The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner

168

May 15, 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 amend a Cooperative Project Agreement (PO# 102576) with the University of New Hampshire (VC #177867-BO46), Durham, NH, for the I-93 Chloride Mitigation Project, by extending the project completion date to June 30, 2016 from June 30, 2013, increasing the contract amount by $17,000 from $286,992 to $303,992 and revising the scope of services to include new tasks and payments, effective upon Governor and Council approval. The original agreement was approved by the Governor and Council on May 6, 2009, item 72, and Amendment 1 was approved on November 9, 2011, item 81. 80% Federal, 20% Highway funds.

Funding is available in account as follows:

	FY 2013
03-44-44-442010-1522-102-500731	$17,000
Dept. Environmental Services, I-93 Chloride TMDLs, Contracts for Program Services	

EXPLANATION

This agreement is due to expire on June 30, 2013. We are requesting approval of this amendment to the agreement in order to provide the University of New Hampshire additional time and funding to complete supplemental tasks to the agreed upon scope of services. A copy of the original agreement and first amendment are included as Attachment A.

The Department of Environmental Services (DES) and the Department of Transportation (DOT) are working cooperatively to address chloride loading in four impaired watersheds in the southern Interstate 93 corridor between Salem and Manchester. DES and DOT developed a Memorandum of Agreement (approved by G&C on June 21, 2006, Item 86, amended by G&C on May 6, 2009, Item 65) outlining the roles and responsibilities for completing water quality studies to determine the total maximum daily load (TMDL) of chlorides for the affected water bodies and for implementing salt reduction programs. The TMDL for a water body is the maximum chloride load that the water body can assimilate without violating water quality standards.

After successfully establishing the salt certification and training program, the salt accounting system, and the initial round of municipal salt reduction plans, the I-93 Salt Reduction Steering Committee

would like to extend the agreement with the UNH Technology Transfer Center and increase the total price of the Agreement by $17,000 to expand training opportunities for salt applicators, increase use of the salt accounting system, and work with the four corridor municipalities through two additional rounds of federal funding for municipal salt reduction efforts. To date, $179,724 of the original agreement has been spent. The amended agreement will run through the expiration date of the existing Memorandum of Agreement between DOT and DES (June 30, 2016).

In the event that federal or highway 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.

Thomas S. Burack, Commissioner

AMENDMENT #1 to
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

The Cooperative Project Agreement, approved by the State of New Hampshire Governor and Executive Council on **5/6/11**, item # **72, and amended on 11/09/11, item #81**, for the Project titled "**I-93 Chloride Mitigation Project**," Campus Project Director, **Charles Goodspeed III**, is and all subsequent properly approved amendments are hereby modified by mutual consent of both parties for the reason(s) described below:

Purpose of Amendment (Choose all applicable items):

☐ Extend the Project Agreement and Project Period end date, at no additional cost to the State.

☒ Provide additional funding from the State for expansion of the Scope of Work under the Cooperative Project Agreement.

☐ Other:

Therefore, the Cooperative Project Agreement is and/or its subsequent properly approved amendments are amended as follows (Complete only the applicable items):

- Article A. is revised to replace the State Department name of with and/or USNH campus from to .
- Article B. is revised to replace the Project End Date of **6/30/13** with the revised Project End Date of **6/30/16**, and Exhibit A, article B is revised to replace the Project Period of **Upon Governor and Council Approval – 06/30/13** with **Upon Governor and Council Approval – 06/30/16**.
- Article C. is amended to expand Exhibit A by including the proposal titled, "**Technology Transfer Center Salt Reduction Cooperative Project Agreement**," dated **04/15/13**.
- Article D. is amended to change the State Project Administrator to and/or the Campus Project Administrator to .
- Article E. is amended to change the State Project Director to and/or the Campus Project Director to .
- Article F. is amended to add funds in the amount of **$17,000** and will read:

  Total State funds in the amount of **$303,992** 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.

- Article F. is amended to change the cost share requirement and will read:

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

- Article F. is amended to change the source of Federal funds paid to Campus and will read:

  Federal funds paid to Campus under this Project Agreement as amended are from Grant/Contract/Cooperative Agreement No. from under CFDA# . Federal regulations required to be passed through to Campus as part of this Project Agreement, and in

Campus Authorized Official KJ
Date 5/14/13

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 **revised** Exhibit B, the content of which is incorporated herein as a part of this Project Agreement.

- Article G. is exercised to amend 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, as follows:

  Article is amended in its entirety to read as follows:
  Article is amended in its entirety to read as follows:

- Article H. is amended such that:

  ☐ 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.

- ☒ Exhibit A is amended as attached.

- ☐ Exhibit B is amended as attached.

All other terms and conditions of the Cooperative Project Agreement remain unchanged.

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

This Amendment and all obligations of the parties hereunder shall become effective on the date the Governor and Executive Council of the State of New Hampshire or other authorized officials approve this Amendment to the Cooperative Project Agreement.

IN WITNESS WHEREOF, the following parties agree to this **Amendment #1** to the Cooperative Project Agreement.

By An Authorized Official of:
University of New Hampshire
Name: Karen Jensen
Title: Manager of Research Administration
Signature and Date: 5/14/13

By An Authorized Official of:
NH Department of Environmental Services
Name: Thomas S. Burack
Title: Commissioner
Signature and Date: 5/22/2013

By An Authorized Official of: the New Hampshire Office of the Attorney General
Name: Evan Mulholland
Title: AAG
Signature and Date: 5-23-13

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

Campus Authorized Official KJ
Date 5/14/13

EXHIBIT A

A. Project Title: I-93 Chloride Mitigation

B. Project Period: Upon Governor and Council Approval through June 30, 2016

C. Objectives: This contract was originally executed in in May of 2009. To date T2 has have completed the all of the tasks originally scoped with the exception of those tasks which are ongoing (training, salt accounting, and development of salt management plans). Through the course of this agreement all involved municipalities have become actively involved in salt reduction including passing salt reduction resolutions, adopting salt reduction plans, and procuring equipment to reduce salt usage in their communities. Additionally sector allocations have been completed, a salt reduction system developed, and a salt reduction training program developed, marketed and deployed with nearly 300 individuals trained to date.

As the project has evolved the originally conceived tasks have become outdated and new needs and roles for T2 have evolved and become apparent. To that end we are requesting that the scope of services be updated to reflect the revised work items as shown in the attached scope of services and that the term of the contract be extended through June 30, 2016.

D. Scope of Work: Revised as follows to 5 below tasks. The following tasks totals are based on the projected available balance as of June 30, 2013. Current expenditure totals will be finalized by July 31, 2013. If the projected unexpended balances changes, a revised section D will be submitted to the State for insertion into this amendment with out the need for an offocially approved amendment. The total project costs will not exceed the amount listed in article F.

1. Green Snow Pro Training $25,000.00
   Continue Conducting and marketing of Green Snow Pro training sessions including updating of training materials, development of new demonstrations, and marketing of courses to applicators and landowners.
2. Promote Use of Salt Accounting System for towns/privates $33,422.39
   Active marketing of salt accounting system to certified applicators. Improvement of salt account system to accept municipal data and facilitate municipal tracking of private data within each town.
3. Private Sector Application Rate Evaluation $10,000.00
   Evaluate private sector usage and compare with PSU application rates with adjustment for weather severity.
4. Salt Reduction Plan Development $12,000.00
   Work with municipal officials to track, update, and submit new salt reductions plans
5. Regional Salt Reduction Effort Coordination & Feasibility Study $15,000.00
   Work with state, local and private sector officials to determine possible strategies to implement regional solutions for salt reduction including regional brine making.

Task 1-5 Subtotal $95,422.39

Total Project Cost: $ 303,992.00

Campus Authorized Official KJ
Date 5/14/13

E. Deliverables Schedule: Deliverables for Tasks 1-2 are ongoing through the remainder of the agreement. For Task 3, the test plan deliverable will be submitted in June 2014 with subsequent trials completed by June 2016. Task 4 deliverables include salt reduction plans for the I-93 corridor towns to be updated in June 2014 and June 2015. Task 5 deliverables will be submitted for Phase I in June 2015 and Phase II in June 2016.

F. Budget and Invoicing Instructions: Campus will submit invoices to State on regular Campus invoice forms for tasks 3 - 5 as specified in Section D above. Tasks 1 and 2 will be billed quarterly for the total expenses incurred during the invoicing period, until the specified dollar amounts have been reached. No expense detail will be required. State will pay campus within 30 days of receipt of each invoice and task completion report. Campus will submit its final invoice not later than 75 days after the Project Period end date.

Campus Authorized Official KJ
Date 6/14/13

Attachment A
Copy of original Cooperative Project Agreement and Amendment 1

The State of New Hampshire

DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner

April 20, 2009

APPROVED G & C
DATE 5/6/09
ITEM # 72

His Excellency, Governor John H. Lynch
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, Office of Sponsored Research, VC #92050, Durham, NH, in the amount of $286,992.00 for the I-93 Chloride Mitigation Project, effective upon Governor and Council approval through December 31, 2011. 80% federal, 20% highway funds.

Funding is available in account I-93 Chloride TMDLs 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 2010 and 2011 is contingent upon the availability and continued appropriation of funds.

	FY 2009	FY2010	FY2011
010-044-1522-102-0731 Contracts for Program Services	$110,841	$88,980	$87,171

EXPLANATION

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 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 Department of Environmental Services (DES) and the Department of Transportation (DOT) are working cooperatively to assess how deicing of the Interstate 93 between Salem and Manchester and other roads and infrastructure affect the water quality in streams in the area. The occurrence of chloride above acute and chronic water-quality criteria for the protection of aquatic life has been found in some streams in drainage areas through which I-93 passes. DES and DOT are determining the extent of these water quality issues in the region and developing potential actions to reduce chloride levels affecting local stream quality. DES and DOT have developed a Memorandum of Agreement (approved by Governor and Council on June 21, 2006, Item 86) outlining the roles and responsibilities for completing water quality studies to determine the total maximum daily load (TMDL) of chlorides for the affected

DES Web site: www.des.nh.gov
P.O. Box 95, 29 Hazen Drive, Concord, New Hampshire 03302-0095
Telephone: (603) 271-3503 • Fax: (603) 271-2867 • TDD Access: Relay NH 1-800-735-2964

water bodies. The TMDL for a water body is the maximum chloride load that the water body can assimilate without violating water quality standards.

The purpose of this Cooperative Project Agreement is to coordinate and fund the University's work in support of the overall I-93 Chloride study. The University will prepare and implement data collection, reporting, and accounting in parallel with a continuing investigation and training in de-icing, anti-icing procedures and site design procedures. Data for the project will be from four southern NH watersheds within the I-93 corridor. This project will include an online GIS viewer for data display as well as an interactive website for municipal and commercial data collection and accounting. Training and certification processes will be implemented to facilitate the use of alternative procedures and alternative site designs shown to reduce the need for anti-icing and de-icing procedures.

A budget breakdown is provided in Attachment A. In the event that federal or highway 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.

Michael J. Walls, Asst. Comm.
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 **12/31/11**. 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: **I-93 Chloride Mitigation**

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: NHDES
29 Hazen Drive
Concord, NH 03302-0095

Phone: 271-8862

Campus Project Administrator

Name: Kelly J. Washburne
Address: UNH Office of Sponsored Research
51 College Rd., Svc. Bldg., Rm 116
Durham, NH 03824

Phone: 862-1221

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: NHDES
29 Hazen Drive
Concord, NH 03302-0095

Phone: 271-2358

Campus Project Director

Name: Charles Goodspeed II
Address: UNH Civil Engineering Department
33 College Road
Durham, NH 03824

Phone: 862-1443

F. Total State funds in the amount of $286,992 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. **9-8083-0-7-401** from **Federal Highway Administration, Department of Transportation** under CFDA#20.205. 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 hereto 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 Service** have executed this Project Agreement.

By An Authorized Official of:
University of New Hampshire
Name: Kathryn B. Cataneo
Title: Executive Director of Sponsored Research
Signature and Date: Kathryn B. Cataneo 11/10/08

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

By An Authorized Official of: the New Hampshire Office of the Attorney General
Name: Evan Mulholland
Title: AAG
Signature and Date: 4-22-09

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

EXHIBIT A

A. **Project Title:** I-93 Chloride Mitigation

B. **Project Period:** Upon Governor and Council approval through December 31, 2011

C. **Objectives:** Campus will prepare and implement data collection, reporting, and accounting system in parallel with a continuing investigation and training in de-icing, anti-icing procedures and site design procedures. Data for the project will be from four southern New Hampshire watersheds within the I-93 corridor. The project will include an online GIS viewer for data display as well as an interactive website for municipal/commercial data collection and accounting. Training and certification processes will be implemented to facilitate use of alternative procedures and alternative site designs shown to reduce the need for anti-icing and de-icing procedures.

D. **Scope of Work:** A detailed scope of work is provided in section IV of the proposal titled Chloride Mitigation, dated September 19, 2008, and incorporated by reference. Specific tasks include:

Task 1: GIS Modeling and Analysis
Task 2: Salt Usage Defaults
Task 3: Winter Maintenance Practices Research
Task 4: Training and Certification
Task 5: Parameter Identification and Date Collection Management System
Task 6: Data Collection 2008 and 2009
Task 7: Data Collection 2009 and 2010
Task 8: Data Collection 2010 and 2011
Task 9: Usage Trends
Task 10: Recommended Winter Maintenance Tech Sheet

E. **Deliverables Schedule:** A detailed list of deliverables is provided in section VI of the proposal titled Chloride Mitigation, dated September 19, 2008, and incorporated by reference.

F. **Budget and Invoicing Instructions:**

Budget Items	FY09	FY10	FY11	Total
1. Salaries & Wages	49,315	44,215	44,641	138,171
2. Employee Fringe Benefits	1,050	1,131	1,176	3,357
3. Travel	12,500	8,500	9,000	30,000
4. Supplies and Services	27,289	19,054	16,802	63,145
5. Equipment	0	0	0	0
6. Facilities & Admin Costs	20,687	16,080	15,552	52,319
Subtotals	110,841	88,980	87,171	286,992

Using standard Campus invoices, Campus shall submit requests for payment accompanied by the reports and deliverables for each task completed according to the schedule and detailed budget specified in the proposal titled Chloride Mitigation, dated September 19, 2008, and incorporated by reference. State shall issue payment to Campus within 30 days of receipt and approval by the State Project Director of the reports, deliverables, and accompanying invoices. Campus will submit its final invoice not later than 60 days after the Project Period end date.

G. Other:

- 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 New Hampshire Department of Transportation and the Federal Highway Administration.

September 19

Chloride Mitigation 2008

The UNH technology Transfer Center (T²) proposes to prepare, and implement a data collection, reporting and accounting system in parallel with a continuing investigation and training in de-icing, anti-icing procedures and site design procedures. Data for the project will be from four southern New Hampshire watersheds within the Interstate 93 corridor. The project will include an online GIS viewer for data display as well as an interactive website for municipal/commercial data collection and accounting. Training and certification processes will be implemented to facilitate use of alternative procedures and alternative site designs shown to reduce the need for anti-icing and de-icing procedures

UNH
Technology
Transfer
Center

I) Need Statement

The NH Department of Environmental Services completed total maximum daily load studies on four watersheds affected by chlorides. A significant portion of the chloride load is attributed to winter maintenance practices. Continued growth and urban development in southern NH will inevitably lead to increased commercial, state, and municipal transportation infrastructure (i.e. state routes, interstates, municipal roads, commercial roadways and parking structures) requiring winter maintenance. To begin reducing chloride usage from transportation infrastructure applications, economically viable and environmentally friendly winter maintenance practices must be identified. This includes improved best practices for existing winter maintenance products, as well as new environmentally friendly products if available. It is also envisioned that improved municipal land use specifications should be recommended to mitigate future adverse environmental impacts from winter maintenance.

II) Proposal Overview

This project will include ten tasks to take place over 3 years with a focus on evaluation and reduction of chloride usage. Tasks 1 and 2 will involve collection, analysis and presentation on an online GIS platform of existing and default chloride usage/concentration data. Online presentation of the data will allow DES, participating municipal officials, and team members to view available information with advanced search, buffer and reporting options. Task 3 & 4 will research alternative procedures, will offer training in the proper use of selected procedures, and will establish a Green certification program. Commercial site characteristics requiring less winter maintenance will also be investigated and presented in a format conducive to incorporation in land use regulations. The educational program will culminate in a certification program for practitioners, landowners and government officials. Task 5 will identify winter maintenance product usage trends and application procedures. Variables that result in higher and lower winter maintenance needs will be evaluated including but not limited to: site characteristics, construction methods, topographic, solar exposure and ambient weather elements. During this phase a management structure for sustainable data collection and accounting will be designed and implemented using work study students & GIS/GPS data collection technology. Task 6 will address data collection to refine the default usage/concentration data identified in Task 2. Task 7 and 8 will yield further refinements to Task 5 and 6 results.

Task 9 will evaluate usage trends over the three year duration of the project. Task 10 will compile project knowledge into a winter maintenance tech sheet.

III) Participants

Training and certification participants include municipal public works and NHDOT staff responsible for winter maintenance; private sector public access land owners, and contractors responsible for winter maintenance. Training will also be offered to planning and zoning board personnel. Upon completion of training, the participant list will be posted on the T^2 website for access by DES and others. Participating communities and the private vendors will be asked to voluntarily submit salt usage data after every storm event. It is anticipated that private land owners will view the certification as a green benefit that will be viewed positively by their customers and consequently utilize certified practioners.

IV) Project Tasks

Task 1 GIS Modeling & Analysis

It is vital that a method of viewing, indexing, searching, and reporting the data generated in this project be established to ensure maximum efficiency, and usefulness to all involved parties. Adding geospatial attributes to new data allows it to be overlaid onto a GIS map. The NHDOT Centerline road map, high resolution aerial photography and municipal tax maps will comprise the base map and it will be served online using a commercially available map viewer. New layers containing watershed salt concentrations, winter maintenance product application, and weather data will be added to the map throughout the project. Databases may also be added and linked to geospatial coordinates as necessary to facilitate transparency of large amounts of data.

Task 1.1 Online Map Viewer Setup

Viewer Background: A commercially available robust online GIS viewer will be utilized for this project. It allows for rapid programming of custom queries, reports, and data layers. During this phase the software will be

Installed and configured for web access, and programmed with specific queries and functions for this project. The software is currently in use in dozens of communities across the country and is being used by T^2 under contract with the NHDOT to house a seamless parcel map along the southern I-93 corridor (CTAP Region). It is anticipated that data from the CTAP region will be shared with this project.

Base Map: All project data will be overlaid on a GIS base map. The base map will orient the user to the region, and be used to generate new layers of impervious surfaces such as parking lots. It will be comprised of the layers detailed in the table 1 below with layers in table 2 to be added throughout the project.

Base Map Layers
NHDOT Hi-Res Arial Photography
NHDOT Centerline Roads
Municipal Roadways
Elevation Contours
3D shaded Elevation Relief
Watershed Contours
Municipal Parcel Maps
GRANIT Environmental Data
GRANIT Hydrology Data

Table 1: Base Map Layers

Functionality: Customized queries and reports will be created to assist in analyzing the data displayed on the GIS viewer. Queries can be made on items such as:

- Road/Parking Lot (typical query)
- Query to determine usage information relating to a particular road or parking lot (typical query)
- Query to determine what roads or parking lots are above/below/equal to a suggested goal in tons/ft^2 or tons/yr values

Reports can be generated on any information displayed on the map. A typical report is shown in Table 2.

Event	Snowfall	Owner	Type	Salt Usage	Area	Salt Usage/Event
date	*inches*			*pounds/ 1000 ft²*	*1000 ft²*	*Pounds*
12/5/2008	3	Wal Mart	Parking Lot	1.75	50	87.5
12/6/2008	8	Wal Mart	Parking Lot	2.0	50	100

Table 2: *Typical Parking Lot Usage Report*

Task 1.2 Historical Data Analysis

All data available from DOTs (Minnesota DOT data will considered first), vendors, land owners, and Internet sites will be shown with DES surface water monitoring data for purposes of long-term comparison with chloride application data.

It is anticipated that by posting this data, other sources of winter maintenance activity data will become available. Once the site is operational, Federal Highway Administration (FHWA), American Association of State Highway and Transportation Officials (AASHTO) and American Public Works Association (APWA) will be made aware of its functionality and a further solicitation for data will be made at that time.

Task 2 Salt Usage Defaults

Default salt usage values (tons/lane mi or pounds/1000 sq. ft) will be linked to asphaltic surfaces on the existing GIS map. These defaults will provide the most current accepted baseline for analysis purposes. To provide more accuracy default values will be refined when additional data becomes available. State and local agencies will be polled to determine more NH specific application values on public roads. Participating private vendors will supply actual usage values to revise private lot values.

Task 2.1 Identify Default Values

Research default salt usage values for full spectrum of winter maintenance needs. Regional weather characteristics will be quantified with respect to associated local weather conditions using Weather Severity Index (WSI). DES data will be used to assess values acquired or synthesized from other geographical regions. Default value synthesis is anticipated as proportioning usage with climate severity. Other relationships may become apparent with accumulated data and analysis.

Task 2.2 Data Collection System

A multi-mode data collection system will be created for all municipalities and private vendors participating in the project. The system will consist of a website and phone system, where participants can submit salt usage per snow event.

- *Website*: Will enable participants to electronically submit information based on specific user ID.
- *Phone*: Will enable participants to leave voice and text messages based on a specific user ID.

Green certification will be contingent on submitting salt usage data on a per storm event. Providers not participating in green certification will be encouraged to participate as well. Data linked to user and application site ID's submitted by the user will be stored in an online database. The database will be structured such that it is easily scalable, and facilitates aggregation to annual salt application data, and comparison with WSI. The database will be directly linked to the GIS platform so storm event salt usage data can be viewed immediately following participant submission. Weather data will be accessed through NHDOT recognized weather monitoring stations which will also be viewable on the site.

Upgrades, as solicited from program participants, will be implemented prior to the next training season.

Task 2.3 Panel Review

A Panel consisting of NHDES, NHDOT, Local Officials, and T2 personnel will be assembled to review all project materials, plans and deliverables. A panel review work session will be held to assess the progress and goals of the project.

Task 3 Winter Maintenance Practices Research

T^2 will conduct an international search through FHWA and respective agencies in other countries for feasible environmentally friendly winter maintenance practices. MNDOT reports will be studied to extract relevant data. FHWA foreign country scanning tours have identified numerous highway related products and procedures appropriate for this country and through FHWA training have been adopted by local highway agencies in this country. This proposed search will focus on cooperating organizations and countries that participated in recent scanning tours.

Task 3.1 Anti/Deicing Practices and Alternatives

Practices will be researched with a focus on environmental impact, cost/benefit, and practicality. T^2 will contact appropriate personnel from areas using these practices including: research leaders, municipal/state DPW officials, and private practitioners to gain as much information as possible about each alternative.

T^2 will compile an evaluation packet including user supplied data and summarized information as well as a cost analysis for each alternative. Each alternative will be associated with ambient weather conditions. The alternatives will then be evaluated at a joint T^2/DES work meeting and a consensus for each alternative will be established. If the meeting participants identify additional information pertinent to a products or procedure evaluation the T^2 will conduct additional research and will circulate the findings.

The work meetings will result in the framework for a recommended winter maintenance procedure sheet as well as a basis for future course materials.

Task 4 Training & Certification

Training will be geared toward three distinct groups, winter maintenance practitioners, planning/zoning board officials, private lot owners, and administrators. Winter maintenance practitioners will be offered training on alternative anti-icing/deicing practices, their proper use, effective application procedures and on how to evaluate and improve efficiency of existing winter maintenance practices to reduce chloride use. The second training category is focused towards Planning and Zoning Board participants to improve site planning, solar and environmental conditions that have been shown to significantly reduce winter maintenance requirements. The third will focus on liability, and financial issues related to winter maintenance.

To culminate the trainings sessions Green Certifications will be available to participants who attend all required training sessions. State, local and commercial entities will be encouraged to get their practitioners certified, or alternately utilize already certified practitioners.

Task 4.1 Course Development

Audience: While the municipalities throughout the state will be invited to participate the project will focus on the five municipalities within the impaired watersheds along the I-93 corridor (Chester, Derry, Londonderry, Salem, and Windham). It is anticipated that courses for the southern region of the state will be held in each of the five target municipalities. Each respective audience group will be notified of all courses pertaining to their work area. The winter maintenance training and certification courses address the application of deicing/anti-icing products. A combined public and private sector audience consisting of state and municipal highway employees; and contractors responsible for maintaining private property will be invited. The objective of the winter maintenance training will be to reduce salt used through more efficient practices. Deliverables will consist of presenting sufficient information for public highway officials and contractors to consider new equipment options and best practice procedures appropriate for winter maintenance operations.

Planning and Zoning Board officials will be notified of all T^2 courses related to site planning zoning board specifications that yield minimal winter maintenance needs. The course objective is introducing the best available practices for reducing the need for winter maintenance, primarily the use of deicing and anti-icing salts. Deliverables will consist of planning and zoning alternative ideas shown to reduce the need for winter maintenance by capitalizing on solar and other ambient conditions and that are appropriate for inclusion in local subdivision specifications.

Town administrative officials and private lot owners will be notified of courses related to financial and liability concerns. Environmental and legal consequences of each current and alternative practice will be addressed. The objective of the administrative courses is to ensure responsible application of improved practices to ensure no negative impact to town liability or to public safety. Attorneys will be invited to instruct this audience in RSA and court regulations pertaining to winter maintenance responsibilities. The course objective is training on management responsibilities for winter maintenance operations. Deliverables will be management strategies and job responsibilities for highway, police and other local departments with winter maintenance responsibilities. By refining department responsibilities it is anticipated that winter maintenance operations can be tailored to allow the appropriate professionals to identified problem areas and select the proper operation versus the more common request for a general winter operation be performed on all roads.

Each group will be advised of the Green certification program and encouraged to participate, or support those who are participating.

Course Advertising & Registration: Course descriptions pertaining to the application of winter maintenance will be announced as part of the T^2 fall and spring course brochures. Planning and Zoning issues require a new audience for T^2; a mailing list for this audience will be extracted from T^2's general database. Special course announcements will be prepared for each of these courses and distributed as a package. New course categories are also highlighted in the quarterly newsletter. To encourage participation in the five target communities, personal phone calls and visits will be arraigned for each target town.

T^2 staff accepts registrations by phone, email, fax, and US mail. All registrants receive a receipt and special instructions if pertinent to the training. Early registration will be available to the five target towns to ensure availability for all of their personnel.

It is expected that additional course marketing will become necessary to bolster participation. To this end T^2 will publish availability of the courses and issue press releases regarding the initiative, as well as holding joint T2/NHDOT/Municipal/Private work sessions to determine appropriate marketing steps.

Course Instructors: T^2 solicits instructors through NHDOT recommendations, LTAP clearinghouse, LTAP regional/national meetings and word of mouth. Prior to every course, a T^2 staff coordinator meets with the instructor to review slides, handouts and testing materials. T^2 has an instructor's manual containing course standards to assure appropriate quality material is presented. Kathryn Meyers, education programs manager will oversee all courses with technical review by Charles Goodspeed, T^2 Director.

When appropriate, T^2 staff review instructor prepared course quizzes to assure consistency with T^2 hosted Academy and Road Scholar Program requirements. A 5 hour course typically yields .5 CEUs and 5 PDHs at a cost of between $60 and $75 depending on publication, facility and instructor expenses. It is anticipated that discounts will be given to the five target towns to encourage participation.

Instructors are typically given meals, lodging, travel expenses and a stipend for their work. If a field experience is included with the course the instructor must prescribe a goal and all groups/individuals are expected to meet or surpass the goal.

Course attendees have the option of obtaining follow up assistance at any time. Assistance is offered via phone, web site, publications, and site visits. Typically instructors or T^2 staff offer all or part of this assistance and in some cases the NHDOT offers help.

Learning Format: A minimum of 2 (i.e. at least 1 instructor and a course manager) individuals run each course. Typical courses are 5 hours, 8:30 – 2:30 with time for lunch. Webinars, video conferences, and field experiences are offered when appropriate.

Course Schedule: Highway professionals prefer courses in late spring and early fall, planning and zoning related audiences will most likely be less constraining. Courses are repeated on a regular base as a function of need.

Course Materials: T^2 staff will research winter maintenance alternatives and prepare/assemble courses commensurate with the acquired materials. A national and when appropriate international inquires will be made to solicit anti-icing/deicing practices as well as planning and zoning board guidelines/specifications. Financial and tort liability concerns will also be researched and appropriate information will be presented accordingly. In cases deemed appropriate tech sheets will be prepared and circulated to T²'s complete mailing list, in excess of 1,500 addresses. Newsletter articles will also be prepared using tech sheet information; T^2 newsletters are circulated nationally. The number of courses will range from 4 to 6 per year depending on the number of winter maintenance practices found to be appropriate and economically feasible.

Task 4. Green Certification

A Green certification program will be offered as a promotion to reduce the use of salt products. A minimum number of course credits, sharing of salt usage data, and approval by a review board are the basic requirements to sustain a Green Certification. Certifications will be offered to winter maintenance contractors, equipment operators, public access land owners, municipal highway departments and municipal planning and zoning boards. Contractors will have the option of posting a certification sticker on all trucks operated by a certified driver. Land owners will have the option of posting a sign designating a Green winter maintenance program. Municipal highway departments will be encouraged to certify winter maintenance equipment operators and all contracted commercial operators. All certification placards for parking

lots, magnetic signs equipment, and certified operator IDs will be prepared and circulated by T^2.

Task 4.3 Panel Review

Following each training season instructor reviews will be compiled and a joint DES/NHDOT/T^2 work session will be held to synthesis the results and prepare upgrades for the following training season.

Task 4.3 Evaluation

Practioners: The link between the training/certification and salt accounting program will provide a mechanism for DES and T^2 to evaluate the effectiveness of the training programs by quantifying changes in usage data as submitted by practioners. Flexibility to change course formats, materials, and certification incentives based on usage data will be maintained to ensure maximum salt reduction is achieved. Success of the training and certification program will be defined as a measurable reduction in salt usage.

Planning & Zoning: Participating PB and ZBA officials will be polled to evaluate adoption of proposed standards. Problems identified, and difficulties encountered will be addressed and included in future training and certifications sessions. Effectiveness of adopted standards will be evaluated if new construction utilizing the standards is present during the study. Success of the revised PB/ZBA standards will be defined by new construction sites requiring less winter maintenance.

Administrators & Landowners: Participating town administrators and private landowners will be polled to determine any potential liability, or safety issues encountered as a result of the new practices, or standards. It is anticipated that modifications will be made based on feedback. Success of the liability courses will be evaluated by response from town administrators and landowners, as well as reduced winter maintenance operations through use of decision matrices.

Task 5 Parameter Identification & Data Collection Management System

Parameters collected and displayed in previous tasks that relate to topography, weather, solar exposure winter maintenance, site conditions, etc. will be evaluated. A work session will be held to evaluate identified variables and to solicit additional parameters that warrant collection and monitoring. The identified parameters will be collected on a regular prescribed basis to be determined by the work group.

Task 5.1 Pertinent Parameter Identification

The following categories of parameters will be evaluated and established:

Preliminary Weather Parameters
Precipitation Rate
Snow/Ice Depth
Temperature by hour
Moisture content of snowfall
Precipitation type by time
snow density
Dew point

Table 3: Weather Parameters

Preliminary Parking Lot Site Parameters
Area
Wind exposure (numerical Scale
Pavement Temperature
Drainage (Culverts, detention ponds etc.
Sun exposure (numerical scale)
Surface Type
Surface Condition
Daily Usage Hours
Drive through

Table 4: Parking Lot Parameters

Preliminary Roadway Parameters
Area
Wind Exposure (numerical Scale
Pavement Temperature
Slope
Drainage
Sun exposure (numerical Scale
Surface type
Surface condition
Roadway Classification
Pavement Temperature

Table 5: Roadway Parameters

Task 5.2 Develop Data Collection System

T^2 will establish the protocols for data collection. The protocols will stem from more than 20 years of asset inventory data collection, and asset management. A management structure will be developed and implemented to collect data and an owner/contractor network established to report data. The programs to perform these functions are available with the Local Technical Assistance Program (LTAP). T^2 will evaluate these programs, select the most appropriate, and customize it for this application. It is anticipated custom programming will be necessary to adapt existing programs to the specific needs of this project.

T^2 will establish and populate a database to manage and synthesize data. Data will be stored in an easily transferable format, as layers in the GIS system and when appropriate as shape files for illustration on parcel maps. Reports and mapping techniques will be prepared to illustrate potential trends. These tasks are currently under development and will simply need modifications to address winter maintenance procedures.

Task 6 Data Collection 2008 & 2009

During the winter of 2008-2009 data will be collected from participating entities on a per storm event.

Task 6.1 Data Collection

As part of each data collection effort renewed outreach programs will be implementing to encourage continued participation in data collection efforts. Salt usage data will be required from each participant in the green certification for renewal of certification. Data to be collected will include salt usage on a tons/mi and pounds/1000 sq. ft. basis. New concentration data will also be collected from DES monitoring sites. This data will be used to refine the default values implemented in task 2.

Significant site parameters identified in task 5 will be collected using GPS/GIS rapid data collection techniques. This data will be presented in GIS Shape file format if appropriate and integrated into the variable database for online access via the GIS web interface. The preliminary proposed map layers are detailed in table 6.

Proposed Map Layers
Chloride Concentrations
Chloride Application Rates
Parking lot areas and attributes
Roads and attributes

Table 6: Proposed Map Layers

<u>Task 7.0 Data Collection 2009 & 2010</u>

During the winter of 2009-2010 data will be collected from participating entities per storm event. Data to be collected will modified from task 6 to reflect the newest information.

<u>Task 8.0 Data Collection 2010 & 2011</u>

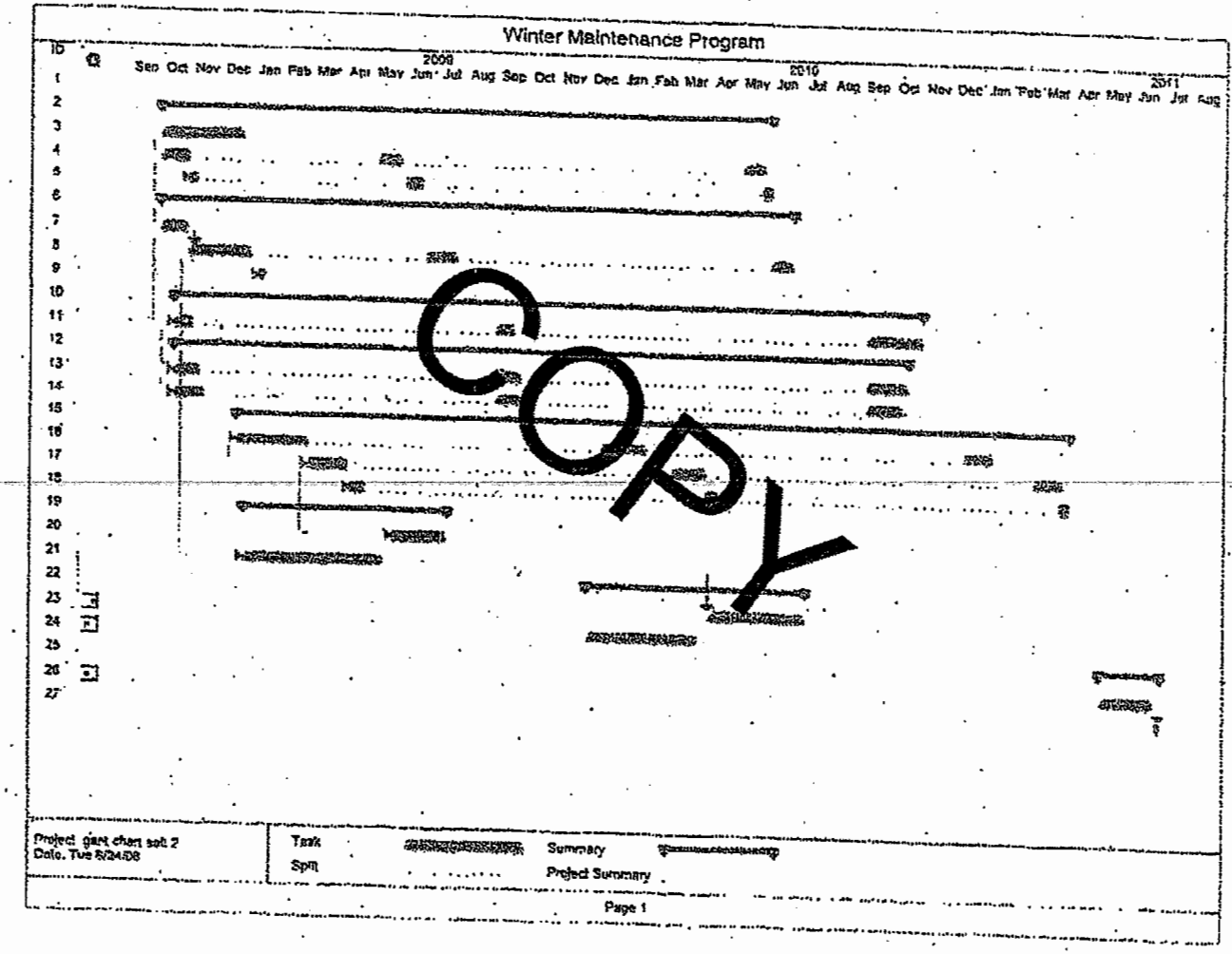
During the winter of 2010-2011 data will be collected from participating entities per storm event. Data to be collected will modified from task 7 to reflect the newest information.

Task 9.0 Usage Trends

Based on historical data and 2 winters of data collection trends will be identified relating salt usage and site parameters as well as training effectiveness.

Task 10.0 Recommended Winter Maintenance Tech Sheet

T^2 in conjunction with NHDES and NHDOT will generate a winter maintenance tech sheet detailing recommended practices for both current use and alternative anti-deicing materials. The tech sheet will include equipment calibration information, application rates, frequencies and best practices. The tech sheet will be distributed through the T^2 list serve, website, and will be made available for NHNES and NHDOT distribution.


Winter Maintenance Program
2008
2009
2010
2011
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug
COPY
Project: gant chart sept 2
Date: Tue 9/24/08
Task
Split
Summary
Project Summary
Page 1

VI) Deliverables

Task 1.0 Web access to Online Data Viewer including layers:

Centerline road
Parking lots
Parcel boundaries
Topography (3D relief & contour lines)
Per event chloride usage by event
Annual chloride usage
National wetlands
Regional & local political boundaries

Task 2.0 Web access to fully functional Online Data Viewer w/ pertinent layers (new data will be added as available), data collection system website, and phone system. All associated software

Task 3.0 Online Data Viewer w/ pertinent layers (new will be added as available) including all course materials used during for training (lesson plans, power points, etc.)

Task 4.0: Significant site and environmental parameter list, data collection management structure, and data collection methods

Task 5.0: Online Data Viewer w/ pertinent layers (new will be added as available)

INTERIM REPORT: Summarizing all of the data collected and analysis performed from beginning of project to end of winter 2009 including: Gross Salt Usage, Usage Trends and Map of Areas of Improvement/Concern.

Task 6.0: Online Data Viewer w/ pertinent layers (new will be added as available)

Task 7.0: Online Data Viewer w/ pertinent layers (new will be added as available). A detailed final report including:

- Summary of data and analysis from 2008-20010
- Gross Salt Usage
- Usage Trends
- Map of Areas of Improvement/concern
- Conclusions

Task 8.0: Final trend report & usage summary including training effectiveness

Task 9.0: Winter Maintenance Tech Sheet drafts and final submittal

VII) **Project Constraints:**

Winter maintenance procedures are basically the same today as when asphalt paving became common practice. Plow contours have changed, their sizes have increased and additional blades have been added to trucks but the simple fact remains -- they push the snow off the roads versus their predecessors compacting the snow on the roads using rollers. The use of an abrasive material, sand, and a melting material, salts, has also been in place for years. These procedures and products are still accepted as being vehicular and pedestrian safe as well as being economically viable; the only significant difference today is the quantity of winter maintenance being performed.

It is only the more recent recognition of the adverse environmental impact induced by this practice that is posing a need for change. Obviously there will be significant resistance to change as these procedures are still viewed as safe and the most economically viable winter maintenance practices. Change will be difficult until other products and procedures are shown to be economically viable and proven in a court of law to be equally effective.

It is imperative to prove, using appropriate variables/parameters and infrastructure design alternatives that improved winter maintenance practices are viable as well as economically effective. The primary goal of this research is to identify the appropriate variables/parameters, implement a sustainable

accounting program, and offer training in environmentally friendly and cost effective maintenance alternatives in a manner that will be accepted and implemented by the public and private sectors. It must be recognized that modifications in land use regulations may be required to effectively implement permanent change.

Annual Budget Summary			
	Labor*	Supplies & Travel**	Total***
First Year	$62,487.50	$29,200.00	$123,710.63
Second Year	$44,718.75	$16,500.00	$82,645.31
Third Year	$45,731.25	$14,000.00	$80,637.19
Total Project Cost			$286,993.13

Labor calculated using $25/hour and fringe=35% eq=(hours)(rate)*1.35
** Supplies & Travel not including overhead
*** Total calculated by using overhead=$35% eq=(Labor)+(Sup. &Tra.)*1.35

Chloride Mitigation Proposed Budget

First Year

Line	Item	Description	Person-hours	Travel	Supplies
	Full Completion				
1	1.1 Historical Analysis				
2		Research/Locate Historical Values	20	$1,000.00	$500.00
3		Data Processing	20		
4		Data Analysis/Post Processing	20		
		GIS Integration	20		
5	1.2 Online Map Viewer				
6		GIS Site Licence (mpower tech.)			$6,000.00
7		Building Queries/Reports	40		
8		Data Entry/Testing	40		
	Partial Completion				
9	2.1 Default Values				
10		Research/Develop default usage model	20		
11		Data Collection	100	$1,000.00	$500.00
12		Post-Processing & Analysis	125		
13	2.2 Data Collection Sys.				
14		Development of Data Collection	100		
15		Programming Data Collection System	120		
16		Data Collection Beta Testing	40		
17		Data Collection Phone Line	20		
18	.0 W.M. Practice Researc				
19		International Academic Literature Research	100	$2,000.00	$100.00
20		International DPW Innovations Search	100	$2,000.00	$200.00
21		Initial NH Winter Maintenance Spec	100		$400.00
22	4.1 Training				
23		Training Development Logistics	90	$500.00	$1,000.00
24		Training Lesson Plans/Course Material	60		$3,000.00
25		Training Sessions	150	$3,000.00	
26	4.2 Green Certificatoin				
		Certification Materials/Specification	40	$1,000.00	$4,000.00
27	5.1 Parameter ID				
28		Parameter Research/Identification	120		
29	5.2 Management Sys.				
30		Parameter Management System Developmer	80		
31	6.0 Data Collection				
32		Initial Data Collection of Selected Variables	325	$2,000.00	$1,000.00
		First Year Totals	1859	$12,600.00	$15,700.00

Second Year					
Line	Item	Description	Person-hours	Travel	Supplies
	Full Completion				
33	2.2 Data Collection Sys.				
34		efinement of Data Collection Sys. & Variable	175		
35	2.1 Default Values				
36		Refinement of Usage Default Values	150		
37	6.0 Data Collection				
38		Data Collection	350	2000	1000
	Partial Completion				
39	4.0 Training & Certificatio				
40		Training Development/Logistics	80	500	1000
41		Training Lessons Plans/Course Material	80		2000
42		Training Sessions	150	3000	
43	4.2 Green Certification				
44		Certification Materials/Specification	50	1000	4000
45	5.0 Parameter ID/Mgmt.				
46		Parameter Refinement	90		
47	7.0 Data Collection				
48		Parameter Collection	200	2000	
		Second Year Total	1325	$8,500.00	$8,000.00

Third Year					
Line	Item	Description	Person-hours	Travel	Supplies
	Full Completion				
49	4.0 Training & Certificatio	Final Training & Certification Liability &			
50		Training Development/Logistics	60	2000	1000
51		Training Lessons Plans/Course Material	40		
52		Training Sessions	150	3000	
53	4.2 Green Certification				
		Certification Materials/Specification	50	1000	3000
	5.0 Parameter ID/Mgmt.				
		Final Parameter Modifications	80		
	8.0 Data Collection	Data Collection of Final Variables	325		
	9.0 Data Usage Trends				
		Post Processing & Analysis of All Data	250		
		Formating & Integration of all data into GIS	100		
	10.0 Tech Sheet Develop				
		Development, Printing, Publishing & Review	300	3000	1000
		Third Year Total	1355	$9,000.00	$5,000.00

Project Director: Start Date: End Date:

Sponsor Budget				Bud. Period 1	Bud. Period 2	Bud. Period 3	Total
A. Faculty	Base	Mos or %					
PI	0	0.00	Acad		0	0	0
		0.00	Summer	12,500	13,000	13,520	39,020
		0.00	Cal		0	0	0
Co-PI	0	0.00	Acad	0	0	0	0
		0.00	Summer	0	0	0	0
		0.00	Cal		0	0	0
Co-PI	0	0.00	Acad	0	0	0	0
		0.00	Summer	0	0	0	0
		0.00	Cal	0	0	0	0
Other Sr Personnel	0	0.00	Acad	0	0	0	0
		0.00	Summer	0	0	0	0
		0.00	Cal	0	0	0	0
Total Faculty				12,500	13,000	13,520	39,020
B. Other Personnel		Fringes					
Grad Students AY		0.0%	613NZ0	35,500	29,900	29,810	95,210
Grad Students SU (Partial Fringe)		8.4%	613NZ0	0	0	0	0
Subtotal Grad Students				35,500	29,900	29,810	95,210
Post Doctoral Assoc		28.2%	611Q90	0	0	0	0
Pat Staff		40.8%	615NZ0	0		0	0
OS Staff		40.8%	617NZ0	0	0	0	0
Labor (incl student)		8.4%	61SNZ0			0	0
Labor (Partial Fringe exempt)		0.0%	61SNZ0	1,315	1,315	1,311	3,941
Total Salaries & Wages (A+B)				49,315	44,215	44,641	138,171
	39,020	8.4%	65YF10	1,050	1,131	1,176	3,357
C. Fringe Benefits	0	40.8%	65YF10	0	0	0	0
	0	28.2%	65YF10	0	0	0	0
Subtotal				1,050	1,131	1,176	3,357
Total Salaries, Wages & FB (A+B+C)				50,365	45,346	45,817	141,528
D. Tuition			7[illegible]100	10,589	11,054	11,802	33,445
E. Equipment			7[illegible]300	0	0	0	0
F. Travel			71[illegible]	12,500	8,500	9,000	30,000
G. Other Direct Costs							
Materials & Supplies			7112[illegible]	16,700	8,000	5,000	29,700
Publications Cost			7112[illegible]	0	0	0	0
Consultants			7[illegible]000	0	0	0	0
Computer Services			711200	0	0	0	0
Subcontracts			730001	0	0	0	0
Service Providers			717200	0	0	0	0
Participant Support	Stipend		722200			0	0
Other						0	0
Other					0	0	0
Total Direct Costs				90,154	72,900	71,619	234,673
TDC				79,565	61,846	59,815	201,227
H. Facilities & Administrative		0.00	760300	20,687	16,080	15,552	52,319
Total Direct + F&A				110,841	88,980	87,171	286,992
I. Cost Sharing (if any)				0	0	0	0
J. Program Income (if any)				0	0	0	0
Total Project Costs				110,841	88,980	87,171	286,992

F&A Rate	26.00%	26.00%	26.00%	Please note these rates s
Full Fringe Rate	40.80%	43.80%	43.80%	change based on annual
FICA Rate	8.40%	8.70%	8.70%	Federal Government as
Post Doc Rate	28.20%	28.50%	28.50%	proposal. Check with y
Inflation Factor	104.50%	104.50%	104.50%	updates before finalizi

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
Budget Estimate

Project Director: Start Date: End Date:

Sponsor Budget				Bud. Period 1	Bud. Period 2	Bud. Period 3	Total
A. Faculty	Base	Mos or %					
PI	0	0.00	Acad		0	0	0
		0.00	Summer	12,500	13,000	13,520	39,020
		0.00	Cal		0	0	0
Co-PI	0	0.00	Acad	0	0	0	0
		0.00	Summer	0	0	0	0
		0.00	Cal		0	0	0
Co-PI	0	0.00	Acad	0	0	0	0
		0.00	Summer	0	0	0	0
		0.00	Cal	0	0	0	0
Other Sr Personnel	0	0.00	Acad	0	0	0	0
		0.00	Summer	0	0	0	0
		0.00	Cal	0	0	0	0
Total Faculty				12,500	13,000	13,520	39,020
B. Other Personnel		Fringes					
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Subtotal Grad Students				35,500	29,900	29,810	95,210
Post Doctoral Assoc		28.2%	[illegible]	0	0	0	0
Pat Staff		[illegible]	613[illegible]	0		0	0
OS Staff		[illegible]	7NZ0	0	0	0	0
Labor (incl student)		8.4%	61[illegible]NZ0			0	0
Labor (Partial Fringe exempt)		0.0%	61[illegible]Z0	1,315	1,315	1,311	3,941
Total Salaries & Wages (A+B)				49,315	44,215	44,641	138,171
	39,020	[illegible]%	65YF10	1,050	1,131	1,176	3,357
C. Fringe Benefits	0	[illegible]%	65YF10	0	0	0	0
	0	[illegible]%	65YF10	0	0	0	0
Subtotal				1,050	1,131	1,176	3,357
Total Salaries, Wages & FB (A+B+C)				50,365	45,346	45,817	141,528
D. Tuition			721100	10,589	11,054	11,802	33,445
E. Equipment			740000	0	0	0	0
F. Travel			710000	12,500	8,500	9,000	30,000
G. Other Direct Costs							
Materials & Supplies			711200	16,700	8,000	5,000	29,700
Publications Cost			711200	0	0	0	0
Consultants			717000	0	0	0	0
Computer Services			711200	0	0	0	0
Subcontracts			730001	0	0	0	0
Service Providers			717200	0	0	0	0
Participant Support	Stipend		722200			0	0
Other						0	0
Other					0	0	0
Total Direct Costs				90,154	72,900	71,619	234,673
	TDC			79,565	61,846	59,815	201,227
H. Facilities & Administrative		0.00	760300	20,687	16,080	15,552	52,319
Total Direct + F&A				110,841	88,980	87,171	286,992
I. Cost Sharing (if any)				0	0	0	0
J. Program Income (if any)				0	0	0	0
Total Project Costs				110,841	88,980	87,171	286,992

The State of New Hampshire

DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner

October 19, 2011

His Excellency, Governor John H. Lynch
and The Honorable Council
State House
Concord, NH 03301

APPROVED G & C
DATE 11/9/11
ITEM # 81

WD - WMB - 10 - 2011 - 05
I93 - M - 09 - 01

REQUESTED ACTION

Authorize the Department of Environmental Services to amend a Cooperative Project Agreement (PO# 102576) with the University of New Hampshire – Sponsored Programs Administration (VC #177867-B046), Durham, NH, for the I-93 Chloride Mitigation Project, by extending the project completion date to June 30, 2013 from December 31, 2011. The original agreement was approved by the Governor and Council on May 6, 2009, #72, 80% Federal, 20% Highway funds. No additional funding is requested as part of this time extension amendment.

EXPLANATION

This agreement is due to expire on December 31, 2011. We are requesting approval of this amendment to the agreement in order to provide the University of New Hampshire additional time to complete the agreed upon scope of services. A copy of the original agreement is included as Attachment A.

The Department of Environmental Services (DES) and the Department of Transportation (DOT) are working cooperatively to address chloride loading in four impaired watersheds in the southern Interstate 93 corridor between Salem and Manchester. DES and DOT have developed a Memorandum of Agreement (approved by Governor and Council on June 21, 2006, Item 86, amended by Governor and Council on May 6, 2009, Item 65) outlining the roles and responsibilities for completing water quality studies to determine the total maximum daily load (TMDL) of chlorides for the affected water bodies and for implementing salt reduction programs. The TMDL for a water body is the maximum chloride load that the water body can assimilate without violating water quality standards.

The purpose of this Cooperative Project Agreement is to coordinate and fund the University's work in support of the overall I-93 Chloride study. The University will develop best management practices for road salt application and associated training and certification programs for public and private salt applicators. Approximately forty percent of the work has been completed to date. This extension is necessary due to administrative delays in obtaining "notice to proceed" from the Federal Highway Administration at the beginning of the project. To date of the original $286,992 agreement only $84,238 has been spent.

In the event that federal or highway 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.

Thomas S. Burack, Commissioner

DES Web site: www.des.nh.gov
P.O. Box 95, 29 Hazen Drive, Concord, New Hampshire 03302-0095
Telephone: (603) 271-3503 • Fax: (603) 271-2867 • TDD Access: Relay NH 1-800-735-2964

AMENDMENT #1 to
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

The Cooperative Project Agreement, approved by the State of New Hampshire Governor and Executive Council on **05/06/2011**, item # **72**, for the Project titled **"I-93 Chloride Mitigation Project,"** Campus Project Director, **Charles Goodspeed II**, is and all subsequent properly approved amendments are hereby modified by mutual consent of both parties for the reason(s) described below:

Purpose of Amendment (Choose all applicable items):

☒ Extend the Project Agreement and Project Period end date, at no additional cost to the State.

☐ Provide additional funding from the State for expansion of the Scope of Work under the Cooperative Project Agreement.

☐ Other:

Therefore, the Cooperative Project Agreement is and/or its subsequent properly approved amendments are amended as follows (Complete only the applicable items):

Article B. is revised to replace the Project End Date of **12/31/2011** with the revised Project End Date of **6/30/2013**, and Exhibit A, article B is revised to replace the Project Period of **Upon Governor and Council approval – 12/31/2012** with **Upon Governor and Council approval – 6/30/2013**.

All other terms and conditions of the Cooperative Project Agreement remain unchanged.

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

This Amendment and all obligations of the parties hereunder shall become effective on the date the Governor and Executive Council of the State of New Hampshire or other authorized officials approve this Amendment to the Cooperative Project Agreement.

IN WITNESS WHEREOF, the following parties agree to this **Amendment #1** to the Cooperative Project Agreement.

By An Authorized Official of:
University of New Hampshire
Name: Karen M. Jensen, Manager
Title: Sponsored Programs Administration
Signature and Date: 9/29/11

By An Authorized Official of:
NH Dept. of Environmental Services
Name: Thomas S. Burack
Title: Commissioner
Signature and Date: 10/21/2011

By An Authorized Official of: the New Hampshire Office of the Attorney General
Name:
Title: Assistant A.G.
Signature and Date: 10-24-11

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

KJ
9/29/11