icing, prewetting, ground speed oriented spreaders, and recommended temperature calibrated application rates). Success shall be verified during the project period by documenting salt reduction achieved by demonstration BMPs, and in the long-term through adoption of BMPs recommended in the watershed-based plan by UNH and the Town of Durham.
- D. Scope of Work:** Please see Attachment A: Full Proposal for detailed Scope of Work and Deliverables (Section 10).
- E. Deliverables Schedule:** Please see Attachment A: Full Proposal for detailed Scope of Work and Deliverables (Section 10).
- F. Budget and Invoicing Instructions:** Using standard Campus invoices, Campus shall submit requests for payment and documentation of the completion of Tasks as detailed in Attachment A: Scope of Work and Deliverables. Upon receipt and approval by the State Project Director of the Deliverables specified within Attachment A and associated invoices, State will issue payment withing 30 days to Campus in accordance with the payment schedule as follows:

Upon Completion and DES approval of Task 1: \$3,000
Upon Completion and DES approval of Task 2: \$1,200
Upon Completion and DES approval of Task 3: \$3,000
Upon Completion and DES approval of Task 4: \$1,200
Upon Completion and DES approval of Task 5: \$2,000
Upon Completion and DES approval of Task 6: \$2,000
Upon Completion and DES approval of Task 7: \$2,000
Upon Completion and DES approval of Task 8: \$16,620
Upon Completion and DES approval of Task 9: \$16,620
Upon Completion and DES approval of Task 10: \$2,359
Upon Completion and DES approval of Task 11: \$2,266
Total \$52,265

- G. Funding Credit: All materials produced for public distribution shall be reviewed and approved by State Project Director prior to distribution and shall include a citation that funding was provided by the New Hampshire Department of Environmental Services (DES) with the DES logo, and appropriate attribution to the U.S. Environmental Protection Agency.
- H. Operations and Maintenance: Management practices implemented as agreed upon in the scope of services of this grant agreement and with funds awarded under the NH 319 Watershed Assistance Grants Program, shall be properly operated and maintained for the intended purposes during the life span of the project. The life span of a project shall be determined by the Grantee, tailored to the types of practices expected to be funded in this project, and agreed upon by DES. The Grantee shall provide DES with an engineering estimate of the design life of the best management practice(s) (BMPs).

Operation includes the administration, management, and performance of non-maintenance actions needed to keep the completed practice safe and functioning as intended. Maintenance includes work to prevent deterioration of the practice, repairing damage, or replacement of the practice to its original condition if one or more components fail. The Grantee shall assure that any sub-award of Section 319 funds similarly include the same condition in the sub-award. Additionally, both EPA and DES reserve the right to periodically inspect a practice during the life span of the project to ensure that operation and maintenance are occurring. If it is determined that the participants are not operating and maintaining these practices in an appropriate manner, DES may request a refund for that practice supported by the grant.

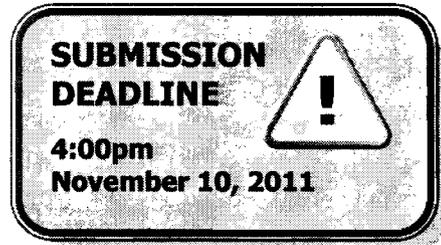
EXHIBIT B

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 .

Attachment A: Full Proposal

2012 Watershed Assistance and Restoration Grants FULL PROPOSAL FORM



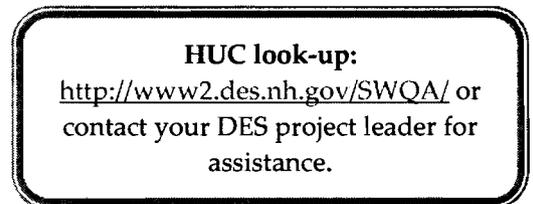
1. PROJECT TITLE

College & Reservoir Brook Watershed Management Plan Development Phase I: Salt Reduction Demonstration Project

Format Example: Crystal Lake Watershed Management Plan Implementation Phase 2: Smith Street BMPs

2. PROJECT LOCATION

- A. Town(s): **Durham, NH**
Does project involve other states? Yes No
- B. What water body does it affect? **College & Reservoir brook**
12-digit hydrologic unit code (HUC): 600030902-09, &
600030902-10
- C. Attach a project location map showing the watershed and relevant project site locations (required).



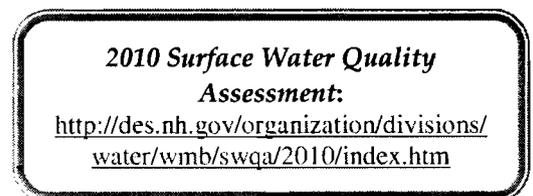
3. GRANT CATEGORY

Please check applicable category:

- a. Watershed Assistance Grant for High Quality Waters
- b. Watershed Restoration Grant for Impaired Waters

Please list the designated uses that are impaired and the specific causes of impairments as identified on the 2010 305(b)/ 303(d) Surface Water Quality Assessment. If the waterbody is not listed as impaired in the

Attachment A: Page 2 of 16



2010 Surface Water Quality Assessment, then describe and attach documentation of the impairment.

Designated Use: Aquatic Life

Cause of Impairment: Chlorides from Road Salt

4. APPLICANT INFORMATION

A. Organization Name: University of New Hampshire Technology Transfer Center

B. Federal Funding Accountability and Transparency Act (FFATA) Information

Data Universal Numbering System (DUNS) Number: 11-108-9470

Please check the applicable box:

The Executive Compensation Data requirements of the FFATA do not apply to the Applicant organization.

The Executive Compensation Data requirements of the FFATA apply to the Applicant organization and the Applicant agrees to provide information to DES as required by the FFATA.

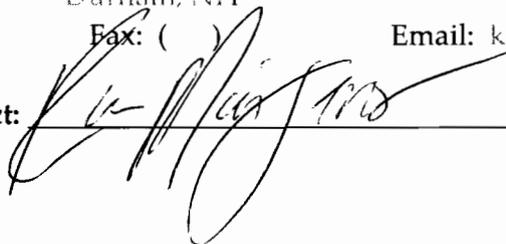
C. Project Manager

Project manager's name: Charles Goodspeed
Title: Associate Professor
Affiliation: University of New Hampshire – Civil Eng. Dept.
Street address: 33 Academic Way
City, State, ZIP: Durham, NH
Day phone: (603)862-1443 Fax: () Email: chgi@unh.edu

D. Legal Contact (Officer legally authorized to sign agreements)

Legal Contact's name: Karen Jensen
Title: Manager
Affiliation: Sponsored Programs Admin - UNH
Street address: 51 College Rd.
City, State, ZIP: Durham, NH
Day phone: (603)862-2172 Fax: () Email: karen.jensen@unh.edu

Signature of Legal Contact:



Date: 1/23/13

5. PROJECT SUMMARY

- Anticipated Start Date : May 1, 2013 Project End Date: December 31 2014
- Note the general time frame for projects funded in 2011 is June 1, 2012 through December 31, 2014 though the duration can vary, and actual start date will be dictated by EPA and Governor and Council approval date.
- Provide a clear statement of the types of nonpoint sources and water quality problems or threats to be addressed by the project.

Both College & Reservoir Brooks contain chloride concentrations in excess of federal standards. Road salt used in winter maintenance of sidewalks and parking lots is the primary source of the contamination. Based on preliminary data, UNH and the town's deicing of sidewalks (~24 miles of sidewalks), parking lots, and roads is believed to be the largest source of the chloride loading. NHDOT has a small stretch of Rts. 4 and 155 that are within the watershed. There are also several private lots that contribute loading. Relative load contributions can be derived from the road miles and parking lot acreage data presented later in this document.

- In 200 words or less, provide a description of the proposed project **suitable for press release** including: the general location (municipalities and watershed); water quality threat or impairment(s); causes or sources of water quality threats or impairment(s); proposed management activities, e.g., education, technical assistance, planning/design, construction; proposed deliverables; desired project outcome; and how success will be verified.

The College and Reservoir Brook Watersheds located entirely in Durham, NH are impaired by chlorides primarily from winter maintenance activities conducted by: The Town of Durham (Town), The University of New Hampshire (UNH), NHDOT, and private sector contractors. The Technology Transfer Center (T²) proposes to work in partnership with the Town, UNH and NHDOT to develop a watershed-based plan and to demonstrate selected BMPs for use primarily on the over 24 miles of sidewalks and parking lots. Demonstration BMPs will include equipment upgrades, operator and supervisor education and hands on training, quantification of existing application rates and demonstration of salt accounting practices to document usage and reductions. The watershed-based plan will quantify annual reduction goals and proposed BMPs to achieve those goals (e.g. equipment calibration, use of anti-icing, prewetting, ground speed oriented spreaders, and recommended temperature calibrated application rates). Success shall be verified during the project period by documenting salt reduction achieved by demonstration BMPs, and in the long-term through adoption of BMPs recommended in the watershed-based plan by UNH and the Town of Durham.

6. DESIRED ENVIRONMENTAL OUTCOME

Please provide a concise statement of the expected environmental result, outcome, or end-state that this project strives to achieve. If the environmental outcome is not expected to be achieved until after the project period, explain how this project will make progress toward the outcome. Goal-setting and results-planning can help water resource managers develop more deliberate project designs and achieve optimal project outcomes, e.g., turbidity values in the lake remain below 10 NTU during a 1" rainfall event; the impaired river segment is in a state of equilibrium based on stream morphology principles; or, ambient fecal coliform bacteria levels will be reduced to enable reopening of a closed shellfish harvest area (18 acres).

It is anticipated that there will be 10-30% reduction in chloride imports from the demonstration BMPs. Additional reductions are possible but cannot be guaranteed, as the reduction through use of BMPs is highly dependent on current practices and the ability to achieve greater material efficiencies through the use of BMPs. It should be noted that initial reduction estimates are conservative and will not meet predicted TMDL requirements. This project is the planning and demonstration phase of a multi-year approach which should ultimately result in meeting of predicted TMDL requirements and in reducing the contaminant loading to an acceptable level in both watersheds.

7. STAKEHOLDER COORDINATION, ROLES, AND RESPONSIBILITIES

Describe participation and commitments expected from other agencies, organizations and municipalities. Provide a letter affirming support and approval from any BMP construction location property owners, and/or match providers.

University of New Hampshire T² Center – Green Snow Pro Training, Equipment Calibration, Salt Reduction plan development, salt reclamation trials.

University of New Hampshire – Purchase of new equipment, attendance at Green SnowPro training sessions, calibration of equipment, salt reclamation trials, documentation of salt use.

Town of Durham New Hampshire – Purchase of new equipment, attendance at Green SnowPro training sessions, calibration of equipment, documentation of salt use.

8. WATERSHED BASED PLAN

Describe how the project will either implement or generate the required elements of a watershed based plan (a-i below). For impaired waters, the plan should address measures intended to meet the quantifiable water quality goal. See Watershed-based Plans for examples that meet the "a through i" elements.

- a) *Identify pollution causes and sources: An identification of the causes and sources or groups of similar sources that will need to be controlled to achieve the load reductions estimated in this watershed-based plan (and to achieve any other watershed goals identified in the watershed-based plan), as discussed in item (b)*

immediately below. Sources that need to be controlled should be identified at the significant subcategory level with estimates of the extent to which they are present in the watershed (e.g., X number of storm drains that need retrofits; Y miles of gravel roads that need drainage BMPs; or Z linear miles of eroded streambank needing remediation).

Chloride imports are primarily from the application of salt for winter maintenance of roadways, parking lots, and sidewalks. The sources can be categorized by their winter maintainer (Private Sector, University of New Hampshire, Town of Durham, or NHDOT), as well as the area of pavement (miles of roads, miles of sidewalks and acres of parking lots) The tables below, tabulate the total paved surfaces in each watershed and categorize it by maintainer.

Table 1: Road Miles by Winter Maintainer Source: NHDES

Watershed	Road Type	Total Miles
College Brook	Municipal Road	3.01
	State Road	2.24
	UNH Road	5.44
Reservoir Brook	Municipal Road	1.79
	Not Maintained	0.77
	UNH Road	1.35
Grand Total		14.59

Table 2: Parking Lot Area by Maintainer Source: NHDES

Watershed	Lot Type	Total Acres
College Brook	UNH Lot	27.98
Reservoir Brook	Non-UNH Lot	15.00
	UNH Lot	30.24
Grand Total		73.21

- b) Estimate pollution reductions needed: An estimate of the load reductions expected for the management measures described under (c). Estimates should be provided at the same level as in item (a) above (e.g., the total load reduction expected for storm drain retrofits, gravel road BMPs or eroded streambanks). First quantify the pollutant loads for the watershed. Based on these pollutant loads, determine the reductions needed to meet water quality standards (or other goals).

Chloride loading is estimated in the tables below provided by NHDES. Methodologies are approximate and apply assumed annual loading rates to generate total loading.

Table 3: College Brook Calculated Salt Loading Source: NHDES

College Brook Salt Loading		Annual Loading Rate	Total Annual Salt Load
Roads	State roads	15 tons/lane mi	33.55
	Municipal roads	13 tons/ lane mi	39.08
	UNH roads	13 tons/ lane mi	70.75
Parking Lots	UNH lots	9.46 tons/acre	264.66
	Non-UNH lots	6.4 tons/acre	0.00
Total Salt Load			408.04

Table 4: Reservoir Brook Calculated Salt Loading Source: NHDES

Reservoir Brook Salt Loading		Annual Loading Rate	Total Annual Salt Load
Roads	State roads	15 tons/lane mi	13.50
	Municipal roads	13 tons/ lane mi	23.32
	UNH roads	13 tons/ lane mi	17.51
Parking Lots	UNH lots	9.46 tons/acre	286.04
	Non-UNH lots	6.4 tons/acre	96.00
Total Salt Load			436.36

TMDL analysis has not officially been conducted; however estimated reductions are outlined in the table below provided by NHDES. Each watershed needs 40-45% reduction of chloride imports to meet the predicted TMDL requirements and stop violating water quality standards.

Predicted Chloride TMDLs for I-93 Watersheds based on Trowbridge et al. (2010)

Parameter	Units	College	Reservoir
Drainage Area	mi ²	0.88	1.00
	km ²	2.28	2.59
Runoff Coefficient (Note 1)	cfs/mi ²	1.55	1.55
	m ³ /s/km ²	0.0170	0.0170
Conversion Factor	mg m ³ yr / Mg L s	0.0317	0.0317
Predicted Cl Loading Threshold	Mg Cl / km ² / yr	54.60	54.60
	Mg NaCl / km ² /yr	90.02	90.02
	Mg NaCl / yr	205	233
	tons NaCl / yr	226	256
Estimated Actual Loading	tons NaC l / yr	408	436
Reduction Needed	%	45%	41%

- c) *Actions needed to reduce pollution*: A description of the NPS management measures that will need to be implemented to achieve the load reduction or habitat restoration scope estimated under paragraph (b) above (as well as to achieve other watershed goals identified in this watershed-based plan), and an identification (using a map or a description) of the critical areas in which those measures will be needed to implement this plan

Training & Certification: Reductions cannot be directly attributed to the training; however it will be the foundation for implementing BMPs.

Equipment Calibration: Reductions possible from equipment calibration are highly dependent on existing practices. Reductions of 2-20% are possible. Reductions of 3-5% are anticipated as a direct result of the equipment calibration demonstration.

Sidewalk Equipment Upgrades & BMPs: The project team is anticipating 5-30% reduction of salt used on sidewalks with the demonstrated equipment upgrades. It should be noted that the sidewalks represent a portion of the total sector loading so the overall reduction from sidewalks should be 5-10%. Greater reductions may be possible in the long term, up to 75% reduction in some cases. The project team is also planning on demonstrating a new BMP: reclaiming salt after a storm. For the purposes of this project the practice will be demonstrated manually to justify the further expense of purchasing a vacuum sweeper. The project team anticipates requesting grant funding in the future to procure such equipment.

- d) ***Costs and authority:*** An estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon, to implement this plan. Describe the types and sources of match that will be used to implement the project, keeping in mind that at least 40% of the project cost must be provided in non-federal match.

Estimated project cost is approximately ~\$167,000¹. T² will be responsible for delivering project results and for organizing, training, and assisting in implementation of BMPs for Municipal and University winter maintenance organizations. It will also, in partnership with DES administer the grant monies to purchase new sidewalk equipment for each organization.

Matching funds* will be from the Town of Durham's equipment purchase in the estimated sum of \$117,000¹.

Cooperation of UNH and Durham officials is vital to project success. T² has held meetings with both organizations and has gotten commitments from each organization to participate in this proposed project to reduce salt in the two affected watersheds.

Both UNH and Durham anticipate seeking additional funding to implement the demonstrated BMPs spelled out in the watershed-based plan.

- e) ***Outreach and education:*** An information/education component that will be used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing NPS management measures.

Educational component will be focused on UNH and Durham officials and winter maintenance personnel; however salt reduction efforts will be published in local newspapers and publications.

- f) ***Schedule:*** A schedule for implementing the NPS management measures identified in this plan that is reasonably expeditious.

May – August '13	Preparation of watershed-based plan and evaluation of existing practices.
May – October '13	Procurement of selected sidewalk maintenance equipment & BMP training and calibration of equipment.

¹ Note project matches are not required for this agreement – they have been already satisfied by existing purchases

November '12 – March '14	Winter Maintenance and BMP demonstration. Salt accounting demonstration.
April – October '14	Evaluation of salt reduction achieved during previous winter. Refinement of utilized BMPs and preparation for fall training and winter operations.

g) **Milestones:** *A description of interim, measurable milestones for determining whether NPS management measures or other control actions are being implemented.*

- Completed watershed-based plan
- Sidewalk maintenance equipment demonstration
- Calibration of municipal and university equipment prior to winter season
- Green SnowPro certified UNH and Durham Staff
- Successful achievement of reduction from demonstration BMPs as reported by University and Municipal officials

h) **Success indicators and evaluation:** *A set of criteria that can be used to determine whether loading reductions or habitat restoration is being achieved over time and substantial progress is being made towards attaining water quality standards and, if not, the criteria for determining whether this watershed-based plan needs to be revised.*

Two factors should be considered when evaluating chloride imports to the affected watersheds: (1) reported salt usage from University, Municipal, State and Private sectors, and (2) recorded chloride concentrations in the affected watersheds.

It must be recognized that the goal of this project is to affect reductions in chloride imports through the demonstration of selected BMPs in the two watersheds. The project does not anticipate completely restoring both watersheds. It is anticipated that several more years of efforts will be required to get reductions to the level required by the predicted TMDLs while retaining public safety.

i) **Monitoring plan:** *A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under item (h) immediately above.*

Salt use should be reported by UNH, the Town of Durham, and private sector applicators on an annual basis. This salt use should be used as a baseline to evaluate reductions. Continued water quality monitoring should also be used to evaluate actual chloride levels in the brooks. It is anticipated that this water quality testing will be conducted by DES. It should be noted that submission of salt usage data is voluntary.

9. PROJECT COST

A. Total Project Costs

$[\text{Grant funds requested}] \times 0.667 = \text{Required non-federal match}$ <p>or</p> $[\text{Grant funds requested}] \times 1.667 = \text{Total cost}$ $[\text{Total cost}] - [\text{Grant funds requested}] = \text{Required non-federal match}$
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Identify the amount of EPA Section 106 Grant funds requested, other funding source(s) if applicable, and total cost of project (100%).

Funding	Percentage	Amount
Federal EPA 106 Grant funds requested	30.6%	\$52,265
Other funding source(s) (Town of Durham)	49%	\$33,350
Total project cost	100%	\$85,615

B. Costs by Budget Category

In the provided **Spreadsheet A**, list your 106 grant project costs for each budget category. *Attach the completed spreadsheet to this application.* Please contact your DES project leader if you need assistance.

10. OBJECTIVES AND TASKS

In the provided **Spreadsheet B**, give a detailed description of the tasks and the associated costs that will be required to fulfill each project objective. Objectives need to be SMART. That is Specific, Measurable, Achievable, Relevant to the outcome, and Time-specific. For each objective please also describe how you will measure success. *Attach the completed spreadsheet to this application.* Please contact your DES project leader if you need assistance.

Objectives & Tasks:

Objective 1: Develop watershed based salt reduction plans (SRP) for Durham and UNH

Measure of Success: Accurate estimation of average annual salt imports from UNH and Municipal Winter Maintenance

Deliverable: Salt Reduction plans for Durham, and UNH

Task	Task Description	Responsible Party	Proposed Dates	Federal EPA 106 Grant Funds	Other funds	Source of other funds* <i>Match not required</i>	EPA Mandated Element (a – i)
1	Research/Draft BMP demonstration plan for Durham	T2/Durham	Jun.-Aug 2013	\$3,000	\$0		a
Method: Meetings will be conducted to determine appropriate BMPs, and a draft version of the BMP demonstration plan will be created for discussion							
2	Develop BMP demonstration plan for Durham	T2/Durham	Aug-Sept 2013	\$1,200	\$0		d, c, f
Method: Salt reduction options will be evaluated for use in Durham based on the results of reduction of other tasks. The most effective options will be incorporated into plan with their associated costs and reductions							
3	Research/Draft BMP demonstration plan for UNH	T2/UNH	Jun.-Aug 2013	\$3,000	\$0		a
Method: Meetings will be conducted to determine appropriate BMPs, and a draft version of the BMP demonstration plan will be created for discussion							
4	Develop BMP demonstration plan for UNH	T2/UNH	Aug-Sept 2013	\$1,200	\$0		d, c, f
Method: Salt reduction options will be evaluated for use in Durham based on the results of reduction of other tasks. The most effective options will be incorporated into plan with their associated costs and reductions							
Deliverable Subtotal				\$8,400	\$0		

Objective 2: Calibrate Existing Equipment

Grantee Initials KS
 Date 1/23/13

Measure of Success: Equipment Successfully Calibrated allowing appropriate application rates to be set

Deliverable: Calibrated salt dispensation equipment

Task	Task Description	Responsible Party	Proposed Dates	Federal EPA 106 Grant Funds	Other funds	Source of other funds	EPA Mandated Element (a – i)
5	Demonstrate Calibration of UNH Equipment	T2/UNH	Sept-Nov 2013	\$2,000	\$0		c
Method: Equipment will be calibrated using NH BMP for calibration. Calibration charts will be generated for each vehicle							
6	Demonstrate Calibration of Durham Equipment	T2/Durham	Sept-Nov 2013	\$2,000	\$0		c
Method: Equipment will be calibrated using NH BMP for calibration. Calibration charts will be generated for each vehicle							
Deliverable Subtotal				\$4,000	\$0		

Objective 3: Training: "Green Snow Pro" Certify UNH and Durham Winter Maintenance Staff

Measure of Success: Minimally 75% of UNH and Durham Staff take and pass the green snow pro certification.

Deliverable: Certified Winter Maintenance Staff at UNH and Durham DPW

Task	Task Description	Responsible Party	Proposed Dates	Federal EPA 106 Grant Funds	Other funds	Source of other funds	EPA Mandated Element (a – i)
7	Green Snow Pro Training	T2	Aug-Sept 2013	\$2,000	\$0		c
Method: T2 will conduct training sessions sufficient to train all UNH and Durham DPW public works							
Deliverable Subtotal				\$2,000	\$0		

Objective 4: Implement & Evaluate BMPs

Grantee Initials KS
 Date 1/23/13

Measure of Success: Proposed BMPs feasibility proven.

Deliverable: Data on effectiveness of salt recovery and reduction potential for sidewalk equip.

Task	Task Description	Responsible Party	Proposed Dates	Federal EPA 106 Grant Funds	Other funds	Source of other funds	EPA Mandated Element (a – i)
8	Purchase New Equip - Town	Durham	Jun-Nov 2013	\$16,620	\$33,350	Durham, NH	c
Method: Durham will purchase a ground speed controlled spreader unit with in-cab controls and calibration potential. Estimated Reduction 15-30% for this vehicle							
9	Purchase new Equipment - UNH	UNH	Jun-Nov 2013	\$16,620	\$0		c
Method: UNH will purchase a new spreader unit with ground speed controls and in cab controls. Estimated reduction is 15-30% for this vehicle							
10	Salt Reclamation Pilot	T2/UNH	Nov 2013 - March 2014	\$2,359	\$0		c
Method: Salt will be manually reclaimed after storm events on test sections of sidewalk. The reclaimed salt will be measured. Project will include report containing results							
11	Final Report	T2	March-Sept 2014	\$2,266			h
Method: Salt reductions achieved through BMP demonstrations will be quantified. Estimates of salt reductions that could be achieved with watershed-wide application of BMPs will be provided. Recommendations for future purchases and actions will be provided for UNH and Durham with respect to achieving the required load reduction estimated in the watershed-based plan.							
Deliverable Subtotal				\$37,865	\$33,350		
Total For All Tasks				\$52,265	\$33,350		

11. QUALITY ASSURANCE

Grantee Initials KJ
 Date 1/23/13

All projects must follow the *New Hampshire Section 319 Nonpoint Source Grant Program Quality Assurance Project Plan (QAPP)*. Projects that include collection, analysis, or manipulation of environmental data, including pollutant load reduction estimates, require an individual QAPP if such data collection and analysis deviates from the Program QAPP.

QAPP Questions?
 Visit:
<http://des.nh.gov/organization/divisions/water/wmb/was/qapp/index.htm>
 or
 contact Jillian McCarthy at
 (603) 271-8475, or
jillian.mccarthy@des.nh.gov.

1. Please check the applicable box:

- This project includes collection and analysis of environmental monitoring data.
- This project includes modeling or other analysis or manipulation of environmental data.
- This project does not include either of the above (skip to Section 11).

2. This project conforms to the *New Hampshire Section 319 Nonpoint Source Grant Program QAPP*.

- Yes** (development of a Site Specific Project Plan (SSPP) is included as a task in this application.)
- No** (development of an individual project QAPP is not included as a task in this application.)

12. PUBLIC PARTICIPATION AND OUTREACH

Describe how information and education will be used to enhance public understanding of the project and encourage public participation in selecting, designing, and implementing nonpoint source pollution management measures (e.g. "Involve lakeside residents in planting trees and shrubs in the protected shoreland area," "Develop a rain barrel program for neighborhood residents," etc.).

T² will utilize UNH media relations to publicize project progress and environmental impacts. It is anticipated that articles will be published in "The New Hampshire" The University newspaper, as well as other local papers.

It is also anticipated that training sessions might be made public to those individuals who live within the watershed area to give them an overview of BMPs with memorable quick facts – like: "it only takes about 2 coffee cups worth of salt to effectively deice a normal sized driveway."

13. OPERATION AND MAINTENANCE

Please note that best management practices implemented with funds awarded under the Watershed Assistance Grants Program must be properly operated and maintained for the intended purposes

during the life span of the project. The life span of a project shall be determined by the Grantee, tailored to the types of practices expected to be funded in this project, and agreed upon by DES.

Operation includes the administration, management, and performance of non-maintenance actions needed to keep the completed practice safe and functioning as intended. Maintenance includes work to prevent deterioration of the practice, repairing damage, or replacement of the practice to its original condition if one or more components fail. Additionally, both EPA and DES reserve the right to periodically inspect a practice during the life span of the project to ensure that operation and maintenance are occurring. If it is determined that the participants are not operating and maintaining these practices in an appropriate manner, EPA or DES may request a refund for that practice supported by the grant.

If your project involves construction, what long-term operation and/or maintenance will be required, who is responsible, and how will future operation and maintenance be sustained?

Equipment will be calibrated annually, and documentation of same will be retained. Durham and UNH will continue to utilize the new equipment and practices funding permitting. New purchased equipment will be kept in good repair and maintained for at least the expected lifespan of the equipment.

14. PHASING CONSIDERATIONS

DES recognizes that years of sustained NPS implementation may be needed to achieve measurable improvement to a waterbody. If additional phases of the project beyond the scope and time period of this project are anticipated, briefly describe the goal of each phase. Cases in which phasing may be warranted include projects to restore impaired waters, and projects in relatively larger watersheds.

Phase II: Full scale BMP implementation.

The project team anticipates to utilize the results of these demonstrations and the salt reduction plans as a guide to continue to put successful BMPs in place. The project team anticipates seeking future funding for same.

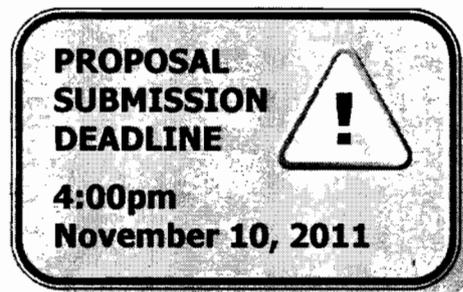
15. SUBMITTAL REQUIREMENTS

Submit **two signed copies** of the 2012 Watershed Assistance Grants Full Proposal Application Form and all attachments, via mail or hand delivery, **and an electronic copy** of the Full Proposal Application Form and all attachments in Microsoft Word or PDF file formats to:

NH Department of Environmental Services
Attention: Jeff Marcoux
Watershed Assistance Section
PO Box 95
Concord, NH 03302-0095

E-mail electronic copies to:
jeffrey.marcoux@des.nh.gov

If you have difficulty e-mailing attachments, such as maps and photos, please contact Jeff Marcoux to make alternate arrangements.



Your Full Proposal package should include:

- The completed Full Proposal Application Form
- The completed Objectives, Deliverables, and Tasks spreadsheet (spreadsheet A)
- The completed Budget Cost by Category spreadsheet (spreadsheet B)
- A site map
- Letters of approval from BMP construction site owners (if applicable)
- Letters of commitment from match providers
- Optional:
 - o Letters of support (Provided directly to DES with pre-proposal)
 - o Photos
 - o Water quality data

Attachment B: Watershed Assistance and Restoration Grant Ranking

Organization	Project Name	Reviewer 1	Reviewer 2	Reviewer 3	Reviewer 4	Reviewer 5	Reviewer 6	Weighted Total Score	Rank by weighted total score
Province Lake Association	Province Lake Watershed-based Plan Development	310	264	288	291	310	310	1773	1
NHDES Dam Bureau	Horseshoe Pond Dam Removal - Phase 1, Design, Engineering, and Permitting	268	288	288	310	310	242	1705	2
Acton Wakefield Watersheds Alliance	Salmon Falls Headwaters Watershed - Based Management Implementation Project - Phase 2	264	310	288	245	310	269	1687	3
Cobbetts Pond Improvement Association	Cobbett's Pond Restoration Plan Implementation II – Farmer Rd. & Horseshoe Rd. Area	310	223	223	310	310	288	1664	4
Lake Winnepesaukee Watershed Association	Waukegan-Winona Watershed Based Plan	264	242	269	268	291	266	1600	5
Mirror Lake Protective Association	Mirror Lake Watershed - Stormwater Improvement Implementation Project	264	268	196	205	266	223	1421	6
Newfound Lake Region Association	Newfound River Watershed Management Plan - Implementation Phase II	223	208	243	245	197	243	1358	7
UNH Stormwater Center/SWA Center	Great Bay Municipal Bioretention Program	269	140	223	223	269	197	1321	8
Rye, Town of	College Brook Watershed Restoration: Chloride Reduction	310	208	183	178	207	126	1211	9
Lakes Region Planning Commission	Implementation of the Parsons Creek Restoration Project - Phase 1	154	245	162	218	223	197	1200	10
Granite Lake Association	A Watershed Restoration Plan for Moultonborough Bay Inlet - Phase I	203	132	108	247	247	247	1182	Not Selected
Sunapee, Town of	Granite Lake Watershed Management Plan - Phase 1 Implementation	225	140	104	137	137	150	893	Not Selected
Exeter, Town of	Perkins Pond Watershed Planning and Stormwater Management Project	223	72	85	138	126	183	827	Not Selected
	West Side Drive LID Stormwater Improvement Feasibility Analysis Phase 1	31	138	100	118	103	100	591	Not Selected

Review Team Members

Name	Qualifications
Andy Chapman	11 years experience, Clean Lakes Program Coordinator, aquatic biologist, project management and coordination, lakes management expertise
Steve Landry	16 years experience, Merrimack Watershed Coordinator, aquatic biologist, project management, Merrimack watershed expertise
Jeff Marcoux	7 years experience, Watershed Assistance Specialist, grant and contract expertise
Barbara McMillan	12 years Watershed Assistance Outreach Coordinator, outreach and education expertise.
Sally Soule	13 years experience, Coastal Watershed Coordinator, project management, Coastal watershed expertise
Eric Williams	23 years experience, Watershed Assistance Section Supervisor, environmental planner, general project management expertise, WAS section and 319 program supervisor.

**Attachment C
Budget Estimate**

Budget Item	Grant Funding
Salaries & Wages	\$12,570.00
Indirect cost of salary	\$14,447.00
Supplies	\$1,240.00
Travel and Training	\$0.00
Contractual	\$24,000.00
Constuction	\$0.00
Postage and Printing	\$0.00
Total	<hr/> \$52,265.00