

**Select Board Meeting**  
**Monday, June 18<sup>th</sup>, 2018, 6:50 p.m.**  
**Nowak Room, Town Office Building**  
**10 Front Street, Exeter NH**

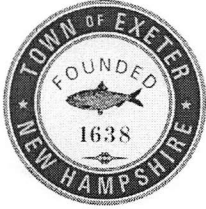
1. Call Meeting to Order
2. Board Interview – Historic District Commission
3. Bid Award – Engine 4 Replacement
4. Public Comment
5. Minutes & Proclamations
  - a. Proclamations/Recognitions
6. Approval of Minutes
  - a. June 4<sup>th</sup>, 2018
7. Appointments – Zoning Board of Adjustment
8. Discussion/Action Items
  - a. WW Lagoon Sewer Odor Update
  - b. WWTF Contract Amendment: Long Term Nitrogen Control Plan
  - c. SRF Loans: Asset Management Plans for Wastewater and Stormwater
  - d. Lincoln Street Project Phase 2 – Construction Administration Contract
9. Regular Business
  - a. Tax, Water/Sewer Abatements & Exemptions
  - b. Permits & Approvals
  - c. Town Manager’s Report
  - d. Select Board Committee Reports
  - e. Correspondence
10. Review Board Calendar
11. Non-Public Session
12. Adjournment

Julie Gilman, Chair  
Select Board

Posted: 6/15/18 Town Office, Town Website

Persons may request an accommodation for a disabling condition in order to attend this meeting. It is asked that such requests be made with 72 hours notice. If you do not make such a request, you may do so with the Town Manager prior to the start of the meeting. No requests will be considered once the meeting has begun.

AGENDA SUBJECT TO CHANGE



# Town of Exeter

Town Manager's Office  
10 Front Street, Exeter, NH 03833

## Statement of Interest Boards and Committee Membership

Committee Selection: Historic Commission

New

Re-Appointment

Regular

Alternate

Name: Linda P. Allen Email: lallen09@comcast.net

Address: 41 Front St. Unit 1 Phone: 603-686-3855

Registered Voter: Yes  No

Statement of Interest/experience/background/qualification, etc. (resume can be attached).

I live in an historic home and am interested in what the historic commission is involved in and doing. I am a retired math teacher. I've lived here for about 15 years and would like to contribute to the community.

If this is re-appointment to a position, please list all training sessions you have attended relative to your appointed position.

\_\_\_\_\_  
\_\_\_\_\_


I understand that: 1. this application will be presented to the Exeter Selectboard only for the position specified above and not for subsequent vacancies on the same board; 2. The Town Manager and Selectboard may nominate someone who has not filed a similar application; 3. this application will be available for public inspection.

- After submitting this application for appointment to the Town Manager:
- The application will be reviewed and you will be scheduled for an interview with the Selectmen
  - Following the interview the Board will vote on your potential appointment at the next regular meeting
  - If appointed, you will receive a letter from the Town Manager and will be required to complete paperwork with the Town Clerk prior to the start of your service on the committee or board.

I certify that I am 18 years of age or older:

Signature: Linda P. Allen Date: 06/06/18

# Memo

**To:** Select Board, Russ Dean, Town Manager  
**From:** Brian Comeau, Fire Chief   
**Date:** June 15, 2018  
**Re:** Fire Engine Recommendation

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After careful review and consideration, I would like to recommend purchasing our new Fire Engine from Greenwood Fire Apparatus in No. Attleboro MA. Although, all engines bids were competitive, Greenwoods bid was not only low bid, but represents the best value for our money. We currently have two (2) engines, Engine 2 and Engine 5 and Greenwood's warranty and service record has been excellent.

Greenwood Fire Apparatus's original price was \$523,678, after trade in of \$15000.00 the bid price was \$508,678.

After review of the bids and comparison of all three submissions for options, the Greenwood price was reduced to a final price of \$500,214. If the town chooses to take the pre-buy option the price could be reduced by an additional \$14,511, reducing the purchase price to \$489,916.00.

To summarize I would like to recommend Greenwood Fire Apparatus at \$500,214.

## Draft Minutes

### Select Board

6/4/18

#### 1. Call Meeting to Order

Present at this meeting were Anne Surman, Kathy Corson, Julie Gilman, Molly Cowan, Don Clement, and Town Manager Russ Dean. The meeting was called to order at 6:30PM by Ms. Gilman. Selectwoman Corson motioned to move into non public session under RSA 91A 3 2a for compensation. Selectwoman Surman seconded. Roll call vote: Surman aye, Gilman aye, Clement aye, Cowan aye. The Board then entered into a non-public session. The Board emerged from non public session.

2. Board Interviews – Zoning Board of Adjustment. Esther Olson was interviewed by the Select Board for a position on the Zoning Board of Adjustment.

The Board then reconvened in the Nowak Room for the remainder of the meeting.

#### 3. Public Comment

Darius Thompson spoke about the materials for the holiday parade, as he is the person responsible for those materials. He wanted to make sure that people knew that the Memorial Day and Holiday parades are two separate events. He is bringing this up because there were some materials used for the Memorial Day parade that were taken from the Holiday parade storage without him being contacted.

Will and Eva, two students from the Student Activists Against Gun Violence, asked about their applications for the use of the town hall. They asked for a fee waiver for the AV and filming charges, and requested access to the upstairs bathroom and live streaming of the event. Ms. Gilman said they would discuss it at permits & approvals, and also would come back to them about the bathroom access.

Megan Eddy asked about the smell coming from the wastewater treatment plant. Mr. Dean said that the smell is coming from the sludge transfer done at the lagoon, and they are trying to aerate and mix the sludge so that the smell is reduced. Mr. Dean said that he would have the health officer check for any health concerns and look into it more. Mr. Clement asked if there is an estimate from the engineers about when it would be completed. Mr. Dean said that there was not as of yet, and that they are still trying to minimize the odor with alternatives.

Mark Damsell thanked the Lions Club and other volunteers for staining the benches in Swasey Parkway over the weekend.

#### 4. Minutes & Proclamations

##### a. Proclamations/Recognitions

There were no proclamations at this meeting.

#### 5. Approval of Minutes

##### a. April 23rd, 2018

**MOTION:** Mr. Clement moved to accept the April 23<sup>rd</sup>, 2018 minutes as submitted. Ms. Corson seconded the motion, and it passed unanimously.

b. May 21st, 2018

**MOTION:** Ms. Corson moved to accept the May 21<sup>st</sup>, 2018 minutes as submitted. Ms. Surman seconded the motion, and it passed unanimously.

## 6. Appointments

There were no appointments at this meeting.

## 7. Discussion/Action Items

### a. 12 Front Street Request – Parking Access

John Lyons, the attorney representing the property owner, spoke about this request. Anne Bushnell, the property owner; Cory Belvin, the project engineer; and Betty LaBranche who is Ms. Bushnell's real estate agent. They had approached the ZBA for a density and setback variances, which were both granted. The HDC gave their approval to take down some of the L-shaped land in the back and replace it with another structure. Now, they are coming before the Select Board for the access issue. They will still need to go before the planning board to obtain final approval. The project has not changed since they first presented it to the ZBA.

The new structure will not be visible from the front to maintain the historic feel of the location, while maximizing space. In the back of the property is a gate with a historic access to the back parking lot. With the building, it will not be usable for access. They are asking for side access into the town parking, which would be one-way off of Front Street. Mr. Lyons emphasized that the new development meets all the goals of the master plan and is an in-fill development, adding additional affordable residential units. The location allows walking and biking, and is a good opportunity to increase the ability of people to live downtown.

Mr. Clement asked if there is a binding agreement for the rear-access gate. Mr. Lyons said that there is not, there is no definitive easement. Mr. Belvin passed around an aerial photo of the development and pointed out the back parking lot. They began working on site concepts two years prior, and met with Mr. Sharples and Mr. Eastman to discuss moving the access point to the side. The site was re-planned according to their recommendations. The current plan is for 9 units in the rear, providing a 20-foot wide access for emergency vehicles and having a single-entry point from Front Street. This will reduce the number of vehicles accessing the location from Front Street. This development would help to remove housing barriers for those with lower income. There would be two lost parking stalls located on the side, but there will be 14 additional on-site parking stalls.

Ms. Corson asked why the access is in-and-out, as opposed to just out. She also asked about why the emergency access needs to be 20-feet. Mr. Belvin said that it is due to town regulation. Mr. Lyons said that they are looking to get a sense of consideration from the Select Board before they go to the Planning Board. Ms. Corson emphasized that the 20-feet plays a big role because it can make the difference between one or two lost parking spaces. She also brought up that if there is a parking garage ever planned for that location, it would be undesirable. In order to prevent people from using that access point as an entrance, they would need signs. Mr. Lyons said that there would also be a

condominium association for the project which would enforce its rules and regulations. Mr. Clement said that they also should draft an official agreement. Mr. Lyons indicated their willingness to work with the town about any project concerns. Mr. Dean said that the access from the perspective of the flow of cars going onto Front Street is desirable, so that less traffic occurs on Front Street.

Ms. Cowan asked them to explain what infill development was, and also to clarify what affordable housing means to this project. Mr. Belvin said that this affordable housing does not meet the RSA requirements, but they are reasonably priced single-bedroom units. They are not luxury units. Infill development describes the use of empty spaces that already exists as opposed to developing new green space. Mr. Clement also pointed out that the access route would be a private way. Mr. Sharples said that access aisle requirements depend on a lot of variables. He asked the board if they were concerned about the parking spaces or the traffic flow, because he believes that if the access is one-way, they would still lose two spaces.

The board was in favor of the proposal as long as their concerns were addressed to the planning board.

#### b. Property Use Policy/Special Events Form Discussion

Ms. Gilman said that there were some questions about town liability and an equitable policy for all. The board would like to update these policies because they felt they were outdated. She addressed the current tension between the Exeter Arts Committee and some members of the public. She pointed out that there is no requirement for public comment, and that if there are non-residents wishing to speak they must ask permission. The Right-to-Know law does not require an audio recording, but the town is likely to move forward with that. She said that she felt as though the arts committee deserves respect, and that people should provide constructive criticism.

Mr. Clement agreed with Ms. Gilman that it was perfectly okay to disagree with the arts committee or any other town board, but it needs to be constructive and not personal in nature. He also emphasized the importance of the volunteer boards and committees.

The board then went over the revised property use policy and special events form, which have been added to. Ms. Gilman proposed a checklist for any application coming in, so that nothing is left out and that all permissions can be considered at once. Mr. Dean said that the current policy dated back to 2004. They removed sections in the new draft for loaning town equipment, solicitation, and the signboard. There are multiple permitting bodies in town, and all of these policies are supplementary to the venue the event occurs at.

In section 5, they listed the order of preference for users. The new policy also clearly defines what a "town sponsored function" or "civic event" is. There are also added provisions on accessibility and scheduling. They have also created a broader event application form that all locations are able to use, along with more detailed supplementary information. The event application also lists other documents and forms that must be submitted with it, if applicable.

Ms. Gilman expressed her desire to slim the application down so that it isn't overwhelming, especially for smaller events that only occur at the town hall and don't require any specialized permitting or setup. She also said she would like more discussion about alcohol use in town buildings. The board agreed, and also would like to close any inconsistencies between this policy and any specific

location use policies such as the library trustees or arts committee. Mr. Clement said he would like to schedule a work session to go over the new policy. Ms. Corson said it would be a good idea to include some kind of policy for the upstairs bathroom. Also, there should be a different fee schedule considered for nonprofit organizations not centered in Exeter.

Dan Chartrand said that he believed that there was bias and exclusivity in some of the town boards, like the Swasey Parkway trustees and Exeter Arts Committee, towards TEAM Exeter. He said that they want more access to public spaces. He suggested that the Board of Selectmen start acting as the permitting body for the art gallery. Ms. Gilman said that she fears that having that would make permitting more difficult.

Derek Haddad said that he attended a recent arts committee meeting and did not feel comfortable speaking during their public comment. His concern is that members of the public will not want to attend meetings if they are not comfortable speaking. He hopes that every town meeting will be recorded for viewing. He also asked for clarification about what the selectboard representative's role is at other meetings. Mr. Clement said that selectboard representatives can be voting members of the committee, depending on that committee's charter. Mr. Haddad asked if there could be more information on how meetings function.

Jim Faber said that there was a perception that the arts committee meeting was not responsive to the public. He said that nametags and public recording would have been good.

Scott Ruffner said that he had served on the arts committee for three years before he was not reappointed. He feels as though the people without power are voicing their frustrations and are being stifled. He pointed out the delay in getting applications and permitting through the process. He also said that the selectboard representative's role needs to be clearer and less involved.

Sharon Harris said that she has witnessed the bias in the town, and has recently become more involved in town meetings. She is looking to the select board to help take responsibility for this issue, and asked the board members to step in and handle it.

Bruce Jones said that he thought that televising meetings would be advantageous for all involved. He felt that public input was shut down at the previous arts committee meeting. He sent the committee an email about these issues and received a response. He did not feel as though members of the public were bullying or harassing the committee members.

Ms. Cowan emphasized that participation by the public in civic life is important. She believes that any permitting body and any committee with a budget should be televised. Mr. Clement said that the housing authority, the energy committee, and the human services committee are all not televised. Ms. Corson also asked what kind of personnel requirement that would entail.

Paul Royal agreed with Ms. Cowan that the current rhetoric discourages public participation in the town. He said it is important to discuss things in a positive manner. He also suggested that televising meetings would help this, because people would hold themselves to higher standards. Amy McLaughlin said that while televising meetings would help, she wanted the leadership in the town to have higher standards for how town bodies treat members of the public. Chris Soutter said that the board should be careful in creating rules that cover everybody, because it might be more appropriate to be specific.

**MOTION:** Ms. Corson moved to record the next arts committee meeting in the Nowak Room. Ms. Cowan seconded the motion, and it passed 3-2-0, with Ms. Surman and Mr. Clement voting nay.

The board decided to schedule a work session for 6/25/18 at 5:30PM to further discuss the policy.

c. Human Services Funding Committee

Mr. Clement had asked for an update on the human services funding committee. There is also a new charge for the committee, and a description of how organizations are chosen to be funded. Mr. Clement also mentioned the human services funding policy that he would like to update. Each year the select board votes on what organizations the funding will go to, as proposed by the human services funding committee. Ms. Gilman said it would be good to update the policy regarding the type of organizations funded, and how the procedure is followed.

Amy McLaughlin said that the funding distributed from 2017 is broken up into four quarters. If an agency received \$1,000, for example, they would receive \$250 each quarter. Ms. McLaughlin said that they are hoping to formalize the process to make it more consistent. The application form from 2017 was repurposed and made more consistent for 2018. They also ask organizations for a narrative of their overview and impact. Chris Soutter asked if the board could formalize the human services funding committee from an ad-hoc to a standing committee.

**MOTION:** Mr. Clement moved to adopt the human services funding committee charge as presented. Ms. Corson seconded the motion, and it passed unanimously.

d. Swasey Parkway Turnaround Update

The board received an updated drawing showing the traffic pattern, and an explanation of the quoted price from Wright-Pierce. The cost of the turnaround would be less if it was completed as a separate project outside of the current Swasey Parkway updates. Mr. Clement thinks the turnaround is a good idea, but doesn't think that it necessarily needs to be done this year.

Mark Damsell, a current Swasey trustee, said that he shared many of the board's concerns about the potential turnaround. He said that the turnaround would be a good asset for the parking situation in the town. He suggested keeping more green space and lessening the pavement. The turnaround would only be for personal vehicles, as well.

Mr. Sharples explained to the board how they could reduce the size of the turnaround and increase the amount of greenspace. He also said that it was important to make sure that larger vehicles could turnaround, and that the traffic flow makes sense.

**MOTION:** Mr. Clement moved to complete the turnaround as a separate project, and to try to find ways to retain greenspace and shrink the turnaround. Ms. Cowan seconded the motion, and it passed unanimously.

8. Regular Business

a. Tax, Water/Sewer Abatements & Exemptions



**MOTION:** Ms. Cowan moved to deny the veteran credit for map 61, lot 13. Mr. Clement seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the veteran credit for map 68, lot 6, unit 211 for \$500. Mr. Clement seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the elderly exemption for \$152,251 for: map 29, lot 8; and map 64, lot 65. Ms. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the elderly exemption for \$236,251 for: map 94, lot 21. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the disability exemption for \$125,000 for: map 95, lot 64, unit 143. Ms. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the abatement for \$127.74 for: map 110, lot 2, unit 80. Ms. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the abatement for \$163.30 for: map 110, lot 2, unit 80. Ms. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the abatement for \$447.65 for: map 104, lot 1, unit 1. Ms. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the abatement for \$412.63 for: map 104, lot 1, unit 1. Ms. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the abatement for \$266.15 for: map 104, lot 1, unit 1. Ms. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the abatement for \$279.06 for: map 104, lot 1, unit 1. Ms. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the abatement for \$219.52 for: map 104, lot 1, unit 1. Ms. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the jeopardy tax for \$337.30 for: map 87, lot 14, unit 14B. Mr. / Clement seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the jeopardy tax for \$251.64 for: map 87, lot 14, unit 2A. Ms. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the jeopardy tax for \$224.87 for: map 87, lot 14, unit 3B. Ms. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the jeopardy tax for \$159.28 for: map 87, lot 8, unit C21. Ms. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the yield tax for \$198.94 for: map 47, lot 8. Ms. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the land use change tax for \$15,000 for: map 113, lot 5. Ms. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the abatement for \$667.23 for: map 13, lot 6. Ms. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the jeopardy warrant for \$165.97 for: map 87, lot 14, unit 11A. Ms. Corson seconded the motion, and it passed unanimously.

#### b. Permits & Approvals

**MOTION:** Ms. Corson moved to approve the use of the town hall by James Duprie of the Pine Street Players for their youth theater production from 4/28/19-5/13/19. Ms. Cowan seconded the motion, and it passed unanimously.

**MOTION:** Ms. Corson moved to approve the use of the town hall and bandstand by Scott Ruffner of TEAM Exeter for the Exeter Arts and Music Festival from 5/16/19-5/19/19. Ms. Cowan seconded the motion, and it passed unanimously.

**MOTION:** Ms. Cowan moved to approve the use of the town hall by Enna Grazier of Exeter Rises for a public forum on 6/22/18 from 5:00-9:00PM Ms. Corson seconded the motion, and it passed unanimously.

**MOTION:** Ms. Corson moved to approve the use of the town hall by Enna Grazier of Exeter Rises for a public forum on 7/20/18 from 6:00-8:00PM Ms. Cowan seconded the motion, and it passed unanimously.

**MOTION:** Ms. Corson moved to approve the use of the town hall by Enna Grazier of Exeter Rises for a public forum on 8/17/18 from 6:00-8:00PM Ms. Cowan seconded the motion, and it passed unanimously.

**MOTION:** Mr. Clement moved to approve a fee waiver for Exeter Rises for their public forums on 6/22/18, 7/20/18, and 8/17/18. Ms. Corson seconded the motion, and it passed unanimously.

The board discussed the use of the public bathroom upstairs during any town hall events. Ms. Cowan suggested having a monitor from the group holding the event to watch the second floor. The board pointed out that the lights and cleanliness of the bathroom are important.

**MOTION:** Ms. Surman moved to allow access to the bathrooms in the town hall under the condition that there is a monitor to keep conditions, and to turn off the lights before leaving. Ms. Corson seconded the motion, and it passed 4-1-0 with Mr. Clement voting nay.

**MOTION:** Ms. Corson moved to table a request from the YMCA for a blue sign at the intersection of Front St and Linden St. Mr. Clement seconded the motion, and it passed unanimously.

**MOTION:** Ms. Corson moved to waive the charged interest for \$404.26 to the Town of Hampton. Ms. Cowan seconded the motion, and it passed unanimously.

#### c. Town Manager's Report

Mr. Dean reported that the Court Street Bridge Project had been completed. There is a Cooper hawk in a tree at the Winter Street Cemetery, so they need to wait until the fall to complete that project. He also expressed his condolences for the passing of Cleo Castonguay.

d. Select Board Committee Reports

Mr. Clement said that he attended the Lincoln Street project meeting, and said that some individuals on Tremont Street were concerned about drainage. He asked Mr. Dean to follow up on that issue.

e. Correspondence

There are multiple letters concerning the Exeter arts committee making recommendations and offering support as well. There was also a flyer for some other arts committee events, including a magic act and a 70's disco night. The Municipal Bond Bank also sent the board details about bonding.

9. Adjournment

**MOTION:** Ms. Gilman moved to adjourn the meeting at 10:30PM. Ms. Surman seconded the motion, and it passed unanimously.

Respectfully submitted by recording secretary Samantha Cave.

**Committee Appointments**

**June 18<sup>th</sup>, 2018**

**Candidates**

**Esther Olson Murphy, Alternate Member, Term to expire 4/30/20.**

**NOTE:** There is another term available, alternate member, term to expire 4/30/21.

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TO:	Jennifer Perry, Matt Berube, Steve Dalton – Town of Exeter	DATE:	June 15, 2018
FROM:	Ed Leonard, Andy Morrill	PROJECT NO.:	12833C
SUBJECT:	WWTF Odor Situation Update		

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Aerated lagoon wastewater treatment facilities often have a “spring turnover”, related to water temperature, which often results in odor generation. In Exeter, this condition has historically resulted in limited odor complaints for 2 to 4 weeks, typically starting in late April. This year, the odors started in late April but persisted as odors intensified into May. The Town began putting additional aerators on-line in early to mid-May. Once the Town realized that this was not a “typical” spring turnover, they reached out to Wright-Pierce (WP) for assistance. WP retained Bowker & Associates (Bowker), a firm which specializes in odor assessment, characterization and abatement, to assist in this matter. WP and Bowker conducted baseline sampling, assessed the situation and provided advice. An initial meeting was held on June 4 with the Town, NHDES, Bowker and WP. Several initial strategies and a field sampling effort were developed during that initial meeting. Field sampling was conducted on June 7. Aerated Lagoon Cell 1 was found to be strongly anaerobic (i.e., very low dissolved oxygen (DO) levels and very low oxidation-reduction potential (ORP) levels) and was producing odorous hydrogen sulfide gas. The anaerobic conditions, which were responsible for the on-site and off-site odors, were related to a combination of the planned transfer of sludge from Lagoon 3 to Lagoon 1 and inadequate available aeration capacity. The principal odor sources were determined to be the Lagoon Cell 1 water surface and the two effluent structures located at the north end of Lagoon Cell 1. A memorandum summarizing that sampling effort is attached.

Since the Town requested assistance from Wright-Pierce, the following significant remedial measures have been implemented by the Town and/or WP/Bowker to restore aerobic conditions to Lagoon Cell 1:

- Raised the water level in Lagoon Cell 1 to the maximum design elevation in order to provide as much water cover as possible over the sludge surface.
- Deployed 5 additional mechanical surface aerators to substantially increase the oxygen transfer capacity.
- Ordered parts sufficient to deploy 1 to 3 additional mechanical surface aerators if needed based on aeration capacity and as staff are available to assemble, install and deploy.
- Deployed 2 surface mixers in an “odor cap” configuration.
- Deployed a recirculation system to pump treated and disinfected wastewater from the Chlorine Contact Tank to Lagoon Cell 1.
- Installed covers on the grating surface of several concrete structures to retain the odor emissions for the wastewater conveyance piping.

Memo: WWTF Odor Situation Update

June 15, 2018

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- Installed a temporary sodium hypochlorite chemical injection system to oxidize liquid phase sulfides in the influent wastewater and in Lagoon Cell 1.
- Developed and implemented a daily monitoring plan in order to obtain/record data suitable for decision making purposes.
- Identified a New Hampshire community that may be able to loan the Town some floating aerators.
- Secured proposals for the Town to rent or buy additional aerators, if necessary, and to implement temporary supplemental chemical feed systems (BIOXIDE), if necessary.

At current flows, the liquid detention time in Lagoon Cell 1 is normally approximately 20 days. With the introduction of the recirculation system described above, this detention time was decreased to approximately 10 days. In situations like this, it would typically take 1 to 2 detention times (i.e., 10 to 20 days with the recirculation system operating) to see significant improvement.

As a result of the above remedial measures, there have been significant measurable improvements in Lagoon Cell 1. Between June 11 and June 14, Lagoon Cell 1 achieved several consecutive days of positive ORP values, increasing dissolved oxygen values and non-detect hydrogen sulfide concentrations (i.e., less than 0.1ppm). On June 14, Lagoon Cell 1 dropped back into slightly negative ORP values. Between June 11 and June 14, on-site odors has returned to “fairly normal conditions”. Public Works has not received any public odor complaints since Monday June 11.

We expect that this situation will continue to improve, as long as the current amount of aeration is maintained or increased. It is very important that the Town should continue to install the additional mechanical surface aerators, as planned, and operate them, if necessary, to restore DO levels at or above 2 mg/l. While some day-to-day variation is expected, if the improvement trend stops and odors increase, the Town should implement the temporary supplemental chemical feed system. The daily monitoring program should be maintained through mid-July in order to confirm that stable conditions are achieved/maintained in all three lagoons. We will continue to review the daily data with the Town.

**BOWKER & ASSOCIATES, INC**  
**CONSULTING ENGINEERS**

21 Summerfield Lane  
Scarborough, Maine 04074

Office (207) 874-8077

[www.bowkerandassoc.com](http://www.bowkerandassoc.com)

FAX (207) 874-8022

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**MEMORANDUM**

Subject: Results of Baseline Odor Sampling at Exeter, NH Wastewater Lagoons  
From: Robert P.G. Bowker  
To: Ed Leonard  
Andy Morrill  
Date: June 13, 2018

**INTRODUCTION**

The Town of Exeter, NH is experiencing problems with odor emissions from its wastewater treatment system, which consists of an aerated grit chamber, a 3-cell aerated lagoon system, and disinfection facilities. Apparently, the transfer of solids from Cell No.3 in 2017, in combination with unavailable aeration capacity to meet the additional oxygen demand, caused a loss of dissolved oxygen and an increase in objectionable odors from Cell No.1. Bowker & Associates was retained to assist in quantifying the emissions and developing strategies to control the odors.

**SAMPLING PROGRAM**

On June 7, 2018, a sampling program was conducted consisting of 1) a perimeter survey of hydrogen sulfide (H<sub>2</sub>S) concentrations around the lagoons, and 2) measurement of H<sub>2</sub>S concentrations and analysis of wastewater samples at the surface of Cell No.1.

Perimeter Survey

Perimeter surveys were conducted at 8:00 AM and 4:00 PM using a hand-held Jerome 631-X H<sub>2</sub>S analyzer sensitive to 1 part per billion (ppb). Odor intensity (0 to 5 butanol scale) and odor character were recorded, along with wind speed and direction. The odor intensity scale is also described as follows: 1- Very slight, 2- Slight, 3- Moderate, 4- Strong, and 5- Very strong. The morning survey encompassed the full perimeter of the 3-cell lagoon system, while the afternoon survey was limited to Cell No.1 that was clearly the source of objectionable odor.

Table 1 shows the results of the morning survey. Location numbers correspond to those shown in Figure 1. Strong odors were readily apparent when standing downwind of Cell No.1. When the odor was detected, H<sub>2</sub>S concentrations ranged from .005 to 0.029 ppm (5 to 29 ppb). The odor had a character similar to that of anaerobically digested sludge. Intensity on the 0 to 5 butanol scale was 3 to

5, with 5 being “very strong”. When not downwind of Cell No.1, odors were either non-detectable or “very slight”, with an intensity of 1 and a light, musty character typical of aerobic lagoons.

The afternoon survey, limited to the perimeter of Cell No.1, showed similar results. These are shown in Table 2, with observation locations shown in Figure 2. Strong odors were observed downwind of Cell No.1, with H<sub>2</sub>S concentrations of 0.016 to 0.082 ppm. Immediately downwind of the two outlet structures (where high levels of turbulence strip out the volatile hydrogen sulfide gas), H<sub>2</sub>S concentrations were 0.47 and 0.71 ppm.

### Lagoon Sampling

Using the Town’s boat, measurements were made and samples collected from nine locations on Cell No. 1 and three locations on Cell No.2. A floating flux chamber was used to isolate the water surface to achieve a representative measurement of headspace H<sub>2</sub>S. Hydrogen sulfide concentrations were measured using an Interscan analyzer with a range of 0 to 200 ppm and a sensitivity of 0.1 ppm. A liquid sample was collected from the lagoon surface and analyzed immediately for pH, oxidation reduction potential (ORP), and temperature using a Myron L Model 3P meter, and for total sulfide using a Chemetrics test kit. Dissolved oxygen (DO) was measured at a depth of approximately 1 foot using the Town’s DO meter.

Results of the lagoon sampling are shown in Table 3, with sampling locations shown in Figure 3. Results are summarized as follows:

1. Hydrogen sulfide concentrations in the headspace of the flux chamber ranged from 5 to 38 ppm, and averaged 21 ppm on the surface of Cell No.1.
2. Total sulfide ranged from 0.4 to 0.8 mg/L in Cell No.1, and averaged 0.6 mg/L.
3. ORP ranged from -150 to -240 mV and averaged -194 mV.
4. Dissolved oxygen concentrations in Cell No.1 ranged from 0.15 to 0.29 mg/L and averaged 0.20 mg/L.
5. pH ranged from 6.8 to 7.0, and water temperature ranged from 20 to 21°C.
6. Cell No.2 sampling showed zero H<sub>2</sub>S in the flux chamber headspace, no sulfide in solution, slightly positive ORP, and dissolved oxygen concentrations of 0.9 to 2.4 mg/L.
7. A grab sample of the influent wastewater before the aerated grit chamber exhibited a total sulfide concentration of 0.3 mg/L.

In general, Cell No.1 was dark in color, with areas of floating sludge and bubbles indicating gas production. Cell No.2 was relatively clear with no evidence of floating sludge or gas production.

### **CONCLUSIONS**

1. Cell No.1 is anaerobic and is generating hydrogen sulfide and strong odors.



2. Cells. 2 and 3 are aerobic and emit a very slight musty odor that is typical of aerated lagoons.
3. Although the largest source of odor is currently the surface of Cell No.1, the effluent discharge structures are releasing strong odors due to the high turbulence.
4. Wind tends to disperse odors; however strong winds can cause turbulence at the lagoon surface, increasing H<sub>2</sub>S and odor release.
5. The incoming wastewater, due to its detention in a force main, is devoid of oxygen and is generating some hydrogen sulfide.
6. Perimeter surveys conducted along the berms of the lagoons showed hydrogen sulfide concentrations downwind of Cell No.1 of up to 1 ppm next to the outlet structures. Downwind concentrations typically ranged from 10 to 80 ppb along the berms.
7. While odors released from Cell No.1 are strong and objectionable, downwind hydrogen sulfide concentrations are well below levels that would constitute a health concern. Hydrogen sulfide can be detected by the human nose at concentrations less than 1 part per billion (ppb).
8. Atmospheric conditions greatly affect the detection and intensity of downwind odors, so assessments of future improvements are best made at the source of the odors.

## RECOMMENDATIONS

1. Continue to recycle lagoon effluent from the chlorine contact tank (containing high dissolved oxygen and residual chlorine) back to Cell No.1.
2. Add additional aeration capacity to increase dissolved oxygen levels in Cell 1.
3. Inject 10 mg/L sodium hypochlorite to influent flow to oxidize incoming sulfide and help control H<sub>2</sub>S emissions from Cell 1.
4. Contain odors from Cell 1 outlet structures by using rubber mats (or equivalent) over the open grating.
5. Continue to evaluate nitrate addition to Cell 1 as supplemental oxygen source per Evoqua.
6. Use Cell No.1 outlet structures as control points for measuring H<sub>2</sub>S (below grating). Oxidation reduction potential, dissolved oxygen, pH, and temperature should be measured before the effluent cascades into the chamber. Monitor trends from these data.
7. Establish target levels for Cell No.1 effluent as follows:

DO > 0.75 mg/L  
ORP > 0 mV.  
pH > 7.0  
H<sub>2</sub>S = 0 ppm

8. Due to the large volume of Cell No. 1, achieving aerobic conditions and eliminating the hydrogen sulfide could take several weeks. Should data not show trends toward achieving the above targets, injection of nitrate as a supplemental oxygen source is recommended.

**TABLE 1  
PERIMETER ODOR SURVEY LOG (MORNING)**

Date: 6/7/18

Weather: Temperature 58°F

Surveyor: R. Bowker

Wind direction SW Speed 2-4 mph

Cloud cover Overcast

Location	Time	H <sub>2</sub> S ppm	D/T	Intensity 0 – 5	Character	Comments
Cell 3 -1	8:30	.000		0		No odor
-2	8:35	.000		1	Slight musty	
-3	8:40	.000		1	Slight musty	
Cell 2 -4	8:42	.000		1	Slight musty	
-5	8:46	.000		1	Slight musty	
-6	8:50	.000		1	Slight musty	
Cell 1 -7	8:52	.005		3	Anaerobic sludge	Odor noticeable @ Cell 1
-8	8:55	.013		4	Anaerobic sludge	
Cell 1 Effluent chamber A	8:55	8.5		5	Anaerobic sludge	H <sub>2</sub> S measured below grating
-9	8:58	.029		4	Anaerobic sludge	
Effluent chamber B	9:00	8.8		5	Anaerobic sludge	H <sub>2</sub> S measured below grating
-10	9:01	.010		3	Anaerobic sludge	
-11	9:03	.005		3	Anaerobic sludge	
-12	9:05	.000				No odor

**TABLE 1  
 AMBIENT ODOR SURVEY LOG (MORNING)**

Date: 6/7/18

Weather: Temperature 58°F

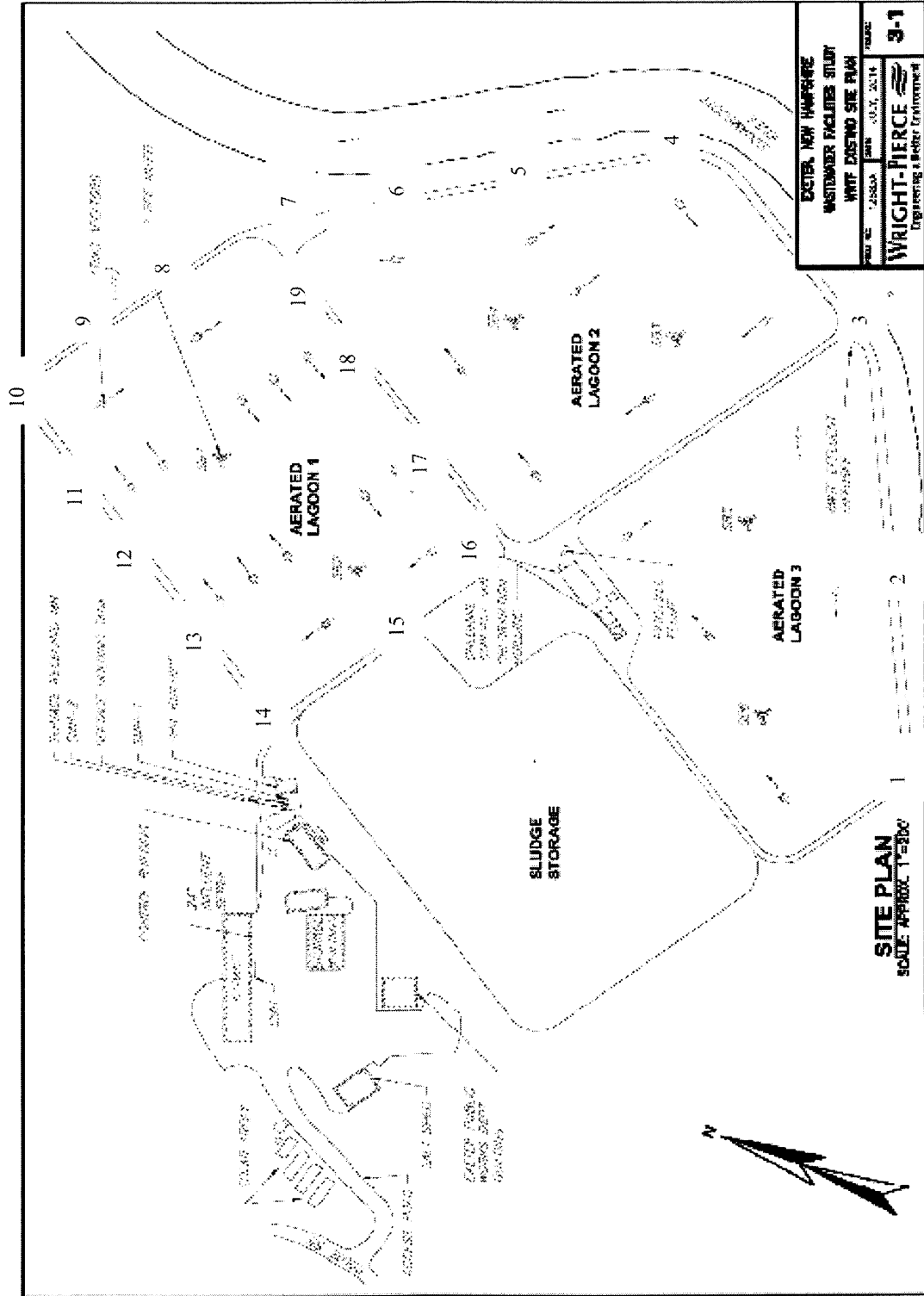
Surveyor: Bowker

Wind direction SW Speed 2-4 mph

Cloud cover Overcast

Location	Time	H <sub>2</sub> S ppm	D/T	Intensity 0 – 5	Character	Comments
Cell 1 13	9:08	.028		4	Sludge	Wind S to SW
14	9:10	.000		0		Upwind of Cell 1
Influent chamber Cell 2	9:15	.012		-		
15	9:16	.000		0	No odor	
Influent chamber Cell 2	9:18	.000		0		
16	9:19	.000		0	No odor	Upwind of Cell 1
17	9:20	.000		0		
18	9:21	.002		3	Sludge	
19	9:25	.006		3	Sludge	

**FIGURE 1. PERIMETER ODOR SURVEY LOCATIONS**  
 June 7, 2018 - MORNING



**TABLE 2  
PERIMETER ODOR SURVEY LOG (AFTERNOON)**

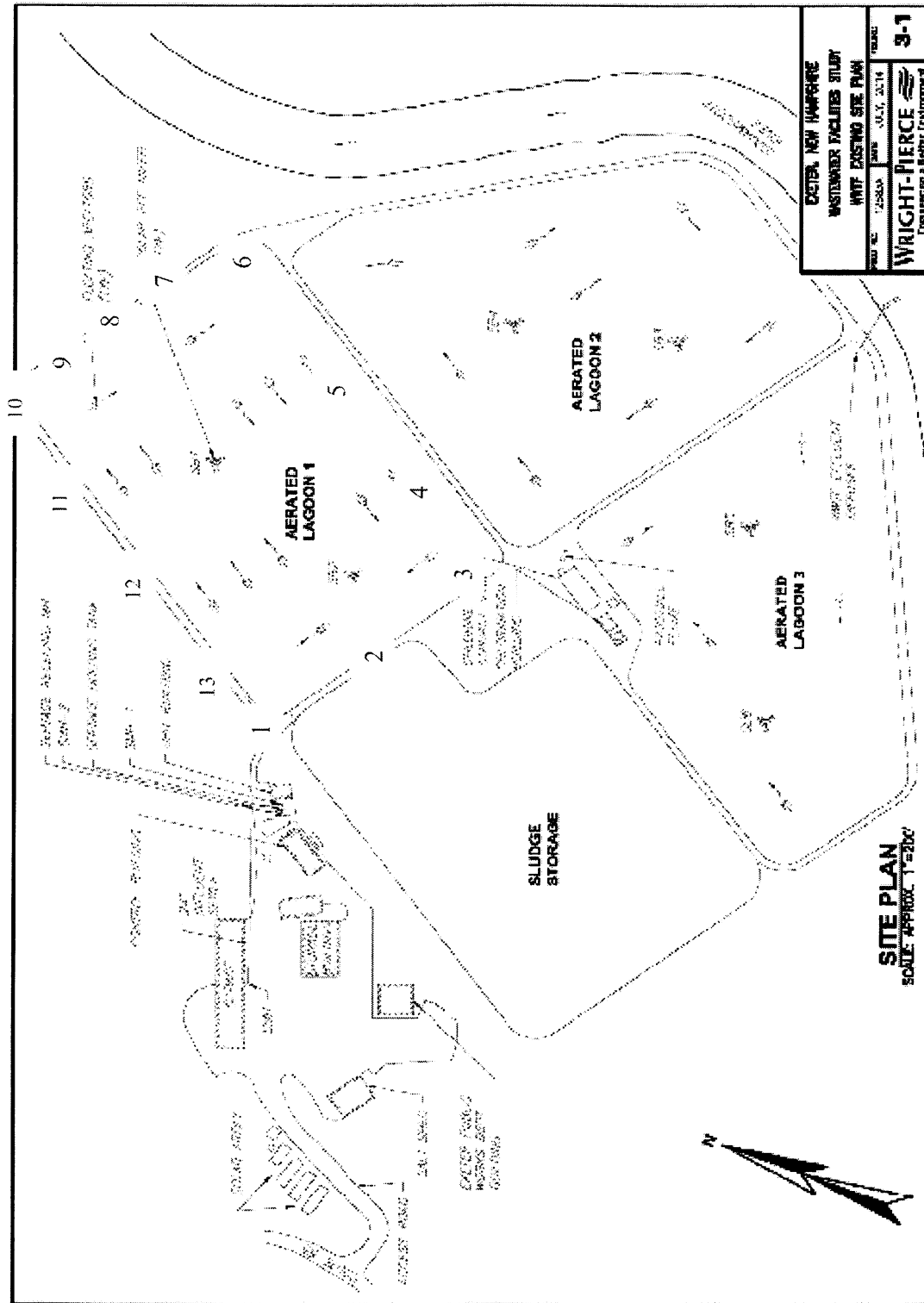
**Date:** 6/7/18 **Weather:** Temperature 63°F

**Surveyor:** Bowker Wind direction SW Speed 10-15 mph

Cloud cover Overcast

Location	Time	H <sub>2</sub> S ppm	D/T	Intensity 0-5	Character	Comments
Cell 1 1	3:30	.000		0		No odor (upwind)
2	3:55	.000		0		
3	4:00	.016		3	Anaerobic sludge	
4	4:05	.016		3	"	
5	4:10	.025		3	"	
6	4:12	.082		4	"	
7	4:15	.47		5	"	Next to Cell 1 effluent structure
8	4:16	.070		4	"	
9	4:16	.71		5	"	Next to Cell 1 effluent structure
10	4:20	.001		0		No odor (upwind)
11	4:22	.000		0		
12	4:24	.000		0		
13	4:26	.001		0		

**FIGURE 2. PERIMETER ODOR SURVEY LOCATIONS  
JUNE 7, 2018 - AFTERNOON**



**LAGOON SAMPLING DATA**

Facility: Exeter

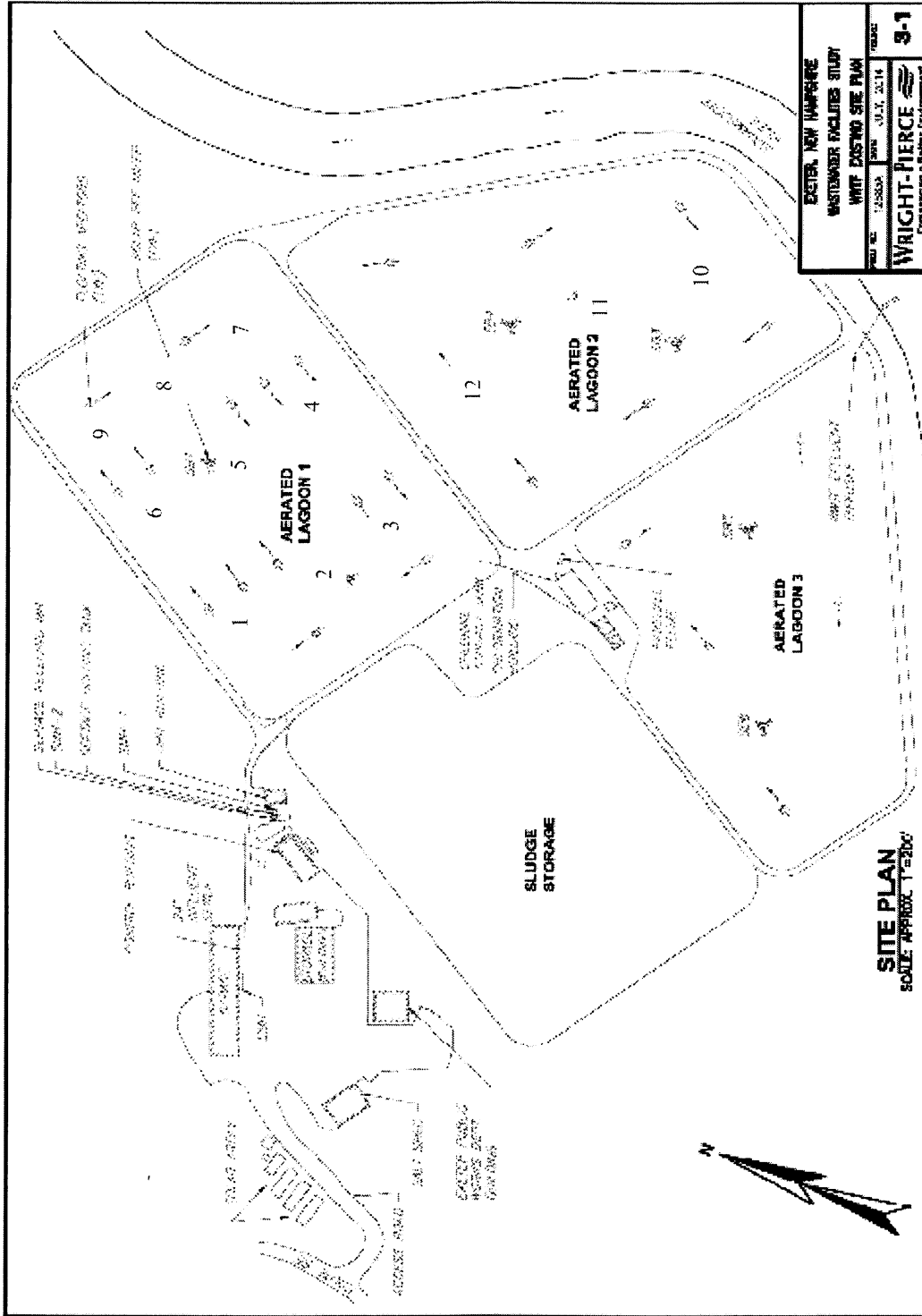
Date: 6/7/18

Sampler: Bowker

Location	Time	pH, s.u.	ORP, mV	Temp, °C	Total Sulfide mg/L	D.O. Mg/L	H <sub>2</sub> S ppm	Comments
Cell 1								
1	10:30	6.9	-150	20.2	0.5	0.29	17	
2	10:45	6.9	-180	21.0	0.6	0.22	25	
3	11:00	6.9	-180	20.8	0.4	0.21	5.3	
4	11:10	6.9	-175	21.2	0.6	0.21	21	
5	11:20	7.0	-180	20.8	0.6	0.21	38	
6	11:30	7.0	-175	21.3	0.6	0.15	7.5	
7	1:20	6.9	-240	21.3	0.8	0.16	21	
8	1:30	6.8	-230	21.0	0.4	0.19	29	
9	1:35	6.9	-235	20.8	0.8	0.17	25	
Cell 2								
10	2:10	7.2	+5	21.8	0.0	0.88	0.0	
11	2:25	7.2	+7	21.8	0.0	0.96	0.0	
12	2:40	7.2	+49	21.1	0.0	2.41	0.0	
Effluent A Cell 1	3:20	6.9	-235	20.9	0.6	-	-	
Effluent B Cell 1	3:30	6.9	-235	21.4	0.6	-	-	
Influent to grit chmbr	3:45	7.3	-200	18.4	0.3	-	-	



**FIGURE 3. EXETER LAGOON SAMPLING LOCATIONS**  
 June 7, 2018





## MEMORANDUM

**To:** Mr. Paul Vlasich and Ms. Jennifer Perry, Town of Exeter  
**From:** Renee L. Bourdeau, Project Manager, Horsley Witten Group  
**Date:** November 27, 2017  
**Re:** Nitrogen Control Plan – Preliminary Nitrogen Reduction Strategy  
**cc:** Ed Leonard, Wright-Pierce

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### 1.0 PURPOSE

The purpose of this memorandum is to summarize the methodology and results for developing planning-level cost estimates and rate of implementation for three nitrogen reduction scenarios. These scenarios include:

- 1) reduce nitrogen non-point sources to a level equivalent to the removal if the wastewater treatment facility (WWTF) were upgraded to achieve a 3-mg/L effluent concentration at current flows (10,400 pounds of nitrogen);
- 2) to meet minimum MS4 requirements; and
- 3) meet minimum MS4 requirements with an additional annual investment of \$100,000.

This memorandum builds on a previous memorandum prepared by the Horsley Witten Group (HW), dated June 15, 2017, revised July 18, 2017 (HW, 2017), which describes the baseline nitrogen loads from the Town.

### 2.0 NON-POINT SOURCE LOAD REDUCTION STRATEGIES

There are a variety of feasible non-point source load reduction strategies that Exeter can consider to reduce the Town's baseline nitrogen load to receiving waters. These strategies are described below, including the level of nitrogen load reduction expected from implementation of each strategy and the cost to implement each strategy. The level of implementation for each of these strategies and the total cost to the Town to meet the 10,400 pound reduction goal is described in Section 3 of this memorandum, along with two other implementation scenarios for consideration. Baseline nitrogen loading from the Town and definitions can be found in the prior HW memorandum (HW, 2017).

#### 2.1 Non-Structural Load Reduction Strategies

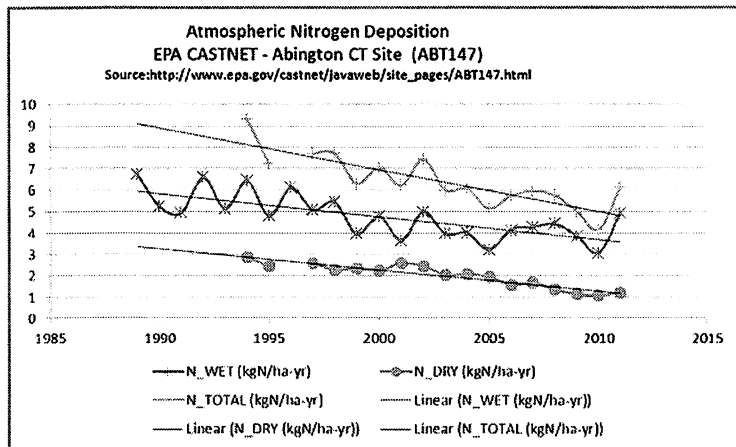
##### 2.1.1 Atmospheric Deposition

Atmospheric sources of nitrogen are a non-negligible portion of the total nitrogen load and has historically been treated as a static value based on published values representative of the late

1990s; however, there is a growing body of data which indicates that atmospheric nitrogen deposition is decreasing, especially since the late 1990s when the Clean Air Act and Clean Air Act Amendments were promulgated (Wright-Pierce, 2017). In particular:

- The Long Island Sound TMDL Report (CTDEP, 2000) included an 18% reduction in atmospheric nitrogen deposition as a part of the required reductions. The CTDEP Long Island Sound Study Work Group is currently re-evaluating the TMDL and expects that atmospheric nitrogen deposition has been reduced more than the 18% value.
- A paper entitled "Historical Changes in Atmospheric Deposition to Cape Cod", (Bowen, Valiela, 2001) analyzed atmospheric nitrogen deposition trends for the 20<sup>th</sup> century. The conclusions presented in the paper indicate that there was an upward trend through the 20<sup>th</sup> century; that the data was very variable; and that the upward trend through the 20<sup>th</sup> century seems to slow down or even reverse in the last decade.
- The NHDES "Great Bay Non-Point Source Study" (Trowbridge, et.al., 2014) summarizes the basis for the NHDES nitrogen loading model for the Great Bay Estuary. Appendix A of the report summarizes data regarding wet deposition rates, dry deposition rates, NO<sub>x</sub> emissions estimates and NO<sub>x</sub> emissions projections through 2020. Referencing EPA estimates, NHDES cites that NO<sub>x</sub> emissions are expected to decrease by 65% from 2001 to 2020.

- The EPA CASTNET (Clean Air Status and Trends Network) program is a long-term environmental monitoring program. Data collected from selected sites around the country are posted on their website ([www.epa.gov/castnet](http://www.epa.gov/castnet)). Data for wet deposition, dry deposition and total deposition for their site in Abington, CT (which is the closest site) indicate clear trends towards reduced atmospheric nitrogen deposition (see inset figure). Reductions in total deposition from the late 1990s to 2012 at this site are approximately 20%.



By documenting the reductions in atmospheric sources of nitrogen over the planning period, the scope and cost of implementing non-point source controls will be reduced. For planning purposes, we have assumed an expected 18% reduction in the nitrogen load from atmospheric deposition, which is applied to all land uses in the Town. To verify these observations, the Town could request that the a local agency (i.e., UNH, PREP) establish a local atmospheric deposition monitoring station for the benefit of all Great Bay communities. Estimated total nitrogen reductions in atmospheric deposition come at no cost to the Town.

### 2.1.2 Agriculture Nutrient Management Program

Nitrogen is one of the most important crop inputs; yet, it is also one of the most complex. It is susceptible to environmental losses, and its effectiveness is impacted by soil types and

weather. Feasible and widely used agricultural best management practices (BMPs) include the use of slow release fertilizer and the use of cover crops.

UNH Cooperative Extension recommends that at least 15% of the fertilizer be of a reduced water solubility to be considered a slow release fertilizer. This reduced water solubility allows for the gradual release and uptake of nitrogen and phosphorous which in turn reduces excess nutrient wash off.

Cover crops are another valuable management practice available for protecting water quality, especially groundwater quality. Cover crops reduce soil erosion by protecting the soil surface from raindrop impact, increasing water infiltration, trapping and securing crop residues, improving soil aggregate stability and providing a network of roots which protect soil from flowing water (USDA, 2013).

The Chesapeake Bay Program (CBP) established nitrogen removal efficiency credits of up to 40% for farmers that adopt agricultural fertilizer best management practices primarily through enhanced and comprehensive nutrient management plans. The enhanced nutrient management plans involve a number of agronomic practices and land/crop treatment measures. Further, the 2010 Maryland TMDL Plan listed specific nitrogen removal credits for the following agriculture best practices:

- Nutrient Management Plan Compliance: 3 pounds per acre reduction
- Precision Agriculture: 2 pounds per acre reduction
- Cover Crops: 5.8 pounds per acre reduction
- Conservation Tillage: 4.6 pounds per acre reduction
- Streamside Buffer: 17.1 pounds per acre reduction

The proposed measures outlined in the CBP to reduce nitrogen loads in existing agricultural operations consist of:

- Enhancing Nutrient Management Plans (application timing, rate and agronomic utilization)
- Increased Use of Land Treatment Measures (cover crops, conservation tillage, vegetated stream buffers)
- Possible Use of Structural Nutrient Management (structural BMPs for treatment removal, additional storage, anaerobic digesters and/or offsite transport systems)

A potential program for Exeter could focus on the development and implementation of enhanced nutrient management plans including increased use of land treatment measures and possible structural nutrient management measures for agricultural activities in collaboration with United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) and UNH Cooperative Extension. We can assume that implementation of a program such as this could achieve, at a minimum, a potential reduction of 15% from the agricultural load. This is consistent with assumptions made in the Oyster River Watershed Integrated Plan (VHB, 2014), developed for Durham, NH.

According to the Town only one (1) farm is regulated under NRCS within the Town boundaries and therefore a program like this may not be worth the staff and financial investment. If the Town decided in the future to implement such a program, it would require an estimated additional 0.1 full time staff (FTE) to assist in the program management and administration, oversight of any regulation changes, and consultation with farmers and NRCS staff (Table 1). The cost per farm to develop a management plan is estimated to be approximately \$5,000. The total cost for implementation of a nutrient reduction management plan for an average farm in the Northeast was estimated at \$9,307 per year, based on data provided in NRCS, 2003. This is equivalent to \$12,100 per year per farm in 2017 dollars (an assumed additional 30% was added to account for inflation to 2017 dollars).

**Table 1. Agriculture Nutrient Management Program Estimated Costs<sup>1</sup>**

<b>Program Measure</b>	<b>Estimated Annual Cost</b>	<b>Estimated One Time Capital Cost</b>
Development of Comprehensive Plans		\$5,000
Farm Program Implementation	\$12,100	
Annual Administration of Program (0.1 FTE)	\$9,000	
<b>Total</b>	<b>\$21,100</b>	<b>\$5,000</b>

1. Estimated cost are rounded to the nearest \$1,000

### 2.1.3 Residential Fertilizer Program

The Town of Exeter under their Zoning Ordinances (2016) with the oversight of the Healthy Lawns Clean Water committee prohibits the use of fertilizer within wetland buffers, shoreland protection and aquifer protection districts on any land use. The Ordinance prohibits the use of fertilizer, except lime or wood ash, based on the following criteria:

- Within the following wetland buffers:
  - 40' for very poorly drained soils (hydric A) soils;
  - 50' poorly drained soils (PD)
  - 100' Prime Wetlands; and
  - 75' Vernal Pools.
- Within the shoreland buffers as described in Table 2.

**Table 2. Shoreland Buffer Distances**

<b>Watershed</b>	<b>River Segment Type</b>	<b>Buffer Distance</b>
Exeter River	Major tributary	300 feet
	Perennial brooks and streams	150 feet
Fresh River	Major tributary	300 feet
	Perennial brooks and streams	150 feet
Squamscott River	Major tributary	300 feet
	Perennial brooks and streams	150 feet
	Upland extent of any tidal marsh	150 feet

- Aquifer Protection District in its entirety.

The Town and the Healthy Lawns Clean Water committee are working to develop a proposed amendment that may allow for the use of organic products in the shoreland and aquifer protection districts with an annual maximum of 1-2 lbs of Nitrogen per 1,000 square feet of lawn. Since the current ordinance does not capture all residential lawns within the Town, we explored the potential additional pollutant load that could be removed if a Town wide residential lawn fertilizer program were implemented.

The Chesapeake Bay Program developed an Urban Nutrient Management Program targeted at reducing pollutant loads from residential lawns (Schueler and Lane, 2014). The program estimates that it could achieve a nitrogen removal efficiency ranging from 6% for low risk lawns to 20% for high risk lawns and a blended efficiency of 9%. High risk lawns have one or more of the following characteristics:

- Owners are currently over-fertilizing beyond state or Cooperative Extension recommendations
- Soils are phosphorus-saturated soils as determined by soil analysis
- Newly established turf
- Steep slopes (greater than 15%)
- 5% or more of the soil is exposed soil for managed turf, or more than 15% of the soil is exposed for unmanaged turf
- Water table within 3 feet of soil surface
- Over-irrigated lawns
- Soils are shallow, compacted or have low water holding capacity
- High use areas
- Sandy soils, or soils with infiltration rates greater than 2 inches per hour
- Within 300 feet of a stream, river, or Bay
- Located on karst terrain
- Active construction sites

The overall effectiveness of the program is dependent on the number and extent of core elements promoted and adopted by homeowners and lawn care professionals as a result of a comprehensive and multi-faceted Public Education and Outreach Program. The core elements of CBP's Urban Nutrient Management Program include the following:

- Maintain dense vegetative cover to reduce runoff, prevent erosion, and retain nutrients.
- Choose not to fertilize, or adopt a reduce rate/monitor approach or a small fertilizer dose approach.
- Retain clippings and mulched leaves on yard and keep them out of streets & storm drains.
- Do not apply fertilizers before spring green up or after grass becomes dormant.
- Maximize use of slow-release N fertilizer during the active growing season.
- Set mower height at 3 inches or taller.
- Immediately sweep off any fertilizer that falls on a paved surface.
- Restrict fertilizer usage within 25 feet of a water feature and require this zone as meadow, grass buffer, or a forested buffer.
- Employ lawn practices to increase soil porosity and infiltration capability, especially along portions of the lawn that convey or treat stormwater runoff.

For the Town, an assumed load reduction of 9% is being applied, which represents a blend of low and high risk lawns. Since a lawn fertilizer program is already underway in Exeter for wetland buffers and shoreland and aquifer protection districts, it is anticipated that participation would be high as the residents are generally well-engaged and aware of the environmental issues.

Implementation of a successful program would require additional staff time of approximately 0.5 FTE to assist in the program management and administration, oversight of any regulation changes, consultation with residents and landscapers, and assistance with the promotion and tracking of certification trainings, outreach and participation levels. Coordination with homeowner associations in key neighborhoods will also be important. Staffing needs for this program could potentially be met through a new staff position that could also provide 0.5 FTE for administering and managing other components of a Non-Point Source Program.

Full implementation of this program is anticipated to take several years and perhaps as much as five years to fully implement. Depending on the results after the fifth year, additional measures may need to be considered. The level of effort required to sustain the program beyond the five years will depend on the initial resident response and the level of involvement / interaction with other program partners.

The estimated program costs, including one-time capital costs, staff time and other annual costs, are outlined in Table 3.

**Table 3. Residential Fertilizer Program Estimated Costs<sup>1</sup>**

<b>Program Measure</b>	<b>Estimated Annual Cost</b>	<b>Estimated One Time Capital Cost</b>
Develop Outreach Plan and Materials		\$25,000
Staff (0.5 FTE)	\$45,000	
Personnel Training/Certification	\$5,000	
Assessment Survey		\$25,000
<b>Total</b>	<b>\$50,000</b>	<b>\$50,000</b>

1. Estimated cost are rounded to the nearest \$1,000

*2.1.4 Enhanced Street/ Pavement Cleaning Program*

In accordance with the final 2017 NH Municipal Separate Storm Sewer System (MS4) permit, the Town is required to develop and implement an Enhanced Street/Pavement Cleaning Program. As part of this program, the Town is required to clean all curbed impervious cover (i.e., directly connected impervious cover) two times per year (spring and fall). The final permit provides expected nitrogen load reduction factors based on the type of sweeper technology. We assume that a high-efficiency regenerative air-vacuum sweeper will be used by the Town to complete sweeping twice per year, which would result in a 2% reduction in initial load from directly connected impervious surfaces.

The Town currently conducts street sweeping and pavement cleaning more than twice per year, therefore meeting the minimum requirements under the MS4 permit. The estimated program costs are outlined in Table 4. These costs include a one-time investment to develop the program, an estimated cost to replace an existing high-efficiency regenerative air-vacuum sweeper every five-years, and the annual cost to maintain the program. Maintenance of the program includes staff time to operate the sweeper and equipment operation and maintenance including fuel and sweeper brushes. These costs are based on local data provided by the Town.



**Table 4. Enhanced Street/ Pavement Cleaning Program Estimated Cost**

<b>Program Measure</b>	<b>Estimated Annual Cost</b>	<b>Estimated One-Time Capital Cost</b>
Develop Program		\$5,000
Regenerative Sweeper (replaced every 5 years)		\$220,000*
Sweeper Maintenance	\$13,000	
Sweeper Operation (1 FTE)	\$95,000	
<b>Total</b>	<b>\$108,000</b>	<b>\$225,000</b>

\*Represents the cost to purchase one regenerative sweeper

*2.1.5 Infrastructure Operations and Maintenance Program*

In accordance with the final 2017 NH MS4 permit, the Town is required to develop and implement an Infrastructure Operations and Maintenance Program detailing the activities and procedures the Town will implement to maintain the MS4 infrastructure in a timely manner. The program shall include routine inspections, cleaning and maintenance of catch basins to maintain 50% free-storage capacity in the catch basin sump. Through implementation of this program, the Town would achieve a 6% (NH MS4 Permit, 2017) reduction in the initial nitrogen load from all directly connected impervious cover.

Currently the Town subcontracts catch basin cleaning services and cleans about 50 percent per year. The estimated program costs are outlined in Table 5. These costs include a one-time investment to develop the program and the annual cost to implement the program. These costs are based on data from the Town.

**Table 5. Infrastructure Operation and Maintenance Program Estimated Cost**

<b>Program Measure</b>	<b>Estimated Annual Cost</b>	<b>Estimated One Time Capital Cost</b>
Develop Program		\$5,000
Implementation of the Program (Subcontractor)	\$25,000	
<b>Total</b>	<b>\$25,000</b>	<b>\$5,000</b>

*2.1.6 Enhanced Organic Waste and Leaf Litter Collection Program*

In accordance with the final 2017 NH MS4 permit, the Town can receive nitrogen reduction credits by performing regular gathering, removal and proper disposal of landscaping wastes, organic debris, and leaf litter from impervious surfaces. In order to receive this credit, the Town

must gather and remove all landscaping wastes, organic debris, and leaf litter from impervious roadways and parking lots at least once per week during the period of September 1 to December 1 of each year. The gathering and removal shall occur immediately following any landscaping activities and at additional times when necessary to achieve a weekly cleaning frequency. The Town must also ensure that the disposal of these materials will not contribute pollutants to any surface water discharges. The Town may use an enhanced sweeping program at a weekly frequency provided that the sweeping is effective at removing leaf litter and organic materials (such as a regenerative sweeper). Through implementation of this program, the Town would receive a 5% reduction in the initial nitrogen load from all directly connected impervious cover. The cost to implement this program would be covered under the Town's current efforts for enhanced street sweeping, as described in Section 2.1.4 and Table 4.

## 2.2 Structural Load Reduction Strategies

### 2.2.1 Advanced Onsite Septic Systems

Traditional septic systems do not remove nitrogen from wastewater. Advanced systems are similar to traditional septic systems, but have an added component that reduces nitrogen concentrations from the effluent before it is discharged to the ground. They are installed at an individual home or cluster of homes, and usually cost more to operate and maintain than a traditional septic system. The increased O&M costs are due to power needs for the system (e.g., pumps, aerators), required water quality sampling, and other elements that are not needed for a traditional onsite system.

An advanced treatment system refers to a system that includes a septic tank, an aeration system, and a recirculation system in the septic tank. Some systems may also have an additional component for advanced denitrification. Alternative treatment components can be added to a conventional system, often between the septic tank and the drainfield, to provide advanced treatment of nitrogen (Figure 1).

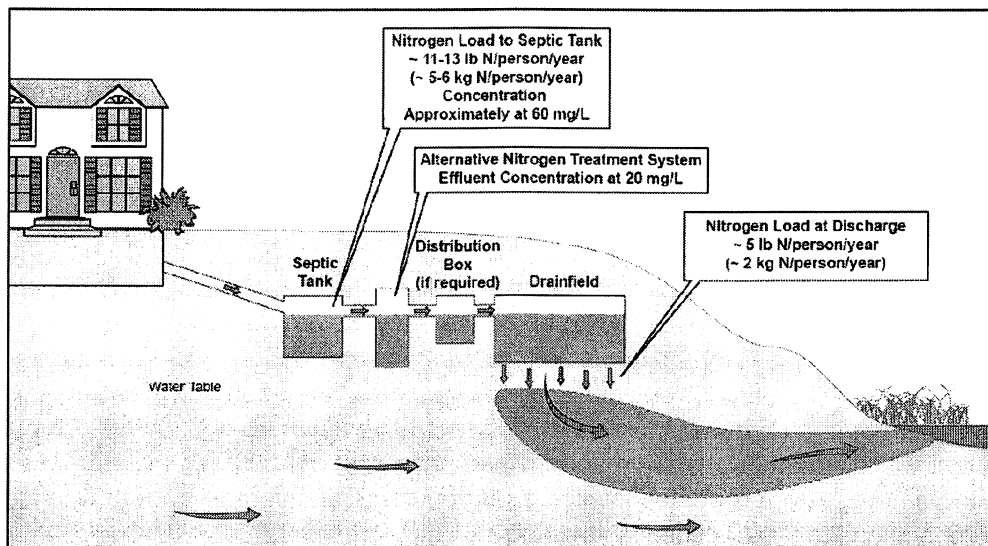


Figure 1. Advanced Onsite System with Nitrogen Treatment (Source: EPA, 2013)

A typical human contributes approximately 10.6 pounds of nitrogen in wastewater to the drain field each year (Trowbridge, et. al., 2014). According to the 2010 US Census, an average household in New Hampshire is made up of approximately 2.4 persons, which would result in approximately 25.4 pounds of nitrogen per year entering an average septic system drain field. The nitrogen load delivered to a receiving waterbody from a septic system drain field (the 'delivered load') depends on the distance of the system to that receiving waterbody. According to Trowbridge, et. al. (2014), a septic system drain field within 200 meters of a receiving waterbody would deliver approximately 60% of the initial load, whereas a septic system drain field outside 200 meters would deliver approximately 26% of the initial load.

Implementation of an advanced onsite system removes approximately 7 pounds of nitrogen per person per year to the drain field (66% reduction in initial load) (EPA, 2013). Therefore, approximately 8.6 pounds of nitrogen per year would enter an advanced onsite treatment drain field. Table 6 presents the estimated initial and delivered load for both traditional and advanced onsite treatment systems in Exeter.

Since the actual locations of systems that would be converted from a traditional system to an advanced system is not known, mass weighted delivered load was estimated based on the total load delivered within and outside of 200 meters divided by the number of systems. The average values (6.7 and 4.4) will be used to calculate the reduced baseline load after implementation of advanced onsite treatment systems, which equates to a 34% reduction in delivered nitrogen from the drain field (groundwater) to the receiving waterbody.

**Table 6. Initial and Delivered Load by Onsite System Type**

System Distance from Waterbody	No. of Systems	Traditional System		Advanced System	
		Initial Load (lbs N/yr)	Delivered Load (lbs N/yr)	Initial Load (lbs N/yr)	Delivered Load (lbs N/yr)
Within 200 meters	19	25.4	15.2	8.6	5.2
Greater than 200 meters	1,318	25.4	6.6	8.6	2.2
<b>MASS WEIGHTED VALUE</b>			<b>6.7</b>		<b>4.4</b>

The average capital cost per household to install a traditional septic system is estimated to be between \$5,000 and \$6,000 (EPA, 2013); to be conservative, we have used a value of \$10,000 in this analysis. The average advanced onsite treatment system, which includes a septic tank, an aeration system, and an anoxic environment separate from the septic tank, is approximately \$10,000 to \$15,000. In our analysis, we used a conservative estimate of \$20,000 per system for installation, with an annual operation and maintenance cost of \$500 per system. These costs assume a new system is being installed and represents an average system with ideal subsurface conditions to treat onsite wastewater.

### 2.2.2 *Sewer Extensions*

The Exeter Wastewater Facilities Plan (Wright-Pierce, 2015) explored locations in Town that are currently serviced by septic systems that could be served by the wastewater treatment plant through sewer extensions. Sewer extensions would result in the wastewater load being diverted from a non-point source (groundwater) to a point source (wastewater treatment plant) discharge. The conversion of an onsite septic system to a sewer connection for an average residence in Exeter would result in an estimated average 34% reduction in delivered load to the receiving water (6.7 lbs N/yr delivered from a traditional septic system compared to 4.25 lbs N/yr delivered from the wastewater treatment facility). The cost to connect a single home to sewer was assumed to be \$40,000 per household (Wright-Pierce, 2015).

### 2.2.3 *Stormwater Best Management Practices*

In accordance with the final 2017 NH MS4 permit, the Town must implement and enforce regulations which require the use of structural stormwater BMPs optimized for the reduction of nitrogen in both new development and redevelopment. To reduce the baseline nitrogen load from stormwater runoff, the Town will need to make efforts to retrofit existing impervious areas (including both publicly and privately owned) with structural stormwater BMPs. The final 2017 NH MS4 permit lists a range of structural stormwater BMPs that provide varying degrees of nitrogen load reduction based on the practice type, the underlying soil type (i.e., rate of soil infiltration) and the capture depth of the BMP (i.e., the size of the practice compared to the drainage capture area). These practices and the range of cumulative nitrogen load reduction are presented in Table 7 below. Infiltration practices (i.e., trenches, basins, rain gardens and bioretention) are suitable for soils capable of infiltrating a minimum of 0.17 inches per hour which is characteristic of soils with a hydrologic soil group (HSG) of A or B. Therefore, in areas of Town with underlying soils in HSG A and B, infiltration BMPs will be most suitable when optimizing for nitrogen. For areas of Town with underlying soils in HSG C and D, gravel wetlands or enhanced biofiltration systems with internal storage reservoirs will be most suitable when optimizing for nitrogen removal.

**Table 7. Range of Cumulative Nitrogen Load Reduction for Structural Stormwater BMPs (Source: 2017 NH MS4 Permit)**

<b>Stormwater Structural BMP Practice</b>	<b>Range of Cumulative Nitrogen Load Reduction*</b>
Infiltration Trench	56% - 100%
Surface Infiltration Practices (i.e., basins, rain gardens and bioretention)	52% - 100%
Bio-filtration Practice	9% - 40%
Gravel Wetland System	22% - 79%
Enhanced Bio-filtration with Internal Storage Reservoir (ISR)	22% - 79%
Sand Filter	9% - 40%
Porous Pavement;	76% - 79%
Wet Pond or wet detention basin;	9% - 40%
Dry Pond or detention basin; and	1% - 23%
Dry Water Quality Grass Swale with Detention.	1% - 23%

*\*Range based on underlying soil infiltration rate and/or BMP capacity*

Using a literature review together with best professional engineering judgment estimates for the cost to implement structural stormwater BMPs in Exeter are provided in Table 8. These costs include both construction and pre-construction costs (i.e., design and permitting) (which typically range from 10 to 40 percent of the BMP construction cost) by impervious acre treated. Since structural BMPs will be selected based on their nitrogen load reduction capability (Table 7), the average cost per impervious acre treated for infiltration practices and wetland/enhanced biofiltration were averaged. These costs are also presented in Table 8.

Since a portion of the developed load that could be treated by structural stormwater practices may come from pervious area, a cost per pervious acre treated needs to be estimated. Pervious areas when compared to impervious areas, produce a reduced volume of runoff and pollutant load, therefore, the cost per pervious acre treated is expected to be less than and impervious acre. To determine the cost reduction of a pervious acre compared to an impervious acre, the ratio of pervious load (68%) from the Town to the impervious load (32%) was compared. Based on this ratio, the cost per impervious acre was discounted by 70% to derive a pervious cost per acre, which is approximately \$16,700 for infiltration practices and \$15,750 for enhanced biofiltration practices.

The structural stormwater BMPs, nitrogen load reduction capability and cost will be used in a range of scenarios to determine the level of reduction the Town could achieve through implementation of these controls.

**Table 8. Planning Level Unit Cost for Structural Stormwater Best Management Practices<sup>1</sup> (UMCES, 2011)**

ROW ID	Structural Stormwater BMP	Initial Costs Per Impervious Acre Treated		
		Pre-Construction Costs <sup>2</sup>	Construction Costs <sup>3</sup>	Total Initial Costs
A	Wet Ponds	\$ 21,333	\$ 42,665	\$ 63,998
B	Dry Extended Detention Ponds	\$ 22,500	\$ 45,000	\$ 67,500
C	Infiltration Practices w/o Sand, Veg.	\$ 16,700	\$ 41,750	\$ 58,450
D	Infiltration Practices w/ Sand, Veg.	\$ 17,500	\$ 43,750	\$ 61,250
E	Filtering Practices (above ground)	\$ 14,000	\$ 35,000	\$ 49,000
F	Filtering Practices (below ground)	\$ 16,000	\$ 40,000	\$ 56,000
G	Bioretention	\$ 9,375	\$ 37,500	\$ 46,875
H	Vegetated Open Channels	\$ 4,000	\$ 20,000	\$ 24,000
I	Bioswale	\$ 12,000	\$ 30,000	\$ 42,000
	<b>Average Cost – Infiltration Practices (Rows C, D, and G)</b>	<b>\$14,525</b>	<b>\$41,000</b>	<b>\$55,525</b>
	<b>Average Cost –Enhanced Bio (Rows E and F)</b>	<b>\$15,000</b>	<b>\$37,500</b>	<b>\$52,500</b>

Notes:

1. All costs are expressed per acre of impervious area treated, not per acre of BMP. Initial costs are assumed to take place in year T=0; annual costs are incurred from year T= 1 through year T= 20.
2. Includes cost of site discovery, surveying, design, planning, permitting, etc. which, for various BMPs tend to range from 10% to 40% of BMP construction costs.
3. Includes capital, labor, material and overhead costs, but not land costs, and associated implementation.

### 3.0 NUTRIENT REDUCTION SCENARIOS

With guidance from the Town, HW evaluated a range of scenarios with varying nutrient reduction goals. For each strategy, we also evaluated the level of implementation and developed a planning-level cost to implement the strategy. For each strategy the following load reduction metrics were evaluated:

- Available acreage – estimated as the total available land area in the Town for the management strategy to be implemented
- Baseline initial load – the estimated baseline initial (unattenuated) load from the available acreage and associated land use category as calculated in the Baseline Nitrogen Modeling Methodology and Results Memorandum (HW, 2017)

- Estimated nitrogen reduction from strategy – the estimated nitrogen reduction as a percentage of existing load for each of the strategies as described in Section 2 above
- Baseline initial load removed – calculated as the baseline initial load multiplied by the estimated nitrogen reduction from each strategy
- Baseline initial load remaining – calculated as the baseline initial load minus the baseline initial load removed
- Baseline delivered load – calculated as the baseline initial load multiplied by the delivery factor which is based on the target transport pathway (i.e., stormwater, groundwater) as described in the Baseline Nitrogen Modeling Methodology and Results Memorandum (HW, 2017)
- Delivered load remaining – calculated as the baseline initial load remaining multiplied by the delivery factor which is based on the target transport pathway (i.e., stormwater, groundwater) as described in the Baseline Nitrogen Modeling Methodology and Results Memorandum (HW, 2017)
- Delivered load removed – calculated as the baseline delivered load minus the delivered load remaining

Costs were broken down into the following categories:

- One-time capital cost – represents the cost that would occur one time over the course of implementing the strategy
- Annual operation and maintenance cost – the annual operation and maintenance cost to implement the strategy
- Total 20-year cost – present value (without inflation) calculated as the one-time capital cost plus the annual operation and maintenance cost multiplied by 20-years
- Equivalent annual cost – calculated as the total 20-year cost divided by 20-years
- Estimated annual cost per pounds of nitrogen removed – calculated as the equivalent annual cost divided by the delivered load removed

Each of the metrics and the cost items described above are presented in Tables 13, 14 and 16. The scenarios and results are described in the following three sections.

### **3.1 Scenario 1: Nitrogen Load Reduction Target of 10,400 Lbs N/ Year**

Scenario 1 is the implementation of a combination of nitrogen non-point source mitigation strategies to achieve a nitrogen reduction of 10,400 pounds of nitrogen per year, which the equivalent amount of nitrogen that would be removed by upgrading the Exeter wastewater treatment facility (WWTF) to achieve a 3-mg/L effluent concentration. The level of implementation strategy and planning-level cost to implement these strategies to meet the 10,400 pounds is presented in Table 13 below. The most cost-effective strategies, based on dollars per pound of nitrogen removed, were selected first.

For Scenario 1, we assumed that the Town would implement all non-structural programmatic strategies as described in Section 2, above. Implementation of the non-structural strategies achieves a reduction of 3,505 pounds of nitrogen per year, which alone will not achieve the

10,400 pound load reduction; therefore, structural reduction strategies (i.e., advanced septic systems, sewer extensions and stormwater structural BMPs) also need to be implemented.

The level of implementation of structural strategies was determined simply based on what is necessary to meet the load reduction target of 10,400 pounds. We assumed that the Town would implement a combination of all three strategies to achieve this load reduction target. Based on that assumption, approximately 30% of the total septic systems in town (401 systems) would need to be replaced with advanced onsite treatment system with another 260 systems (19%) converted from septic to sewer through sewer extensions, as estimated in the wastewater facilities plan (Wright-Pierce, 2015).

Table 9 provides supporting calculations of the expected load reduction from septic systems and sewer extensions. The delivered load values were calculated using the average pounds per year per system as described in Sections 2.7 and 2.8. Through implementation of advanced septic systems and sewer systems in Town, an additional 1,543 pounds of nitrogen would be removed.

**Table 9. Estimated Initial and Delivered Load Removed through Septic System Retrofit**

Type of Treatment System	Baseline Condition			Scenario 1		
	No. of Systems	Estimated Initial Load (lbs N/yr)	Estimated Delivered Load (lbs N/yr)	No. of Systems	Estimated Initial Load (lbs N/yr)	Estimated Delivered Load (lbs N/yr)
Traditional Onsite	1,336	33,936	8,898	675	17,181	4,525
Advanced Onsite	0	0	0	401	3,463	1,752
Sewer Extension	0	0	0	260	6,614	1,105
<b>TOTAL</b>	<b>1,336</b>	<b>33,936</b>	<b>8,898</b>	<b>1,336</b>	<b>27,259</b>	<b>7,354</b>
<b>REMOVED</b>					<b>6,677</b>	<b>1,543</b>

The implementation of non-structural and septic system retrofit strategies results in a total load reduction of 5,048 pounds of delivered nitrogen load per year, which leaves another 5,352 pounds of delivered nitrogen to be removed in order to meet the 10,400 pound target. To provide this additional load reduction, structural stormwater BMPs optimized for nitrogen removal were evaluated.

Since the 2017 NH MS4 Permit presents a range of cumulative nitrogen load reductions (Table 7 based on the underlying soil type and capture depth of the BMP, assumptions need to be made on capture depth of the BMPs assumed to be installed for this analysis. It was assumed that BMPs sized to capture 0.5 inches of runoff would be used for both infiltration and enhanced biofiltration practices. The average cumulative nitrogen load reduction for both infiltration and enhanced biofiltration are presented in Table 10.



**Table 10. Average Nitrogen Load Reduction for Infiltration and Enhanced Biofiltration BMPs**

<b>Structural Stormwater BMP Practice</b>	<b>Assumed BMP Capture Depth (in)</b>	<b>Assumed Infiltration Rate, B Soils (in/hr)</b>	<b>Cumulative Nitrogen Load Reduction</b>	<b>Assumed Infiltration Rate, A Soils (in/hr)</b>	<b>Cumulative Nitrogen Load Reduction</b>
Infiltration Trench	0.5	0.27	91.0%	0.52	92.5%
Surface Infiltration Practices (i.e., basins, rain gardens and bio-retention)		0.27	90.0%	0.52	91.5%
<b>Average Infiltration Practices</b>			<b>91%</b>		<b>92%</b>
Gravel Wetland System	0.5	NA	53%	NA	53%
Enhanced Bio-filtration with Internal Storage Reservoir (ISR)					
<b>Average Enhanced Biofiltration Practices</b>			<b>53%</b>		<b>53%</b>

The available developed land for treatment in the Town is presented by cover type (pervious vs. directly connected impervious area (DCIA)) and HSG in Table 11. For each of the developed land types the initial baseline pollutant load is estimated along with an average pollutant load export rate (PLER). The average pollutant load export rate was estimated using an average area weight value equivalent to the initial pollutant load divided by the land area. Table 11 also presents the BMP removal efficiency and BMP cost associated with the land type if it were optimized for nitrogen reduction based on the 2017 NH MS4 permit. These values will be used to calculate the expected load reduction from structural stormwater BMPs for all scenarios evaluated.

**Table 11. Available Developed Land Area by Cover Type for Treatment**

Developed Land Type	Developed Land Area (acres)	Initial Pollutant Load (lbs N / Year)	Average PLER (lbs N/ ac/ yr) <sup>1</sup>	BMP Type Optimized for N Removal	BMP N Removal Efficiency <sup>2</sup>	BMP Capital Cost (\$/ac)
Pervious HSG A	362	108	0.30	Infiltration	92%	\$ 16,658
DCIA HSG A	20	234	11.70	Infiltration	92%	\$ 55,525
Pervious HSG B	1,309	1,568	1.20	Infiltration	91%	\$ 16,658
DCIA HSG B	85	1,083	12.74	Infiltration	91%	\$ 55,525
Pervious HSG C	38	92	2.42	Enhanced Bio	53%	\$ 15,750
DCIA HSG C	2	25	12.50	Enhanced Bio	53%	\$ 52,500
Pervious HSG D	2,198	7,919	3.60	Enhanced Bio	53%	\$ 15,750
DCIA HSG D	241	3,133	13.00	Enhanced Bio	53%	\$ 52,500
<b>TOTAL</b>	<b>4,255</b>	<b>14,162</b>				

NOTES:

1. Calculated as initial pollutant load divided by the land area.
2. BMP Removal Efficiency optimized for nitrogen, per MS4 permit

To achieve the additional reduction of 5,352 pounds of delivered nitrogen load, approximately 2,092 acres of developed land would need to be retrofit within the Town with structural stormwater BMPs (Table 12). This represents approximately 49% of the total developed land area within the Town. Of the 2,092 acres, 100% or 348 acres of the directly connected impervious area (DCIA) would need to be treated, which would be a difficult task for the Town. To treat 49% of the Town's developable land, the onetime capital cost to the City would be approximately \$46.05 Million.

**Table 12. Scenario 1: Structural Stormwater BMP Estimated Acres Treated and Cost**

Developed Land Cover Type	Town Developed Area for Treatment (acres)	Baseline Initial Load (lbs N/ Year) <sup>1</sup>	BMP N Load Removal (%)	BMP Initial Load Removed (lbs N/ Year) <sup>2</sup>	Baseline Initial Load Remaining (lbs N/ Year) <sup>3</sup>	Delivered Load Removed (lbs N/ Year) <sup>4</sup>	Delivered Load Remaining (lbs N/ Year) <sup>5</sup>	% Total Town Developed Area <sup>6</sup>	BMP Capital Cost (\$ / acre)	One Time Capital Cost <sup>7</sup>
<b>DCIA LAND</b>										
HSG A	20	234	92%	215	19	187	16	100%	\$ 55,525	\$ 1,110,000
HSG B	85	1,083	91%	980	103	853	90	100%	\$ 55,525	\$ 4,720,000
HSG C	2	25	53%	13	12	11	10	100%	\$ 52,500	\$ 110,000
HSG D	241	3,133	53%	1,645	1,488	1,431	1,295	100%	\$ 52,500	\$ 12,650,000
<b>Total DCIA</b>	<b>348</b>	<b>4,475</b>		<b>2,853</b>	<b>1,622</b>	<b>2,482</b>	<b>1,411</b>	<b>100%</b>		<b>\$ 18,590,000</b>
<b>PERVIOUS LAND</b>										
HSG A	0	0	92%	0	0	0	0	0%	\$ 16,658	\$ -
HSG B	0	0	91%	0	0	0	0	0%	\$ 16,658	\$ -
HSG C	0	0	53%	0	0	0	0	0%	\$ 15,750	\$ -
HSG D	1,744	6,282	53%	3,298	2,984	2,869	2,596	79%	\$ 15,750	\$ 27,460,000
<b>Total Pervious</b>	<b>1,744</b>	<b>6,282</b>		<b>3,298</b>	<b>2,984</b>	<b>2,869</b>	<b>2,596</b>	<b>45%</b>		<b>\$ 27,460,000</b>
<b>TOTAL</b>	<b>2,092</b>	<b>10,757</b>		<b>6,151</b>	<b>4,605</b>	<b>5,351</b>	<b>4,007</b>	<b>49%</b>		<b>\$ 46,050,000</b>

**NOTES:**

1. Baseline Initial Load = Town Developed Area for Treatment (acres) x Average PLER (Table 11)
2. BMP Initial Load Removed = Baseline Initial Load x BMP N Load Removal
3. Baseline Initial Load Remaining = Baseline Initial Load – BMP Initial Load Removed
4. Delivered Load Removed = BMP Initial Load Removed x 0.87 (Stormwater Delivery Factor)
5. Delivered Load Remaining = Baseline Initial Load Remaining x 0.87
6. % Total Town Developed Area = Town Developed Area for Treatment + Developed Land Area (Table 11)
7. One Time Capital Cost = Town Developed Area for Treatment x BMP Capital Cost

Implementation of all of the strategies described above will result in an estimated annual nitrogen load reduction of 10,400 pounds. To achieve this load reduction, the capital cost would be approximately \$65.6 million and the 20-year total cost would be approximately \$101.4 Million (Table 13). Together, these costs result in an equivalent annual cost of \$5 Million or \$490 per pound of nitrogen removed to implement Scenario 1. Of the annual cost, approximately \$2.3 Million would be incurred by the Town; whereas, approximately \$2.7 Million would be absorbed by the private sector through redevelopment and retrofit of private property and upgrades of on-site septic systems. The most cost effective strategy for reducing nitrogen is taking credit for changes in rates of nitrogen deposition on the land surface. The next most cost effective strategy for the Town is implementation of a residential lawn fertilizer program (\$100/lb N removed), followed by infrastructure maintenance (\$400/lb N removed), followed by advanced septic systems (\$600/lb N removed). Structural stormwater BMPs are approximately \$700 per pound of nitrogen removed, sewer extensions at \$900 per pound of nitrogen removed and street sweeping and catch basin cleaning the most costly at \$1,700 per pound removed. On average the cost to implement non-structural strategies to reduce nitrogen are \$70 per pound of nitrogen removed; whereas, structural strategies are approximately \$700 per pound of nitrogen removed on average.

Table 13. Scenario 1: Nitrogen Load Reduction Target of 10,400 Lbs N/ Year

NPS Non-Structural Reduction Strategies	Primary Target Pathway	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
		Available Acreage	Baseline Initial Load (LBS N/ YR) <sup>1</sup>	Estimated N Reduction from Strategy <sup>2</sup>	Baseline Initial Load Removed (LBS N/ YR)	Baseline Initial Load Remaining (LBS N/ YR)	Baseline Delivered Load (LBS N/ YR) <sup>3</sup>	Delivered Load Remaining (LBS N/ YR) <sup>4</sup>	Delivered Load Removed (LBS N/ YR)	One-Time Capital Cost	Annual O&M Cost	Total 20-Year Cost	Equivalent Annual Cost	Estimated Annual \$/LBS N Removed	Municipal vs. Private Cost	NOTES	
Calculation					(B x C)	(B - D)	(B x 0.87)	(E x 0.87)	(F - G)			(I + (J x 20 YRS))	(K + 20 YRS)	(L + H)			
Atmospheric Deposition	Stormwater	12,812	18,423	18%	3,316	15,107	16,028	13,143	2,885	\$ -	\$ -	\$ -	\$ -	\$ -	-	Baseline total load from Town	
Residential Fertilizer Program	Stormwater	2,363	5,559	9%	500	5,059	4,836	4,401	435	\$ 50,000	\$ 50,000	\$ 1,100,000	\$ 55,000	\$ 100	Municipal	Baseline load refers to pervious residential	
Infrastructure Maintenance Program	Stormwater	350	1,634	6%	98	1,536	1,422	1,336	85	\$ 5,000	\$ 25,000	\$ 600,000	\$ 30,000	\$ 400	Municipal	Baseline load refers to DCIA from transportation	
Organic Waste and Leaf Litter Collection Program	Stormwater	350	1,634	5%	82	1,552	1,422	1,351	71	\$ 1,105,000	\$ 108,000	\$ 3,300,000	\$ 165,000	\$ 1,700	Municipal	Baseline load refers to DCIA from transportation	
Enhanced Street/ Pavement Cleaning Program	Stormwater	350	1,634	2%	33	1,601	1,422	1,393	28								
<b>Non-Structural TOTAL</b>					<b>4,029</b>				<b>3,505</b>	<b>\$ 1,160,000</b>	<b>\$ 183,000</b>	<b>\$ 5,000,000</b>	<b>\$ 250,000</b>	<b>\$ 70</b>			
NPS Structural Reduction Strategies	Primary Target Pathway	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
		Available Acreage	Baseline Initial Load (LBS N/ YR) <sup>1</sup>	Estimated N Reduction from Strategy <sup>2</sup>	Baseline Initial Load Removed (LBS N/ YR)	Baseline Initial Load Remaining (LBS N/ YR)	Baseline Delivered Load (LBS N/ YR) <sup>3</sup>	Delivered Load Remaining (LBS N/ YR) <sup>4</sup>	Delivered Load Removed (LBS N/ YR)	One-Time Capital Cost	Annual O&M Cost	Total 20-Year Cost	Equivalent Annual Cost	Estimated Annual \$/LBS N Removed	Municipal vs. Private Cost	NOTES	
Calculation						(B - D)			(F - G)			(I + (J x 20 YRS))	(K + 20 YRS)	(L + H)			
Stormwater Structural BMPs	Stormwater	4,255	14,165	43%	6,151	8,014	12,324	6,972	5,351	\$ 46,050,000	\$ 1,390,000	\$ 73,900,000	\$ 3,695,000	\$ 700	Muni/Private	Baseline load from developed land	
Advanced septic systems	Groundwater	N/A	33,936	34%	6,677	27,259	8,898	7,354	1,543	\$ 8,020,000	\$ 201,000	\$ 12,100,000	\$ 605,000	\$ 600	Private	Baseline groundwater/septic	
Sewer Extensions	Groundwater	N/A								\$ 10,400,000	\$ -	\$ 10,400,000	\$ 520,000	\$ 900	Muni/Private	Baseline groundwater/septic	
<b>Structural TOTAL</b>					<b>12,829</b>				<b>6,895</b>	<b>\$ 64,470,000</b>	<b>\$ 1,591,000</b>	<b>\$ 96,400,000</b>	<b>\$ 4,820,000</b>	<b>\$ 700</b>			
<b>TOTAL (Non-Structural + Structural)</b>						<b>16,857</b>				<b>10,400</b>	<b>\$ 65,630,000</b>	<b>\$ 1,774,000</b>	<b>\$ 101,400,000</b>	<b>\$ 5,070,000</b>	<b>\$ 490</b>		
<b>PRIVATE<sup>5</sup></b>												<b>\$ 54,250,000</b>	<b>\$ 2,712,500</b>				
<b>MUNICIPAL<sup>6</sup></b>												<b>\$ 47,150,000</b>	<b>\$ 2,357,500</b>				

NOTES  
 1. Baseline initial (unattenuated) load from Table 4 (HWG, 2017). See notes above in Column O above for additional information.  
 2. Estimated load reduction from strategies are summarized in this memorandum.  
 3. Baseline delivered load from Table 5 (HWG, 2017). See notes above in Column O above for additional information.  
 4. Baseline load multiplied by the delivery factor for stormwater (87% reaches receiving water); septic systems (60% reaches receiving water within 200m; 26% reaches receiving water for systems outside 200m (HWG, 2017).  
 5. Sum of the costs anticipated to be incurred by private citizens and or developers, as referenced in Column N.  
 6. Sum of the costs anticipated to be incurred by the municipality, as referenced in Column N.

### **3.2 Scenario 2: Nitrogen Load Reduction Expected to Meet MS4 Requirements**

Scenario 2 represents the level of nitrogen non-point source strategy implementation required to meet the minimum control measures in the 2017 Final NH MS4 permit (effective July 1, 2018). The requirements have been extrapolated out for 20-years, for comparison purposes to the other scenarios, with the assumption that the requirements would not become more stringent over time. Based on the current permit requirements, the Town would be responsible for developing and implementing an organic waste and leaf litter collection program, infrastructure maintenance program and an enhanced street/pavement cleaning program. Beginning with the fifth annual report and in each subsequent annual report, the Town would report on Town owned properties and infrastructure that have been retrofitted with BMPs to mitigate impervious area. Since the permit does not specify the number of BMPs required per year or the amount of impervious cover treated, we assume that 1 acre of impervious cover would be treated per permit year to meet this requirement. This scenario also assumes that there would be reductions in atmospheric deposition over the 20-year implementation period.

This scenario could serve as the anticipated minimum estimated cost to the Town for implementation of strategies to provide nitrogen reduction. The level of implementation by NPS strategy, estimated nitrogen load reduction and a planning-level cost to implement this scenario are presented in Table 14 below.

To calculate the cost from retrofitting 1 acre of impervious area with structural stormwater BMPs for permit years 5 through 20, the same methodology used in Scenario 1 was applied to Scenario 2. Table 15 presents the anticipated load reduction and cost to retrofit 16 acres of directly connected impervious cover. Implementation of structural stormwater BMPs at this level would cost the Town approximately \$890,000 with an expected delivered load reduction of approximately 161 pounds of nitrogen per year.

For Scenario 2, the strategies required under the 2017 Final NH MS4 permit that achieve nitrogen removal would provide a reduction of 3,230 pounds of delivered nitrogen per year, which is 8 percent reduction in the delivered total non-point source load (40,485 pounds per year) or a 20 percent reduction in the delivered stormwater load (16,028 pounds per year). The 20-year cost including operation and maintenance would be approximately \$5.4 Million, with an average annual cost of \$270,000, and an average of \$80 per pound of nitrogen removed to implement Scenario 2. Of the annual cost, \$232,500 would be incurred by the Town; whereas, approximately \$37,500 would be absorbed by the private sector through redevelopment and retrofit of private property with structural stormwater BMPs.

Table 14. Scenario 2: Nitrogen Load Reduction Expected to Meet MS4 Requirements

		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
NPS Non-Structural Reduction Strategies	Primary Target Pathway	Available Acreage	Baseline Initial Load (LBS N/ YR) <sup>1</sup>	Estimated N Reduction from Strategy <sup>2</sup>	Baseline Initial Load Removed (LBS N/ YR)	Baseline Initial Load Remaining (LBS N/ YR)	Baseline Delivered Load (LBS N/ YR) <sup>3</sup>	Delivered Load Remaining (LBS N/ YR) <sup>4</sup>	Delivered Load Removed (LBS N/ YR)	One-Time Capital Cost	Annual O&M Cost	Total 20-Year Cost	Equivalent Annual Cost	Estimated Annual \$/LBS N Removed	Municipal vs. Private Cost	NOTES
Calculation					(B x C)	(B - D)	(B x 0.87)	(E x 0.87)	(F - G)			(I + (J x 20 YRS))	(K + 20 YRS)	(L + H)		
Atmospheric Deposition	Stormwater	12,812	18,423	18%	3,316	15,107	16,028	13,143	2,885	\$ -	\$ -	\$ -	\$ -	\$ -	-	Baseline total load from Town
Infrastructure Maintenance Program	Stormwater	350	1,634	6%	98	1,536	1,422	1,336	85	\$ 5,000	\$ 25,000	\$ 600,000	\$ 30,000	\$ 400	Municipal	Baseline load refers to DCIA from transportatio
Organic Waste and Leaf Litter Collection Program	Stormwater	350	1,634	5%	82	1,552	1,422	1,351	71	\$ 1,105,000	\$ 108,000	\$ 3,300,000	\$ 165,000	\$ 1,700	Municipal	Baseline load refers to DCIA from transportatio
Enhanced Street/ Pavement Cleaning Program	Stormwater	350	1,634	2%	33	1,601	1,422	1,393	28							
<b>Non-Structural TOTAL</b>					<b>3,529</b>				<b>3,070</b>	<b>\$ 1,110,000</b>	<b>\$ 133,000</b>	<b>\$ 3,900,000</b>	<b>\$ 195,000</b>	<b>\$ 60</b>		
NPS Structural Reduction Strategies	Primary Target Pathway	Available Acreage	Baseline Initial Load (LBS N/ YR) <sup>1</sup>	Estimated N Reduction from Strategy <sup>2</sup>	Baseline Initial Load Removed (LBS N/ YR)	Baseline Initial Load Remaining (LBS N/ YR)	Baseline Delivered Load (LBS N/ YR) <sup>3</sup>	Delivered Load Remaining (LBS N/ YR) <sup>4</sup>	Delivered Load Removed (LBS N/ YR)	One-Time Capital Cost	Annual O&M Cost	Total 20-Year Cost	Equivalent Annual Cost	Estimated Annual \$/LBS N Removed	Municipal vs. Private Cost	NOTES
Calculation						(B - D)		(F - G)				(I + (J x 20 YRS))	(K + 20 YRS)	(L + H)		
Stormwater Structural BMPs	Stormwater	4,255	14,165	1.3%	184	13,981	12,324	12,163	161	\$ 890,000	\$ 27,000	\$ 1,500,000	\$ 75,000	\$ 500	Muni/Private	Baseline load from developed land
<b>Structural TOTAL</b>					<b>184</b>				<b>161</b>	<b>\$ 890,000</b>	<b>\$ 27,000</b>	<b>\$ 1,500,000</b>	<b>\$ 75,000</b>	<b>\$ 500</b>		
<b>TOTAL (Non-Structural + Structural)</b>						<b>3,713</b>			<b>3,230</b>	<b>\$ 2,000,000</b>	<b>\$ 160,000</b>	<b>\$ 5,400,000</b>	<b>\$ 270,000</b>	<b>\$ 80</b>		
<b>PRIVATE<sup>5</sup></b>												<b>\$ 750,000</b>	<b>\$ 37,500</b>			
<b>MUNICIPAL<sup>6</sup></b>												<b>\$ 4,650,000</b>	<b>\$ 232,500</b>			

**NOTES**

1. Baseline initial (unattenuated) load from Table 4 (HWG, 2017). See notes above in Column O above for additional information.
2. Estimated load reduction from strategies are summarized in this memorandum.
3. Baseline delivered load from Table 5 (HWG, 2017). See notes above in Column O above for additional information.
4. Baseline load multiplied by the delivery factor for stormwater (87% reaches receiving water); septic systems (60% reaches receiving water within 200m; 26% reaches receiving water for systems outside 200m (HWG, 2017).
5. Sum of the costs anticipated to be incurred by private citizens and or developers, as referenced in Column N.
6. Sum of the costs anticipated to be incurred by the municipality, as referenced in Column N.

**Table 15. Scenario 2: Structural Stormwater BMP Estimated Acres Treated and Cost**

Developed Land Cover Type	Town Developed Area for Treatment (acres)	Baseline Initial Load (lbs N/ Year) <sup>1</sup>	BMP N Load Removal (%)	BMP Initial Load Removed (lbs N/ Year) <sup>2</sup>	Baseline Initial Load Remaining (lbs N/ Year) <sup>3</sup>	Delivered Load Removed (lbs N/ Year) <sup>4</sup>	Delivered Load Remaining (lbs N/ Year) <sup>5</sup>	% Total Town Developed Area <sup>6</sup>	BMP Capital Cost (\$ / acre)	One Time Capital Cost <sup>7</sup>
<b>DCIA LAND</b>										
HSG A	0	0	92%	0	0	0	0	0%	\$ 55,525	\$ -
HSG B	16	204	91%	184	19	161	17	19%	\$ 55,525	\$ 890,000
HSG C	0	0	53%	0	0	0	0	0%	\$ 52,500	\$ -
HSG D	0	0	53%	0	0	0	0	0%	\$ 52,500	\$ -
<b>Total DCIA</b>	<b>16</b>	<b>204</b>		<b>184</b>	<b>19</b>	<b>161</b>	<b>17</b>			<b>\$ 890,000</b>
<b>PERVIOUS LAND</b>										
HSG A	0	0	92%	0	0	0	0	0%	\$ 16,658	\$ -
HSG B	0	0	91%	0	0	0	0	0%	\$ 16,658	\$ -
HSG C	0	0	53%	0	0	0	0	0%	\$ 15,750	\$ -
HSG D	0	0	53%	0	0	0	0	0%	\$ 15,750	\$ -
<b>Total Pervious</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>			<b>\$ -</b>
<b>TOTAL</b>	<b>16</b>	<b>204</b>		<b>184</b>	<b>19</b>	<b>161</b>	<b>17</b>	<b>0.4%</b>		<b>\$ 890,000</b>

**NOTES:**

1. Baseline Initial Load = Town Developed Area for Treatment (acres) x Average PLER (Table 11)
2. BMP Initial Load Removed = Baseline Initial Load x BMP N Load Removal
3. Baseline Initial Load Remaining = Baseline Initial Load – BMP Initial Load Removed
4. Delivered Load Removed = BMP Initial Load Removed x 0.87 (Stormwater Delivery Factor)
5. Delivered Load Remaining = Baseline Initial Load Remaining x 0.87
6. % Total Town Developed Area = Town Developed Area for Treatment + Developed Land Area (Table 11)
7. One Time Capital Cost = Town Developed Area for Treatment x BMP Capital Cost

### **3.3 Scenario 3: Nitrogen Load Reduction Expected to Meet MS4 Requirements plus an Additional Annual Investment of \$100,000**

Scenario 3 represents the level of nitrogen non-point source strategy implementation required to meet the minimum control measures in the MS4 permit (Scenario 2) plus an additional annual investment of \$100,000, or a total annual investment of \$370,000 for Scenario 3. The level of implementation by strategy, estimated nitrogen load reduction and a planning-level cost to implement this scenario is presented in Table 16 below.

For Scenario 3, we assumed that the Town would implement all non-structural programmatic strategies as described in Scenario 2 with the addition of the residential lawn fertilizer program. To fully implement and maintain these programs for 20-years would require an annual investment of \$250,000 (\$55,000 more than Scenario 2) and a load reduction of 3,070 pounds of nitrogen per year. Using the remaining \$45,000 per year, structural stormwater BMPs would be implemented and account of an additional 261 pounds of nitrogen per year (Table 17).

Implementation of Scenario 3, including both non-structural and structural strategies described above, will result in an estimated annual delivered nitrogen load reduction of 3,766 pounds, 23 percent of the stormwater load (16,028 pounds per year) or 9 percent of the total delivered non-point source load (40,485 pounds per year). The 20-year cost including operation and maintenance would be approximately \$7.4 Million, an average annual cost of \$370,000 or \$100 per pound of nitrogen removed to implement Scenario 3. Of the annual cost, approximately \$310,000 would be incurred by the Town; whereas, approximately \$60,000 would be absorbed by the private sector through redevelopment and retrofit of private property with structural stormwater BMPs.



Table 16. Scenario 3: Nitrogen Load Reduction Expected to Meet MS4 Requirements plus an Additional Annual Investment of \$100,000

		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
NPS Non-Structural Reduction Strategies	Primary Target Pathway	Available Acreage	Baseline Initial Load (LBS N/ YR) <sup>1</sup>	Estimated N Reduction from Strategy <sup>2</sup>	Baseline Initial Load Removed (LBS N/ YR)	Baseline Initial Load Remaining (LBS N/ YR)	Baseline Delivered Load (LBS N/ YR) <sup>3</sup>	Delivered Load Remaining (LBS N/ YR) <sup>4</sup>	Delivered Load Removed (LBS N/ YR)	One-Time Capital Cost	Annual O&M Cost	Total 20-Year Cost	Equivalent Annual Cost	Estimated Annual \$/LBS N Removed	Municipal vs. Private Cost	
Calculation					(B x C)	(B - D)	(B x 0.87)	(E x 0.87)	(F - G)			(I + (J x 20 YEARS))	(K + 20 YRS)	(L ÷ H)		NOTES
Atmospheric Deposition	Stormwater	12,812	18,423	18%	3,316	15,107	16,028	13,143	2,885	\$ -	\$ -	\$ -	\$ -	\$ -	-	Baseline total load from Town
Residential Fertilizer Program	Stormwater	2,363	5,559	9%	500	5,059	4,836	4,401	435	\$ 50,000	\$ 50,000	\$ 1,100,000	\$ 55,000	\$ 100	Municipal	Baseline load refers to pervious residential
Infrastructure Maintenance Program	Stormwater	350	1,634	6%	98	1,536	1,422	1,336	85	\$ 5,000	\$ 25,000	\$ 600,000	\$ 30,000	\$ 400	Municipal	Baseline load refers to DCIA from transportatic
Organic Waste and Leaf Litter Collection Program	Stormwater	350	1,634	5%	82	1,552	1,422	1,351	71	\$ 1,105,000	\$ 108,000	\$ 3,300,000	\$ 165,000	\$ 1,700	Municipal	Baseline load refers to DCIA from transportatic
Enhanced Street/ Pavement Cleaning Program	Stormwater	350	1,634	2%	33	1,601	1,422	1,393	28							
<b>Non-Structural TOTAL</b>					<b>4,029</b>				<b>3,505</b>	<b>\$ 1,160,000</b>	<b>\$ 183,000</b>	<b>\$ 5,000,000</b>	<b>\$ 250,000</b>	<b>\$ 80</b>		
NPS Structural Reduction Strategies	Primary Target Pathway	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
		Available Acreage	Baseline Initial Load (LBS N/ YR) <sup>1</sup>	Estimated N Reduction from Strategy <sup>2</sup>	Baseline Initial Load Removed (LBS N/ YR)	Baseline Initial Load Remaining (LBS N/ YR)	Baseline Delivered Load (LBS N/ YR) <sup>3</sup>	Delivered Load Remaining (LBS N/ YR) <sup>4</sup>	Delivered Load Removed (LBS N/ YR)	One-Time Capital Cost	Annual O&M Cost	Total 20-Year Cost	Equivalent Annual Cost	Estimated Annual \$/LBS N Removed	Municipal vs. Private Cost	
Calculation						(B - D)			(F - G)			(I + (J x 20 YEARS))	(K + 20 YRS)	(L ÷ H)		NOTES
Stormwater Structural BMPs	Stormwater	4,255	14,165	2.1%	300	13,865	12,324	12,063	261	\$ 1,440,000	\$ 44,000	\$ 2,400,000	\$ 120,000	\$ 500	Muni/Private	Baseline load from developed land
<b>Structural TOTAL</b>					<b>300</b>				<b>261</b>	<b>\$ 1,440,000</b>	<b>\$ 44,000</b>	<b>\$ 2,400,000</b>	<b>\$ 120,000</b>	<b>\$ 500</b>		
<b>TOTAL (Non-Structural + Structural)</b>					<b>4,329</b>				<b>3,766</b>	<b>\$ 2,600,000</b>	<b>\$ 227,000</b>	<b>\$ 7,400,000</b>	<b>\$ 370,000</b>	<b>\$ 100</b>		
<b>PRIVATE<sup>5</sup></b>												<b>\$ 1,200,000</b>	<b>\$ 60,000</b>			
<b>MUNICIPAL<sup>6</sup></b>												<b>\$ 6,200,000</b>	<b>\$ 310,000</b>			

NOTES  
 1. Baseline initial (unattenuated) load from Table 4 (HWG, 2017). See notes above in Column O above for additional information.  
 2. Estimated load reduction from strategies are summarized in this memorandum.  
 3. Baseline delivered load from Table 5 (HWG, 2017). See notes above in Column O above for additional information.  
 4. Baseline load multiplied by the delivery factor for stormwater (87% reaches receiving water); septic systems (60% reaches receiving water for systems outside 200m) (HWG, 2017).  
 5. Sum of the costs anticipated to be incurred by private citizens and or developers, as referenced in Column N.  
 6. Sum of the costs anticipated to be incurred by the municipality, as referenced in Column N.

**Table 17. Scenario 3: Structural Stormwater BMP Estimated Acres Treated and Cost**

Developed Land Cover Type	Town Developed Area for Treatment (acres)	Baseline Initial Load (lbs N/ Year) <sup>1</sup>	BMP N Load Removal (%)	BMP Initial Load Removed (lbs N/ Year) <sup>2</sup>	Baseline Initial Load Remaining (lbs N/ Year) <sup>3</sup>	Delivered Load Removed (lbs N/ Year) <sup>4</sup>	Delivered Load Remaining (lbs N/ Year) <sup>5</sup>	% Total Town Developed Area <sup>6</sup>	BMP Capital Cost (\$ / acre)	One Time Capital Cost <sup>7</sup>
<b>DCIA LAND</b>										
HSG A	0	0	92%	0	0	0	0	0%	\$ 55,525	\$ -
HSG B	26	331	91%	300	31	261	27	31%	\$ 55,525	\$ 1,440,000
HSG C	0	0	53%	0	0	0	0	0%	\$ 52,500	\$ -
HSG D	0	0	53%	0	0	0	0	0%	\$ 52,500	\$ -
<b>Total DCIA</b>	<b>26</b>	<b>331</b>		<b>300</b>	<b>31</b>	<b>261</b>	<b>27</b>			<b>\$ 1,440,000</b>
<b>PERVIOUS LAND</b>										
HSG A	0	0	92%	0	0	0	0	0%	\$ 16,658	\$ -
HSG B	0	0	91%	0	0	0	0	0%	\$ 16,658	\$ -
HSG C	0	0	53%	0	0	0	0	0%	\$ 15,750	\$ -
HSG D	0	0	53%	0	0	0	0	0%	\$ 15,750	\$ -
<b>Total Pervious</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>			<b>\$ -</b>
<b>TOTAL</b>	<b>26</b>	<b>331</b>		<b>300</b>	<b>31</b>	<b>261</b>	<b>27</b>	<b>0.6%</b>		<b>\$ 1,440,000</b>

NOTES:

1. Baseline Initial Load = Town Developed Area for Treatment (acres) x Average PLER (Table 11)
2. BMP Initial Load Removed = Baseline Initial Load x BMP N Load Removal
3. Baseline Initial Load Remaining = Baseline Initial Load – BMP Initial Load Removed
4. Delivered Load Removed = BMP Initial Load Removed x 0.87 (Stormwater Delivery Factor)
5. Delivered Load Remaining = Baseline Initial Load Remaining x 0.87
6. % Total Town Developed Area = Town Developed Area for Treatment + Developed Land Area (Table 11)
7. One Time Capital Cost = Town Developed Area for Treatment x BMP Capital Cost

### 3.4 Scenario Comparison

Table 18 presents the cost and load reduction for each of the three scenarios described above. Scenario 2 represents the most cost-effective scenario to implement with regards to the estimated annual dollars per pound of nitrogen removed (\$80) with Scenario 1 being the most expensive at \$490 per pound of nitrogen removed. Of the three scenarios, Scenario 1 would be the most difficult for the Town to achieve as this would require implementing structural stormwater controls on all of the directly connected impervious cover in Town as well as on 45 percent of the pervious area. Further, Scenario 3 would require the Town to implement new regulations to upgrade septic systems to advanced treatment systems. Currently, neither the State nor the Town have such regulations in place mandating the use of advanced treatment systems.

**Table 18. Cost and Load Reduction by Scenario**

Scenario	Total 20-Year Cost	Equivalent Annual Cost	Delivered Load Removed (lbs N/year)	Percent of Total NPS Delivered Load Removed*	Estimated Annual \$ / lbs N Removed
1	\$ 101,400,000	\$ 5,070,000	10,400	26%	\$ 490
2	\$ 5,400,000	\$ 270,000	3,230	8%	\$ 80
3	\$ 7,400,000	\$ 370,000	3,766	9%	\$ 100

\* includes both stormwater and groundwater load (40,485 pounds N per year)

### 4.0 CONCLUSIONS AND RECOMMENDATIONS

- Since the 2012 NPDES permit required the Exeter WWTF to achieve an effluent TN of 3-mg/l, one premise of this analysis is that the required TN removals could be achieved by upgrading the WWTF again or by removing non-point source (NPS) nitrogen.
- “NPS Scenario 1” consists of achieving 10,400 lbs per year via NPS removals within 20-years. This results in a reduction in delivered total non-point source loadings of 26%. This report estimates these costs at a capital cost of \$65.6 Million (M) with a 20-year cost of \$101M, and an equivalent annual cost of \$490 per pound N removed.
- “NPS Scenario 2” consists of meeting the minimum requirements of the MS4 program. This results in a reduction in delivered total non-point source loadings of 8%. This report estimates these costs at a capital cost of \$2.0M with a 20-year cost of \$5.4M. This would remove 3,230 pounds N per year at an equivalent annual cost of \$80 per pound N removed.
- “NPS Scenario 3” consists of meeting the minimum requirements of the MS4 program plus spending an additional \$100,000 per year. This results in a reduction in delivered total non-point source loadings of 9%. This report estimates these costs at a capital cost

of \$2.6M with a 20-year cost of \$7.4M. This would remove 3,766 pounds N per year at an equivalent annual cost of \$100 per pound N removed.

- When optimizing structural stormwater BMPs for nitrogen removal, infiltration practices (i.e., trenches, basins, rain gardens and bioretention) should be used in areas with underlying hydrologic soil groups A and B; whereas, gravel wetlands and enhanced biofiltration practices with internal storage reservoirs should be used in areas with underlying hydrologic soil groups C and D.
- The on-going Exeter WWTF Upgrade is targeting an effluent TN concentration of 5-mg/l. Based on information from Wright-Pierce, this on-going upgrade has a capital cost of approximately \$53M for all phases and is expected to be substantially completed in 2019.
- A separate analysis by Wright-Pierce determine the estimated cost to implement an additional WWTF Upgrade to achieve 3-mg/l at a capital cost of \$6.4M with a 20-year cost of \$9.6M (including operations and maintenance). This would remove 10,400 pounds N per year at an equivalent annual cost of \$46 per pound N removed.

## 5.0 NEXT STEPS

HW and Wright-Pierce will review this memorandum and scenario results with the Town in order to determine a path forward for the Town to develop a Nitrogen Control Plan in accordance with the Administrative Order on Consent.

## 6.0 REFERENCES

Bowen, J.L. and Valiela, I. 2001. *Historical changes in atmospheric nitrogen deposition to Cape Cod, Massachusetts, USA*. Atmospheric Environment 35 (2001) 1039-1051.

Connecticut Department of Environmental Protection (CTDEP). 2000. *A Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound*. December 2000.

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EPA. 2017. *New Hampshire 2017 Final MS4 Permit, Appendix F, Attachment 3 (DRAFT)*. March 28, 2017.

Horsley Witten Group (HW). 2017. *Nitrogen Control Plan – Baseline Nitrogen Modeling Methodology Results*. Memorandum dated June 15, 2017, Revised July 18, 2107.

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Schueler, T. and Lane, C.. 2014. *Recommendations of the Expert Panel to Define Removal Rates for Urban Nutrient Management*. Chesapeake Stormwater Network.  
([http://chesapeakestormwater.net/wp-content/uploads/dlm\\_uploads/2015/03/CBP-APPROVED-FINAL-UNM-EXPERT-PANEL-REPORT-032514\\_SHORT.pdf](http://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2015/03/CBP-APPROVED-FINAL-UNM-EXPERT-PANEL-REPORT-032514_SHORT.pdf))

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University of Maryland Center for Environmental Science (UMCES). 2011. *Cost of Stormwater Management Practices in Maryland Counties*. Prepared for Maryland Department of the Environment Science Services Administration.

Vanasse Hangen Brustlin, Inc. (VHB). 2014. *Oyster River Integrated Watershed Plan for Nitrogen Load Reductions*. July 2014.

Wright-Pierce, 2015. *Wastewater Facilities Plan for the Town of Exeter, New Hampshire*.

Wright-Pierce, 2017. *Draft Comprehensive Water Resources Management Plan, Town of Sandwich, MA*.

loading changes associated with all activities within the Town that affect the total nitrogen load to the Great Bay Estuary.

3. Upon the effective date of this Order, the Town shall begin coordination with the NHDES to develop a subwatershed community-based total nitrogen allocation.
4. By September 30, 2018, submit to EPA and the NHDES a total nitrogen non-point source and point source stormwater control plan ("Nitrogen Control Plan"), including a schedule of at least five years for implementing specific control measures as allowed by state law to address identified non-point source and stormwater Nitrogen loadings in the Town of Exeter that contribute total nitrogen to the Great Bay estuary, including the Squamscott River. If any category of de-minimis non-point source loadings identified in the tracking and accounting program are not included in the Nitrogen Control Plan, the Town shall include in the Plan an explanation of any such exclusions. The Nitrogen Control Plan shall be implemented in accordance with the schedules contained therein.

#### **E. REPORTING**

1. Beginning January 31, 2014 and annually thereafter, the Town shall submit Total Nitrogen Control Plan Progress Reports to EPA and the NHDES that address the following:
  - a. The pounds of total nitrogen discharged from the WWTF during the previous calendar year;
  - b. A description of the WWTF operational changes that were implemented during the previous calendar year;
  - c. The status of the development of a total nitrogen non-point source and storm water point source accounting system;
  - d. The status of the development of the non-point source and storm water point source Nitrogen Control Plan,
  - e. A description and accounting of the activities conducted by the Town as part of its Nitrogen Control Plan; and
  - f. A description of all activities within the Town during the previous year that affect the total nitrogen load to the Great Bay Estuary. The annual report shall include sufficient information such that the nitrogen loading change to the watershed associated with these

AMENDMENT NO. 1 TO  
AGREEMENT BETWEEN  
TOWN OF EXETER, NEW HAMPSHIRE AND WRIGHT-PIERCE  
FOR  
ENGINEERING REPORT PHASE - CONTRACT FOR PROFESSIONAL SERVICES  
FOR TREATMENT WORKS

This Amendment made the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by and between the Town of Exeter ("CLIENT") and Wright-Pierce ("ENGINEER").

WHEREAS, an Agreement was entered on December 30, 2013 between the CLIENT and ENGINEER, which Agreement is entitled ENGINEERING REPORT PHASE CONTRACT FOR PROFESSIONAL SERVICES FOR TREATMENT WORKS ("AGREEMENT") and contained provisions for wastewater facilities planning; and

WHEREAS, the CLIENT desires to have the ENGINEER expand the scope of services and budget to address additional planning needs for the Nitrogen Control Plan.

NOW, THEREFORE, in consideration of said AGREEMENT and other good and valuable considerations, it is hereby agreed and acknowledged by and between CLIENT and ENGINEER to amend the AGREEMENT as follows:

1. The AGREEMENT shall be amended to include this AMENDMENT, a copy of which shall be attached thereto and made a part thereof. The background, scope and schedule for this project is attached as "Exhibit A". The background, scope and schedule for the Phase 1 work is attached as "Exhibit B".
2. The total engineering fee shall be increased by \$69,600, as detailed on the attached Cost or Price Summary Format for Subagreements Under NH SAG & SRF, from \$349,090 to \$418,690.

IN WITNESS WHEREOF, the parties hereto have made and executed this AMENDMENT to said AGREEMENT as of the day and year first above written.

CLIENT: TOWN OF EXETER

ENGINEER: WRIGHT-PIERCE

By: \_\_\_\_\_  
(Authorized Representative)

By: \_\_\_\_\_  
(Authorized Representative)

Date: \_\_\_\_\_

Date: \_\_\_\_\_

APPROVED: DEPARTMENT OF ENVIRONMENTAL SERVICES

By: \_\_\_\_\_  
(Authorized Representative)

Date: \_\_\_\_\_

**AMENDMENT NO. 1 TO THE ENGINEERING REPORT PHASE CONTRACT  
TOWN OF EXETER, NEW HAMPSHIRE  
NITROGEN CONTROL PLAN – PLAN OF STUDY**

**BACKGROUND**

The Town is required to develop a Nitrogen Control Plan per the EPA Administrative Order of Consent (AOC). The AOC requires that, by September 30, 2018, the Town submit to EPA and NHDES a total nitrogen non-point source (NPS) and point source (PS) stormwater control plan (“Nitrogen Control Plan”), including a schedule of at least five (5) years for implementing specific control measures as allowed by state law to address identified non-point source and stormwater Nitrogen loadings in the Town of Exeter that contribute total nitrogen to the Great Bay estuary, including the Squamscott River.

A “Phase 1” task of the Nitrogen Control Plan was initiated in April 2017. The purpose of Phase 1 was to establish “baseline current conditions”, to identify the potential range of environmental targets which may be expected by regulators, and to identify potential implementation approaches and order of magnitude costs for more detailed evaluation as a part of a future phase. Phase 1 built upon the following previously completed work products:

- “Great Bay Nitrogen Non-Point Source Study” (NHDES, June 2014)
- “Wastewater Facilities Plan” (WP, March 2015)
- “Water Integration for Squamscott Exeter (WISE, December 2015)

The remainder of the plan of study for the Nitrogen Control Plan is presented below.

**SCOPE OF SERVICES**

Wright-Pierce will subcontract with Horsley Witten Group to complete portions of this assignment.

**Task 1 – Preliminary Analysis**

The following tasks were completed under previous assignment.

- Task 1-1 Establish Baseline Conditions
- Task 1-2 Develop Planning-Level Cost Estimate to Reduce Equivalent NPS Load
- Task 1-3 Review Meetings

**Task 2 – Select Board’s Meeting**

Brief the Select Board on the findings of the preliminary analysis and the intended approach of the implementation plan.

**WP and HW will:**

- Prepare a draft presentation for the Select Board based on previous discussions with the Town. Incorporate results of Task 4 memorandum related to “potential maximum NPS load reduction” into the presentation.
- Attend a meeting with the Town to discuss the draft presentation.
- Update presentation and attend a Select Board’s meeting to discuss the project.
- Attend an Exeter-Squamscott River Local Advisory Committee to discuss the project.

**Task 3 – Load Reduction Goals**

Establish nitrogen load reduction goals for the Town based on previously published technical work (e.g., NHDES 2009 Numeric Nutrient Criteria for Great Bay Estuary; NHDES 2010 Analysis of Nitrogen Load Reductions; 2014 Joint Report of Peer Review for Numeric Nutrient Criteria for the Great Bay Estuary, etc.).



**AMENDMENT NO. 1 TO THE ENGINEERING REPORT PHASE CONTRACT  
TOWN OF EXETER, NEW HAMPSHIRE  
NITROGEN CONTROL PLAN – PLAN OF STUDY**

**WP will:**

- Review relevant water quality-based load reduction targets and mitigating factors for the Squamscott River watershed. Prepare a memorandum summarizing the water quality-based load reduction targets.

**HW will:**

- Compare the water quality-based load reduction targets from the document review to the Squamscott River watershed baseline load and the Town's baseline load contribution to determine the amount of load reduction that would be required for the Town to meet these watershed targets. Prepare a memorandum summarizing the findings.

**Task 4 – Nitrogen Control Measures**

Task 4 will build on the analyses completed under Task 1-2.

**WP will:**

- Prepare for and participate in two meetings with the Town to discuss the draft memorandum.

**HW will:**

- Identify suitable locations within the Town where stormwater total nitrogen control measures could be installed based on, but not limited to, soil type, land use, impervious cover, depth to groundwater or bedrock, proximity to wetlands or other surface water features, and contributing drainage area using ArcGIS.
- Quantify areas of Town where structural and non-structural nitrogen control measures are most suitable. Estimate the "potential maximum" NPS pollutant load reduction and cost to implement the controls at this level.
- Rank and prioritize the NPS nitrogen control measures based on feasibility for implementation and Town input
- Revise Task 1-2 memorandum to include the "potential maximum" NPS pollutant load reduction scenario and compare to other scenarios. Complete this subtask prior to the Task 2 - Select Board's Presentation.
- Using the Town's active stormwater and NPS TN projects, including the Lincoln Street grant projects, document and locate the Town's structural control measures which may be implemented in next five years.
- Prepare for and participate in a meeting with the Town to review the suitable areas for stormwater controls, estimated maximum pollutant load reduction, and active project list/map (including Lincoln Street grant projects).
- Using the load reduction target established under Task 3, identify projects or control measures which could be implemented by the Town in the first 5 years of the plan
- Prepare a draft memorandum describing the methodology and results for the nitrogen control measures task.
- Prepare for and participate in a meeting with the Town to discuss the draft memorandum.
- Prepare a final memorandum based one round of revisions and comments from the Town.

**AMENDMENT NO. 1 TO THE ENGINEERING REPORT PHASE CONTRACT  
TOWN OF EXETER, NEW HAMPSHIRE  
NITROGEN CONTROL PLAN – PLAN OF STUDY**

**Task 5 – Water Quality Monitoring Program**

A significant amount of water quality data has been collected by various communities and agencies in the Squamscott/Exeter River watershed. The purpose of this task is to identify that information and to develop a Water Quality Monitoring framework for implementation.

**WP will:**

- Coordinate with, obtain and review the available studies and water quality monitoring data pertinent to the Town’s water quality monitoring interests. Reach out to the organizations listed below. Develop a synopsis of the data available, including a map of current sampling locations, frequency of sampling, parameters analyzed and parties responsible.
  - EPA Region 1
  - NHDES
  - University of New Hampshire (UNH) Water Resource Research Center (WRRC)
  - UNH School of Marine Science and Ocean Engineering Jackson Estuarine Laboratory, including Steve Jones
  - Exeter-Squamscott River Local Advisory Committee (ESRLAC)
  - Piscataqua Region Estuaries Partnership (PREP)
  - UNH’s College of Life Science and Agriculture (COLSA)
- Prepare a draft memorandum which summarizes the recommended sampling program for the Town to implement until the submittal of the Engineering Evaluation. Sampling program will identify proposed sampling and testing protocol, sampling locations, sample type (discrete or continuous), sampling frequency, party responsible for sampling, and estimated annual cost of the sampling program.
- Prepare for and participate in a meeting with the Town to discuss the memorandum.
- Prepare a final memorandum based on one round of revisions and comments from the Town.
- Review EPA’s Great Bay Adaptive Monitoring Program document, when issued.
- Coordinate a meeting with EPA, NHDES, UNH and PREP to discuss coordination of monitoring efforts.

**HW will:**

- Attend meeting with the watershed organizations. Review meeting summary.
- Assist WP in the preparation of the recommended sampling program.
- Prepare for and participate in a meeting with the Town to discuss the memorandum.

**Task 6 – Implementation Plan and Schedule**

To meet the requirements for the Nitrogen Control Plan as outlined in the AOC, WP and HW will develop a 5-year implementation plan and schedule for point source (PS) and non-point source (NPS) measures. The plan will also include next steps for the Town in preparation of the Engineering Evaluation to meet AOC requirements and a preliminary outline of potential load allocation reductions for other communities within the watershed.

**WP will:**

- Develop suggested timeline, cost and process to implement PS nitrogen control measures.
- Outline next steps for implementation of PS nitrogen control measures beyond 5-years including elements to consider in the Engineering Evaluation.

**AMENDMENT NO. 1 TO THE ENGINEERING REPORT PHASE CONTRACT  
TOWN OF EXETER, NEW HAMPSHIRE  
NITROGEN CONTROL PLAN – PLAN OF STUDY**

- Update the preliminary adaptive management plan from the Wastewater Facilities Plan (March 2015) to assist the Town in measuring success and/or shortcomings to meet the goals of the plan once implementation has begun. The adaptive management plan will also be a critical piece to the future Engineering Evaluation.
- Develop prioritized recommended plan of PS and NPS nitrogen load reduction projects that will maximize the financial and environmental effectiveness of the program.
- Prepare a draft implementation plan and schedule.
- Prepare for and participate in a meeting with the Town to discuss the draft implementation plan and schedule.
- Prepare a final implementation plan and schedule based on one round of revisions and comments from the Town.

**HW will:**

- Develop suggested timeline, cost and process to implement NPS nitrogen control measures.
- Outline next steps for implementation of NPS nitrogen control measures beyond 5-years including elements to consider in the Engineering Evaluation.
- Assist in the development of an adaptive management plan for the Town.
- Assist with the preparation of the draft implementation plan and schedule.
- Prepare for and participate in a meeting with the Town to discuss the draft implementation plan and schedule.
- Assist with the preparation of the final implementation plan and schedule based on one round of revisions and comments from the Town.

**Task 7 – Final Report**

A written Nitrogen Control Plan will be prepared which summarizes the evaluations and results of the project. The report will present the findings of the final Nitrogen Control Plan to the Town, EPA and NHDES and discuss next steps for implementation of the plan, as well as steps for the Town to take in preparing for development of the Engineering Evaluation.

**WP will:**

- Prepare and submit a Draft Report (10 paper copies and one electronic pdf copy). It is anticipated that the report will be approximately 20 pages of new material, with several appendices (e.g., memo regarding baseline loads, memo regarding cost estimates to upgrade WWTF to 3mg/l effluent TN, memo regarding nitrogen control measures, etc.).
- Prepare for and participate in one review meeting with the Town to discuss the report and receive comments.
- Address the Town's comments and submit a draft Final Report for distribution within Town as well as to EPA and NHDES for review and comment (10 copies and one electronic pdf copy). Complete prior to AOC deadline.
- Prepare for and participate in one meeting with NHDES, EPA and the Town to review comments.
- Address EPA and NHDES comments and submit a Final Report to EPA and NHDES.

**HW will:**

- Assist with the preparation of the Draft Report.

**AMENDMENT NO. 1 TO THE ENGINEERING REPORT PHASE CONTRACT  
TOWN OF EXETER, NEW HAMPSHIRE  
NITROGEN CONTROL PLAN – PLAN OF STUDY**

- Prepare for and participate in one review meeting with the Town to discuss the report and receive comments.
- Assist with addressing the Town’s comments prior to submitting to EPA and NHDES. Complete prior to AOC deadline.
- Prepare for and participate in one meeting with NHDES, EPA and the Town to review comments.
- Assist with addressing EPA and NHDES comments and submit a Final Report to EPA and NHDES.
- Present the final report to the Town and Select Board

**SCHEDULE**

The following schedule is proposed for the remaining scope items.

<b>Milestone</b>	<b>Completion Date **</b>
Task 1 Preliminary Analysis	Completed
<i>Task 1-1 Establish Baseline Conditions</i>	<i>Completed July 2017</i>
<i>Task 1-2 Develop Planning-Level Costs for NPS Reductions</i>	<i>Completed Nov 2017</i>
<i>Task 1-3 Review Meetings</i>	<i>Completed Nov 2017</i>
Task 2 Select Board’s Meeting	May – June 2018
Task 3 Load Reduction Goals	May – June 2018
Task 4 Nitrogen Control Measures Analysis	May – July 2018
Task 5 Water Quality Monitoring Program Outline	May – June 2018
Task 6 Implementation Plan and Schedule	June – July 2018
Task 7 Report	
Draft Report	Late July 2018
Meeting with Town Staff	Mid Aug 2018
Draft Final Report	Late Aug 2018
Selectman’s Meeting	Mid Sept 2018
Submit Final Report to EPA and DES	September 28, 2018

**\*\* Note that this schedule is very aggressive and will require expedited reviews by Town staff. It may be necessary to request a limited AOC time extension to complete this report. If a time extension is needed, it should be requested no later than June 15, 2018. \*\***

**AMENDMENT NO. 1 TO THE ENGINEERING REPORT PHASE CONTRACT  
TOWN OF EXETER, NEW HAMPSHIRE  
NITROGEN CONTROL PLAN – PLAN OF STUDY**

**COMPENSATION**

We recommend establishing the budget shown below. Billings will be based on Wright-Pierce’s Billing Rates, plus Reimbursable Expenses times a factor of 1.0, and charges for Consultants’ services times a factor of 1.05. Total estimated compensation and a breakdown of the labor and expenses per task is presented in the table below. This budget will not be exceeded without prior written approval.

<b>Task</b>	<b>Total</b>
Task 1 Preliminary Analysis	Completed
Task 2 Select Board’s Meeting	\$4,600
Task 3 Load Reduction Goals	\$7,000
Task 4 Nitrogen Control Measures Analysis	\$15,000
Task 5 Water Quality Monitoring Program Outline	\$12,500
Task 6 Implementation Plan and Schedule	\$10,500
Task 7 Report	\$20,000
<b>Total</b>	<b>\$69,600</b>

**ADDITIONAL SERVICES**

There are additional services which may be desired but which are not included in this scope of services. These tasks can be performed based on a written contract amendment. Examples of potential additional services include:

- Development of estimates of future point source and non-point source nitrogen loads
- Development of water quality models
- Implementation of tracking and accounting software or approaches
- Analysis of specific nitrogen control measures and projects
- Development of specific ordinances
- Development of a financial capability analysis
- Development of a Quality Assurance Plan for water quality monitoring data collection and analysis

COST OR PRICE SUMMARY FORMAT FOR SUBAGREEMENTS UNDER NH SAG & SRF			Form Approved DES 02/06	
PART I - GENERAL				
1. GRANTEE / LOANEE - <b>TOWN OF EXETER, NH</b>			2. GRANT/LOAN NO.	
3. NAME OF CONTRACTOR OR SUBCONTRACTOR - <b>WRIGHT-PIERCE</b>			4. DATE OF PROPOSAL <b>April 30, 2018</b>	
5. ADDRESS OF CONTRACTOR OR SUBCONTRACTOR ( Include ZIP ) <b>230 Commerce Way, Suite 302, Portsmouth, NH 03801</b>			6. TYPE OF SERVICE TO BE FURNISHED <b>Nitrogen Control Plan (Amendment 1)</b>	
PART II - COST SUMMARY				
7. DIRECT LABOR (Specify labor categories)	HOURS	HOURLY RATE	ESTIMATED COST	TOTAL
PRINCIPAL-IN-CHARGE	2	65.00	\$130.00	
PROJECT MANAGER	115	61.00	\$7,015.00	
PROJECT ENGINEERS	106	32.11	\$3,403.48	
BLDG DESIGN ENGINEERS	0	45.00	\$0.00	
FUNDING/FINANCING	0	50.00	\$0.00	
CAD/GIS TECHNICIAN	10	25.50	\$255.00	
CLERICAL	10	20.00	\$200.00	
TECHNICAL ADVISORS	6	65.00	\$390.00	
DIRECT LABOR TOTAL:				\$11,393
8. INDIRECT COSTS (Specify indirect cost pools)	RATE	x BASE =	ESTIMATED COST	
OFFICE STAFF	1.68	11,393.48	\$19,141	
INDIRECT COSTS TOTAL:				\$19,141
9. OTHER DIRECT COSTS				
a. TRAVEL			ESTIMATED COST	
(1) TRANSPORTATION			\$250.00	
(2) PER DIEM			\$100.00	
TRAVEL COSTS TOTAL:			\$350.00	
b. EQUIPMENT, MATERIALS, SUPPLIES (Specify categories)		QTY	COST	ESTIMATED COST
COPIES, POSTAGE, PRINTING, ETC.		1	\$600.00	\$600.00
				\$0.00
				\$0.00
EQUIPMENT SUBTOTAL :				\$600.00
c. SUBCONTRACTS			ESTIMATED COST	
HORSLEY WITTEN GROUP			\$31,800.00	
SUBCONTRACTS SUBTOTAL :			\$31,800.00	
d. OTHER (Specify categories)			ESTIMATED COST	
OTHER SUBTOTAL :			\$0.00	
e. OTHER DIRECT COSTS TOTAL :				\$32,750
10. TOTAL ESTIMATED COST				\$63,285
11. PROFIT				\$6,315
12. TOTAL PRICE				\$69,600



2018 Election Results - 2695 votes cast

	<u>Amounts</u>	<u>Yes</u>	<u>No</u>	<u>Total Votes</u>	<u>Blanks</u>	<u>% Yes</u>	<u>% No</u>	<u>Result</u>
Article 21 Wastewater Asset Plan	30,000	2119	409	2528	167	83.8%	16.2%	Pass
Article 22 Stormwater Asset Plan	30,000	2027	421	2448	247	82.8%	17.2%	Pass
Exeter Cooperative Voting		1459	972	2431	264			





**ABSENTEE  
OFFICIAL BALLOT  
ANNUAL TOWN ELECTION  
EXETER, NEW HAMPSHIRE  
MARCH 13, 2018**

BALLOT 2 OF 2

*Andrea J. Kohler*  
TOWN CLERK

**ARTICLES CONTINUED**

**Article 13**

Shall the Town vote to raise and appropriate the sum of twenty thousand dollars (\$20,000) to be added to the Sidewalk Repair and Replacement Capital Reserve Fund previously established. This sum to come from general taxation.  
(Majority vote required) Recommended by the Board of Selectmen 5-0.

YES   
NO

**Article 14**

Shall the Town vote to authorize the Board of Selectmen to enter into a 7-year lease/purchase agreement for \$525,299 for the purpose of lease/purchasing a fire engine for the Exeter Fire Department to replace a 1997 engine, and to raise and appropriate the sum of eighty-eight thousand and one hundred seventy five dollars (\$88,175), which represents the first of 7 annual payments for that purpose. This lease/purchase will contain an escape (non-appropriation) clause. This sum to come from general taxation.  
(Majority vote required) Recommended by the Board of Selectmen 3-2.

YES   
NO

**Article 15**

Shall the Town vote to raise and appropriate the sum of one hundred thousand dollars (\$100,000) to be added to the Sick Leave Expendable Trust Fund previously established. This sum to come from general fund surplus.  
(Majority vote required) Recommended by the Board of Selectmen 5-0.

YES   
NO

**Article 16**

Shall the Town vote to raise and appropriate, through special warrant article, the sum of seventy-three thousand eight hundred and ninety seven dollars (\$73,897), for the purpose of replacing Fire Department radios. This sum to come from general taxation.  
(Majority vote required) Recommended by the Board of Selectmen 4-1.

YES   
NO

**Article 17**

Shall the Town vote to authorize the Board of Selectmen to enter into a 5-year lease/purchase agreement for \$250,400 for the purpose of lease/purchasing a loader for the Exeter Highway Department to replace a 2005 loader, and to raise and appropriate the sum of fifty-six thousand three hundred and forty dollars (\$56,340), which represents the first of 5 annual payments for that purpose. This lease/purchase will contain an escape (non-appropriation) clause. This sum to come from general taxation.  
(Majority vote required) Recommended by the Board of Selectmen 5-0.

YES   
NO

**Article 18**

Shall the Town vote to raise and appropriate, through special warrant article, the sum of fifty thousand dollars (\$50,000), for the purpose of conducting a public safety study to address future operation and facility needs of the Exeter Police, Fire, EMS, and Dispatch departments. This sum to come from general taxation.  
(Majority vote required) Recommended by the Board of Selectmen 3-2.

YES   
NO

**Article 19**

Shall the Town vote to raise and appropriate, through special warrant article, the sum of fifty-thousand dollars (\$50,000), for the purpose of conducting a traffic, parking and pedestrian safety study in the downtown area to include a portion of Front Street, Water Street, String Bridge, Franklin Street, Bow Street, Chestnut Street, Center Street, and other streets in the general downtown area. This sum to come from general taxation.  
(Majority vote required) Recommended by the Board of Selectmen 3-2.

YES   
NO

**Article 20**

Shall the Town vote to raise and appropriate the sum of fifty-thousand dollars (\$50,000) to be added to the Snow and Ice Deficit Non-Capital Reserve Fund previously established. This sum to come from general fund surplus.  
(Majority vote required) Recommended by the Board of Selectmen 5-0.

YES   
NO

**Article 21**

Shall the Town vote to authorize the Board of Selectmen to enter into a loan agreement of up to \$30,000 through the New Hampshire Department of Environmental Services Clean Water State Revolving Loan Fund for the purpose of developing an Asset Management plan for the Town's wastewater infrastructure. The loan will provide up to \$30,000 principal forgiveness; therefore, no repayment of the loan will be required.  
(A 3/5 ballot vote required for approval.) Recommended by the Board of Selectmen 5-0.

YES   
NO

**TURN BALLOT OVER AND CONTINUE VOTING**

**ARTICLES CONTINUED**

**Article 22**

Shall the Town vote to authorize the Board of Selectmen to enter into a loan agreement of up to \$30,000 through the New Hampshire Department of Environmental Services Clean Water State Revolving Loan Fund for the purpose of developing an Asset Management plan for the Town's storm water infrastructure. The loan will provide up to \$30,000 principal forgiveness; therefore, no repayment of the loan will be required. (A 3/5 ballot vote required for approval.) Recommended by the Board of Selectmen 5-0.

YES   
NO

**Article 23**

Shall the Town vote to establish a capital reserve fund under RSA 35:1 for the purpose of general maintenance on town cemeteries including the Winter Street cemetery, and to raise and appropriate the sum of twenty seven thousand dollars (\$27,000) to be placed in this fund and further the Board of Selectmen shall be named agents of the fund and be authorized to make expenditures from the fund. These funds may also be used to match grants available for town cemeteries under the control of the Selectboard as Cemetery Trustees. This sum to come from general taxation. (Majority vote required) Recommended by the Board of Selectmen 5-0.

YES   
NO

**Article 24**

Shall the Town vote to establish a capital reserve fund under RSA 35:1 for the purpose of ongoing maintenance of the Swasey Parkway Pavilion and to raise and appropriate the sum of seven thousand five hundred dollars (\$7,500) to be placed in this fund and further the Board of Selectmen shall be named agents of the fund and be authorized to make expenditures from the fund. This article will not impact the tax rate as surplus funds are available from the Swasey Parkway Pavilion project completed in 2007 and are currently held in an escrow account. (Majority vote required) Recommended by the Board of Selectmen 5-0.

YES   
NO

**Article 25**

Shall the Town vote to adopt the provisions of the Epping Road Tax Increment District Plan Amendment (dated January 8, 2018) in accordance with RSA 162-K:9, which allocates the use of tax increments for retirement of bonds and notes as outlined in the plan. (Majority vote required) Recommended by the Board of Selectmen 5-0.

YES   
NO

**Article 26**

By petition of Herb Moyer and others, to be placed on the Town Warrant: Shall the town express its support to Governor Sununu for New Hampshire to join Maine and Massachusetts and study the feasibility of developing offshore wind power in the Gulf of Maine. The town will provide written notice urging that Governor Sununu request that the Bureau of Ocean Energy Management form an intergovernmental task force. A bipartisan NH legislative committee studied the potential for offshore wind in 2014, and recommended the establishment of this task force. Floating wind turbines located far offshore in federal waters, usually not visible from land, combined with other renewable energy will move NH to 100% renewable energy by 2050. The building of offshore wind farms will bring a significant number of jobs and revenue to New Hampshire. (This is a petitioned warrant article).

YES   
NO

**Article 27**

On the petition of Nicholas T. Gray and other registered voters of Exeter, in an effort to equip voters with a greater understanding of the tax impacts of proposed warrant articles, to see if the Town will vote the following:

Shall the Town adopt RSA 32:5, V-b. The Town shall, for all future annual budgets and special warrant articles requiring public funding, include an estimate of the tax impact for each appropriation. These tax estimates shall be provided in nominal dollar amounts corresponding to the median single-family home assessment in Town. The estimates will be provided separately as part of each respective warrant article. For a warrant article that will result in a bond issue, the tax estimate shall assume a bond of specified length at prevailing interest rates.

YES   
NO

The Board of Selectmen shall, by majority vote and in compliance with the requirements set forth above, approve the estimation methodology utilized and the exact language included on the Town Warrant.

**Article 28**

On petition of Bruce Jones and other registered voters of Exeter, in an effort to establish that all public spaces have a consistent value and prioritized availability to Exeter-based businesses, non-profits and residents, to see if the Town will vote the following:

The Town shall apply the current Town Hall usage fee of \$125 per day to all businesses, including non-profit organizations that are not based in Exeter. This fee shall also apply to the second floor space above Town Hall.

YES   
NO

The Board of Selectmen shall, by majority vote and in compliance with the requirements set forth above, approve the exact language included on the Town Warrant. If this is approved, it is advisory only.

**YOU HAVE NOW COMPLETED VOTING THIS BALLOT**



# TOWN OF EXETER, NEW HAMPSHIRE

10 FRONT STREET • EXETER, NH • 03833-3792 • (603) 778-0591 • FAX 772-4709

[www.exeternh.gov](http://www.exeternh.gov)

## DESIGNATION OF AUTHORITIES FOR CLEAN WATER SRF LOAN

WHEREAS, the Town of Exeter, NH (the Applicant) after thorough consideration of the nature of its water pollution problem hereby determines that developing comprehensive asset management plans, generally described as:

Asset Management Plans for Wastewater and Stormwater Infrastructure (the Project) is desirable and in the public interest, and to that end, it is desired to apply for assistance from the State Revolving Fund (SRF); and

WHEREAS, the Applicant has examined and duly considered the provisions of RSA 486:14 and the New Hampshire Code of Administrative Rules Chapter Env-Wq 500, which relate to loans from the Clean Water State Revolving Fund and deems it to be in the public interest to file a loan application and to authorize other actions in connection therewith;

NOW, THEREFORE, BE IT RESOLVED BY the Town of Exeter Select Board, the governing body of said Applicant, as follows:

1. That the person holding the position of Town Manager, currently held by Russell Dean, is hereby designated as the Authorized Representative of the Applicant for the purpose of filing an application for a loan in accordance with New Hampshire Code of Administrative Rules Chapter Env-Wq 500, furnishing such information, data, and documents pertaining to the applicant for a loan as may be required; and if such loan be made, is the designated Authorized Representative of the Applicant responsible for furnishing such information, data, and documents pertaining to disbursements for the loan.
2. That if such loan be made, the Applicant agrees to repay the loan as stipulated in the loan agreement.
3. That a certified copy of this resolution be included as part of the application to be submitted for a loan.
4. That persons holding the following position(s) at the time of loan execution are authorized to sign the loan agreement binding the Applicant to the terms and conditions of the loan.  
Town Manager.
5. That if such loan be made, the Applicant agrees to make provisions for assuming proper and efficient operation and maintenance of the facilities after completion of the construction thereof.

**DESIGNATION OF AUTHORITIES FOR CLEAN WATER SRF LOAN**

VOTED:

Official Motion: Motion by Selectperson \_\_\_\_\_, “to enter into and approve a loan agreement with the DES in the amount of \$60,000.00 to the Town of Exeter and to authorize Town Manager, Mr. Russell Dean, to sign paperwork associated with such agreement on behalf of the Town”, Selectperson \_\_\_\_\_ seconds the motion.

Vote result:

I, Ms. Andrea Kohler, Town Clerk of Exeter, NH do hereby certify that at the Select Board’s meeting on June 18, 2018, the Town of Exeter, agreed to enter into an agreement with the NH Department of Environmental Services (DES) for the aforementioned SRF Loan.

I certify that said vote has not been amended or repealed and remains in full force and effect as of the date of this Certification.

ATTEST:

Date: \_\_\_\_\_



# EXETER PUBLIC WORKS DEPARTMENT

13 NEWFIELDS ROAD • EXETER, NH • 03833-3792 • (603) 773-6157 • FAX 772-1355

[www.exeternh.gov](http://www.exeternh.gov)

DATE: May 31, 2018  
TO: Russell J. Dean, Town Manager  
FROM: Jennifer Mates, P.E., Assistant Town Engineer  
RE: Lincoln St Phase II Project  
Amendment to Agreement for Construction Phase Services

The Lincoln Street Phase II project was approved by the Town voters (Article 5) in March 2017. The warrant article was for design and construction for \$2,802,000. The project will include sewer, drainage, and streetscape improvements on Lincoln Street, along with utility improvements on Tremont Street and Daniel Street that were designed in Phase I.

CMA Engineers were the design engineers for both phases of the Lincoln St Phase project. Attached is an amendment to the Agreement for Construction Phase Services with CMA Engineers for \$235,000. This is approximately 7.7% of the total project cost, which is lower than the typical range for Construction Engineering services. **The Department recommends approving the construction phase contract amendment for the Lincoln Street Phase II project to CMA Engineers for \$235,000.**

Suggested language for the motion:

*To approve the Amendment to Agreement for Construction Phase Services with CMA Engineers in the amount of \$235,000 and to authorize the Town Manager to sign said contract amendment.*



April 16, 2018

**Revised: May 21, 2018**

Jennifer Mates, P.E.  
Exeter Public Works Department  
13 Newfields Road  
Exeter, NH 03833

**Re: Town of Exeter - Lincoln Street Phase II Project  
Amendment to Agreement for Construction Phase Services  
CMA #1069**

Dear Jen:

CMA Engineers appreciates the opportunity to be of continued service to the Town of Exeter in the construction administration and resident project representative services for the **Lincoln Street Phase II Improvement Project**. Under this amendment, we will represent the Town throughout the construction period.

**Scope of Services and Schedule**

***See Attachment A for detailed description of Scope of Services and Schedule***

**Project Team**

The project team for this amendment includes staff that were involved in the design process and are experienced in the administration and field observation of roadway and utility construction projects.

***William A. Straub, P.E. Principal in Charge***

Responsible for overall commitment of resources of CMA Engineers. Review project progress, quality, and responsiveness.

***Philip A. Corbett, P.E. Project Manager***

Responsible for managing staff, budget, and project communications with the Contractor and Town Staff. Daily construction administration duties including submittal reviews, weekly project progress meetings, dissemination of documents and project correspondence.

***Samuel T. Fortier, PE Project Engineer***

Assistance with administration duties including submittal reviews, and preparation of clarification documents (sketches) to supplement project plans, track quantity spreadsheets and other tasks.

***Jack C. Kareckas, CET Resident Project Representative***

Daily observation of construction, quality assurance, maintain quantity summaries, assist in pay requisition review, maintain as-built documents, coordinate meetings, and represent the Town in the field.

Other CMA Engineers staff may provide project support during the construction project.

**Engineering Fees**

Engineering fees will be assessed as in our existing agreement. Time for staff will be billed on the basis of CMA Engineers, Inc. standard rates. Engineering staff are invoiced at the rate of salary cost (wage rate plus 35% to

cover statutory and customary fringe benefits) times a factor of 2.45. Principal's time is invoiced at the lesser rates of \$175 for William Straub, P.E. Expenses are invoiced at cost plus 10%. Subconsultant costs are subject to a multiplier of 1.15. Mileage will be billed at the prevailing IRS rate. CADD computer time, if required, is invoiced at \$9/hour.

Current resulting hourly rates for members of the project team are (subject to change per formula above):

William A. Straub, P.E.	Principal	\$175/hr
Philip A. Corbett, P.E.	Project Manager	142.26
Samuel T. Fortier, P.E.	Project Engineer	117.69
John C. Kareckas	RPR	121.08
Clerical	Various	75.00

Our fee estimate under this amendment, inclusive of time, expenses and consultants' costs has been estimated at **\$235,000**. Actual time and associated engineering costs during the Construction phase is requirement-driven, based in part on contractor performance and schedule. If total fees exceed the estimated fee above, we will advise the City as to the circumstances requiring such increases. Invoices are submitted monthly with payment of invoices due net thirty (30) days of invoice date.

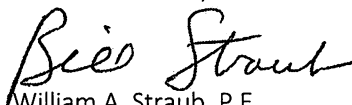
### **Agreement**

The terms and conditions in our existing engineer agreement dated June 4, 2015 apply, except as specifically modified herein. Invoices will be prepared on a monthly basis and will include a summary of all time and expenses, a project summary and status report. Invoices will be due net 30 days.

This amendment to the existing agreement represents the entire agreement between the Town of Exeter and CMA Engineers Inc. for this project. You can authorize this agreement by signing in the spaces provided below and returning a copy to us.

CMA Engineers sincerely appreciates this opportunity to be of continued service to the Town of Exeter. Should you have any questions, please do not hesitate to call.

Very truly yours,  
CMA ENGINEERS, INC.

  
William A. Straub, P.E.  
Principal-in-Charge

  
Philip A. Corbett, P.E.  
Project Manager

Attachments: Attachment A: Scope and Schedule, Fee estimate

WAS/PAC/kao

**ACCEPTED**

**TOWN OF EXETER**

By: \_\_\_\_\_ Date: \_\_\_\_\_

# Attachment A

## Lincoln Street Phase II Improvement Project Construction Phase Services Town of Exeter NH and CMA Engineers, Inc.

---

### Scope of Services

#### Construction Phase Services

Engineering during the Construction phase is requirement-driven, based in part on contractor performance. For this assignment we have assumed full-time resident observation services as well as in-office construction administration. These services will be managed under the direction of a Professional Engineer that has been centrally involved in the design of the project.

Construction Administration includes representing the Town of Exeter in the administration of the construction project and will include the following tasks:

<ul style="list-style-type: none"><li>• Notice to Proceed</li></ul>	<ul style="list-style-type: none"><li>• Review the Contractor's schedule</li></ul>
<ul style="list-style-type: none"><li>• Schedule &amp; moderate preconstruction conference.</li></ul>	<ul style="list-style-type: none"><li>• Schedule, moderate, and document regular construction meetings.</li></ul>
<ul style="list-style-type: none"><li>• Review/approval of Contractor's SWPPP.</li></ul>	<ul style="list-style-type: none"><li>• Contract clarification(s) as necessary.</li></ul>
<ul style="list-style-type: none"><li>• Preparation/review of change orders (as necessary).</li></ul>	<ul style="list-style-type: none"><li>• Materials testing and associated review and documentation.</li></ul>
<ul style="list-style-type: none"><li>• Manage the resident project representative services.</li></ul>	<ul style="list-style-type: none"><li>• Review project for interim completion, substantial completion, and final completion</li></ul>
<ul style="list-style-type: none"><li>• Shop drawing review and approval.</li></ul>	<ul style="list-style-type: none"><li>• Prepare and submit record drawings (<i>CAD drawings or water main, services &amp; appurtenances based on as-built conditions</i>).</li></ul>
<ul style="list-style-type: none"><li>• Review/recommendation for payment of monthly payment applications.</li></ul>	<ul style="list-style-type: none"><li>• Prepare "tie-sheets" with ties to valves and curb stops</li></ul>

Resident Project Representative (RPR) is assumed throughout the completion of the contract. An overall duration of 29 weeks of active construction is assumed in 2018. During this time the resident will represent the Town and CMA Engineers on-site, including:

<ul style="list-style-type: none"><li>• Observe Contractor's Daily Work</li></ul>	<ul style="list-style-type: none"><li>• Track and coordinate work scheduling with Contractor and Town staff as required.</li></ul>
<ul style="list-style-type: none"><li>• Track daily work &amp; maintain daily records of installed materials and quantity sign-offs</li></ul>	<ul style="list-style-type: none"><li>• Review project completion and quality control documentation</li><li>• Interface with residents &amp; abutters as appropriate</li></ul>
<ul style="list-style-type: none"><li>• Review all quality control information</li></ul>	<ul style="list-style-type: none"><li>• Attend all on-site meetings</li></ul>
<ul style="list-style-type: none"><li>• Review pay requisitions</li></ul>	<ul style="list-style-type: none"><li>• Maintain record drawings</li></ul>



The role of the RPR will be to represent CMA Engineers and the Town as outlined above, and not to direct the work or performance of the Contractor. The primary quality control requirements will be completed by the Contractor with pre-qualified subcontractors, and all QC information will be reviewed by CMA Engineers for adequacy and acceptability in accordance with the contract documents.

We have included a \$3,500 allowance to pay for necessary soil and compaction testing to be done by John Turner Consulting.

**Schedule:**

CMA Engineers will provide construction administration and resident project representative services from the conclusion of the bid period through final construction and acceptance of the project. The Construction contract provides the contractor with 200 calendar days of active construction to substantial completion, and another 30-days to final completion (total 230 days).

We anticipate this work to commence in late-June 2018. Estimated timeframes for the construction efforts are summarized as follows:

- Award/Notice to Proceed: June 2018
- 2018 Construction Period: June – August 2018
- 2019 Construction Period: April – August 2019
- Project Closeout: September 2019

The estimated budget assumes active construction requiring coverage by CMA Engineers will be 5 days a week for 8 hours/day during the 29 weeks of active construction. Our budget assumes that the Contractor completes the work satisfactorily Monday-Friday. If use of Saturdays is allowed, additional time and costs may be required.

## List for Select Board meeting June 18 2018

### Abatement

<u>Map/Lot</u>	<u>Location</u>	<u>Amount</u>
72/222/2	12 Center Street	797.74
55/75/100	Meeting Place Dr	6,048.69
110/2/11	11 Exeter Elms	219.52
110/2/8A	8A Exeter Elms	128.96
110/2/8A	8A Exeter Elms	134.74
110/2/8A	8A Exeter Elms	88.34
110/2/16	16 Exeter Elms	68.23
110/2/118	118 Exeter Elms	198.10
86/4/2	18 Hampton Unit 2	3003.59
70/107/1	201A High Street	198.1

### Excavation Tax

<u>Map/Lot</u>	<u>Location</u>	<u>Amount</u>
113/5	Powder Mill Road	197.56

### Exempt Property Review

Phillips Exeter Academy  
Charitable/Educational  
Religious  
Religious Partial Exempt

JUN 07 2018

Received



### Application for Event Use of Town Facility

Forms submitted to: Town of Exeter, 10 Front Street, Exeter, NH 03833

Fax #: 603-777-1514 email: [sriffle@exeternh.gov](mailto:sriffle@exeternh.gov)

Use Request:  Town Hall (Main Floor)  Bandstand  Parking - # Spaces \_\_\_\_\_ Location \_\_\_\_\_

Signboard Request:  Poster Board Week: \_\_\_\_\_  Plywood Board Week: \_\_\_\_\_

**Representative:**

Name: Scott Ruffner Address: 11 Hall Place

Town/State/Zip: Exeter, NH 03833 Phone: 603-512-8396

Email: ScottRuffner@mac.com

**Organization:**

Name: TEAM Address: 111R Water Street

Town/State/Zip: Exeter, NH 03833 Phone: \_\_\_\_\_

**Reservation Details:**

Type of Event/Meeting: First Friday Date: June 7th, 2019

Times of Event: 4pm - 10pm Times needed for set-up/clean-up: 9am-11pm

Will food/beverages be served/prepared in the foyer or room to the right? Yes  No

If Tech/ AV Services are Needed, provide details\*: \_\_\_\_\_

**Requirements:**

**Rental Fee:** For Town Hall use there is a fee of \$125 per day. A rental fee waiver may be requested in writing.

**Cleaning Deposit:** A cleaning deposit of \$100 is required of any user serving food or beverages. If the town determines after use that the building was acceptably cleaned, the deposit fee will be returned to the user. No food is allowed in Main Hall of the Town Hall. If food is to be served and/or prepared in foyer of Town Hall, the electrical outlet cannot exceed 20 amps.

**\*Tech/AV Services:** There is a fee of \$80 an hour for any Tech/AV services needed. Services must be arranged in advance. Email [aswanson@exeternh.gov](mailto:aswanson@exeternh.gov) to coordinate.

**Liability Insurance Required:** The Town requires liability insurance to be submitted with this completed application. Required insurance amounts: General Liability/Bodily Injury/Property Damage: \$300,000/\$1,000,000. The Town of Exeter must be listed as additional insured.

**Keys:** Access to a town building after normal business hours requires a key sign out. Forms and keys can be obtained from the Town Manager's office at the Town Office during normal business hours (there is no other option for obtaining a key). A key can be collected up to 24 hours before your event (with the exception of Sunday events).

Signing below acknowledges receipt of and agreement to all rules, regulations and requirements pertaining to the use of a town facility. Access to the 2nd floor is not allowed during events. Bathroom are accessed from outside the Town Hall. Permit approvals are contingent upon proper insurance and fees paid to the Town of Exeter.

Applicant signature: *Scott Ruffner* Date: 6-7-18

Authorized by the Select Board/Designee: \_\_\_\_\_ Date: \_\_\_\_\_

Office Use Only:

Liability Insurance: On file  In-process  Fee: Paid  Non-profit fee waiver requested



# Application for Town Hall Facility Use

Faxed #: 603-777-1514 or emailed: [sriffle@exeternh.gov](mailto:sriffle@exeternh.gov)  
Forms can be mailed: Town of Exeter, 10 Front Street, Exeter, NH 03833

Facility Requested: Town Hall (Main Floor/Town Hall Stage)  Balcony

### Representative Information:

Name: Diane Bitter Address: 875 Central Rd.  
Town/State/Zip: Rye Beach NH Phone: 603-964-4161  
Email: ddbitter@aol.com Date of Application: 6/14/18

### Organization Information:

Name: Rockingham County Republican C Address: PO Box 772  
Town/State/Zip: Exeter NH 03833 Phone: 603-964-4161

### Reservation Information:

Type of Event/Meeting: Candidates Forum for Congressional Dist. 1 Date: July 11, 2018  
Times of Event: 7:00 to 9:00 p.m. Times needed for set-up/clean-up: 5:00 to 10:00 p.m.  
# of tables: 5 # of chairs: 300  
List materials being used for this event: Sound system, lighting on stage podium  
Will food/beverages be served? water Description: \_\_\_\_\_

### Requirements:

**Rental Fee:** For Town Hall use there is a fee of \$125.00 per day. A rental fee waiver may be requested fee in writing.

**Cleaning Deposit:** A cleaning deposit of \$100 is required of any user serving food or beverages. If the town determines after use that the building was acceptably cleaned, the deposit fee will be returned to the user. No food is allowed in Main Hall of the Town Hall. If food is to be served and/or prepared in foyer or room on the right of the foyer, the electrical outlet cannot exceed 20 amps.

**\*Tech/AV Services:** There is a fee of \$80 an hour for any Tech/AV services needed. Services must be arranged in advance. Email [extvg@exeternh.gov](mailto:extvg@exeternh.gov) to coordinate.

**Liability Insurance Required:** The Town requires liability insurance to be submitted with this completed application. Required insurance amounts: General Liability/Bodily Injury/Property Damage: \$300,000/\$1,000,000. The Town of Exeter must be listed as additionally insured.

**Keys:** Access to a town building after normal business hours requires a key sign out. Forms and keys can be obtained from the Town Manager's office at the Town Office during normal business hours (there is no other option for obtaining a key). A key can be collected up to 24 hours before your event (with the exception of Sunday events).

Signing below acknowledges receipt of and agreement to all rules, regulations and requirements pertaining to the use of a town facility. Access to the 2nd floor is not allowed during events. Bathroom are accessed from outside the Town Hall. Permit approvals are contingent upon proper insurance and fees paid to the Town of Exeter.

Applicant signature: *Diane Bitter* Date: 6/15/18

Authorized by the Select Board /Designee: \_\_\_\_\_ Date: \_\_\_\_\_

### Office Use Only:

Liability Insurance: On file  In-process  Will receive by \_\_\_\_\_  
Fee: Paid  Will pay by \_\_\_\_\_ Non-profit fee waiver requested



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

06/14/2018

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

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

<b>PRODUCER</b> Harrison Insurance Agency, Inc P.O. Box 350 Lebanon, NH 03766 James E. Walker, Jr. <b>603-448-3211</b>		<b>CONTACT NAME:</b> James E. Walker, Jr. <b>PHONE (A/C, No, Ext):</b> 603-448-3211 <b>FAX (A/C, No):</b> 603-448-3212 <b>E-MAIL ADDRESS:</b>  <b>INSURER(S) AFFORDING COVERAGE</b>	
<b>INSURED</b> NH Republican State Committee 10 Water St. Concord, NH 03301-4917		<b>INSURER A:</b> Phenix Mutual <b>INSURER B:</b> <b>INSURER C:</b> <b>INSURER D:</b> <b>INSURER E:</b> <b>INSURER F:</b>	

**COVERAGES** **CERTIFICATE NUMBER:** **REVISION NUMBER:**

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

INSR LTR	TYPE OF INSURANCE	ADDL SUBR INSD WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-SECT <input type="checkbox"/> LOC OTHER:		44.800543-20	07/25/2017	07/25/2018	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 50,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ Excluded GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$
	AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY					COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
	<input type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$					EACH OCCURRENCE \$ AGGREGATE \$ \$
	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> <input type="checkbox"/> Y/N ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N/A				<input type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)  
 This is for the Town of Exeter for the meeting on 6/15/2018 .

<b>CERTIFICATE HOLDER</b>  Town of Exeter 10 Front Street Exeter, NH 03833	<b>CANCELLATION</b>  SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE James E. Walker, Jr. <i>James E Walker</i>



Exeter Area Lions Club

P.O. Box 254

Exeter, NH 03833

Memo

To: Greg Bisson, Acting Director of Exeter Parks and Recreation Department

Ellie Johnson, Treasurer, Exeter Area Lions Club

Russ Dean, Exeter Town Manager

From: Langdon Plumer, Exeter Area Lions Club

A handwritten signature in black ink, appearing to be 'L. Plumer', written over the printed name.

Preamble: The Exeter Lions Board meeting held on June 5, 2018 at the Exeter "Y" approved donating \$1,800.00 to the Exeter Parks and Recreation Department to purchase and install a Kayak Cradle at the Exeter Town Dock with a request to attach an appropriate plaque identifying the gift donor.

Payment arrangements: The Kayak Cradle donated to the Exeter Parks and Recreation Department will be purchased by the Town of Exeter. The Town of Exeter will provide an invoice to the Exeter Area Lions Club sent to Ellie Johnson, Treasurer, Exeter Area Lions Club, P.O. Box 254, Exeter NH 03833. Payment will be made to the Town of Exeter noting the Kayak Cradle gift. The Exeter Park and Recreation Department will arrange for a plaque identifying the gift working with Langdon Plumer, Exeter Area Lions Club to identify the message to be on the plaque.

Please feel free to contact me at 603-770-6499

*Town Manager's Office*

JUN 14 2018

*Received*

**KAYAK CRADLE**

**DONATED BY**



**EXETER AREA LIONS CLUB**

***"WE SERVE"***



## NEW HAMPSHIRE DIVISION OF HISTORICAL RESOURCES

State of New Hampshire, Department of Natural and Cultural Resources  
19 Pillsbury Street, Concord, NH 03301-3570  
[www.nh.gov/nhdhr](http://www.nh.gov/nhdhr)

603-271-3483  
FAX 603-271-3433  
[preservation@dncr.nh.gov](mailto:preservation@dncr.nh.gov)

June 7, 2018

David Sharples  
Town of Exeter  
10 Front Street  
Exeter, NH 03833



Dear Dave,

Our sincere apologies for the long delay regarding the status of the town's grant application to the Certified Local Government Program; however, the Division of Historical Resources is pleased to inform you that your proposal, as discussed on our site visit in April 2018, to undertake survey of two historic districts has been selected for funding. The grant amount will be \$20,000.

The DHR will be sending out the grant agreement documents soon. You may find it advantageous, given the relatively short time frame in which to complete the project, to begin getting your scope of work refined and building your team of consultants while the grant paperwork is in process. This grant will need to be completed no later than September 30, 2019.

We are happy to assist you with any questions that may arise as you move forward. We look forward to working with you on this project.

Sincerely,

  
  
Nadine Miller and Amy Dixon





*Working together is success.*  
— Henry Ford



Town of Exeter  
Goal Setting Report

May 14, 2018

**Primex**<sup>3</sup>  
NH Public Risk Management Exchange

Center for  
**Public Sector**  
Advancement

Promoting Excellence in the Public Sector

## Purpose and Intended Result of the Session

The purpose of the session was for the Board and Town Manager to come together to lay the horizon for the Town and establish goals and strategies that will help guide the Town over the next twelve (12) months.

## Participants

Julie Gilman, Chairwoman  
Donald Clement, Select Board  
Anne Surman, Select Board  
Molly Cowen, Select Board  
Kathy Corson, Select Board  
Russ Dean, Town Manager

*The exercise was facilitated by:*

Rick Alpers, Risk Management Consultant, Primex<sup>3</sup>  
Shelley Walts, Member Service Consultant, Primex<sup>3</sup>

## 2016 Goals Review Discussion

The session began with the Select Board and Town Manager reviewing previous goals and identifying what is going well within the Town and what needs work or improvement.

Rick Alpers also reviewed the process for the new members of the Select Board for establishing goals.

## Top 2016 Goals

### **GOAL #1:** *Master Plan Update*

The update has been completed and is available for public use.

### **GOAL #2:** *Continue to Improve Economic Development Program*

- Looking at Grants to assist
- Master Plan came into being so Economic development will flow from document
- New Planner hired and processes implemented
- Continue to encourage commercial development in identified locations in Town

### **GOAL #3: *Community Relations and Outreach***

- Communication Advisory Committee being formed
- An App for being designed for smart phones
- Continuous work is being done to the website to improve functionality

### **GOAL #4: *Capital Improvement Strategy***

- Continue to develop and plan CIP strategy
- Continue to work on achieving identified targets
- Planning Board oversees Capital Improvement Program (CIP)

## **What is Going Well with the Town of Exeter**

- Economic Development
- Great Select Board that is respectful
- Vitality and energy within Town and Volunteerism
- Master Plan process got more people involved
- Police / Fire / Public Safety satisfied with the Town of Exeter
- Great restaurants
- Synergy between Economic, Planning and Zoning Boards - working well together
- Amazing communication – Great volunteers
- Desirable place to be / live
- Schools will have full day Kindergarten in Fall 2018
- Sidewalks

## **What Needs Work in the Town of Exeter**

- Parking
- Traffic
- Facilities
- Communication
- Budgeting – balance between needs versus wants
- Unaffordable

## 2018-19 Discussion

### Molly Cowan

1. Increase participation in Town Government
2. Economic Development- bring together CEO, CFO, COO, DR, Educators within the local community to network and “brain dump” for development ideas

### Anne Surman

1. Retention of youth/millennials to stay/live/work in Exeter NH
2. Review policies

### Kathy Corson

1. Communication- establish different mediums of communication
2. Facilities- establish Committee to utilize Plan

### Julie Gilman

1. Intersection Review on All Roads
  - Inter-modal focus
  - Complete Streets
2. Historic Preservation to remain a priority in Exeter’s identity

### Russ Dean

1. Review of Tax Exemptions / Credits as they currently stand
2. Craft Housing Strategy - regionally and locally
3. Review Parking / Traffic concerns
4. Town-owned facilities need a detail plan and prioritization of repair or replacement

### Don Clement

1. Board needs to develop clear mission and vision – be accountable to citizens
2. Continue to message where Town the town is headed
3. A long-term Strategic Plan is needed for the community

## Goals for 2018-19

The Select Board and the Town Manager identified the top goals for the Town of Exeter and to develop a work plan. The goals were formulated from the individual goals listed above. The goals and deadline for an update or completion are listed below.

### **GOAL #1: *Facilities***

- Initiate a Plan
- Develop long-term sustainable strategy to update current facilities
- Potential steering committee formation to help drive the process

Select Board to have a work session by **June 30, 2018** to review facilities report and rating system of facilities and provide clear message on direction

### **GOAL #2: *Traffic and Parking Review***

- Develop strategy to review and enhance parking
  - ➔ Explore off street parking options
  - ➔ Grant for engineering study
  - ➔ Public input session
  - ➔ 2019 message for a clear understanding to provide to voters
- Review of traffic flow as development continues
- As roads are updated- keep in mind Complete Streets
  - ➔ Intersections
  - ➔ Sidewalks
  - ➔ Cycle lanes

Policy education of Complete Streets by Dave Sharples by **August 1, 2018**

### **GOAL #3: *Quality of Life Concerns***

- Housing strategy / affordability
- Communications - social media
- Keeping the millennials and future generations and attracting new citizens
- Increase participation in local government
- "Brain Dump" of local citizens for networking and strategy planning for betterment of the Town

## Other Objectives to Consider

- Policy Review
- Review of Exemptions / Credits

Center for  
**Public Sector**  
A d v a n c e m e n t

**Primex**<sup>3</sup>  
NH Public Risk Management Exchange

Bow Brook PLace  
46 Donovan Street  
Concord, NH 03301

603-225-2841  
800-698-2364

[www.nhprimex.org](http://www.nhprimex.org)

Trust. Excellence. Service.

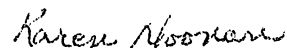
Town Manager  
Town Offices  
Exeter, NH 03833  
June 13, 2018

Dear Mr Dean,

It is with sadness that I tender my resignation from the Exeter Arts Committee. I have appreciated the opportunity to serve this Town in the capacity of a committee member. It has enabled me to meet many fine citizens, artists, and committee members. The experience enriched my life by learning about the artistic talents of many Seacoast residents.

The last few years have not been so pleasant. In my opinion, the Town Officials did not support the EAC as positively as in previous years. Thus, as a volunteer on the EAC, the stress outweighed the feeling of being on a valued committee.

Sincerely,



Karen Noonan

*Town Manager's Office*

JUN 13 2018

*Received*



June 12, 2018

To Exeter Selectboard and Town Manager:

I have been a volunteer member of the Exeter Arts Committee since 2009. During this time, I have spent countless hours gladly encouraging and fostering the arts community in Exeter and surrounding communities. Over the past 3 years, the hours spent were extremely discouraging, with constant interruptions from member and supporters of TEAM, not to mention slanderous, false accusations from TEAM's members and followers. It is my observation through these experiences that the Exeter Town Officials (BOS and Town Manager) have not stood up to, and probably will not ever stand up to these people and as a result will be losing some very dedicated volunteers.

That said, effective immediately I resign from the Exeter Arts Committee. I will provide all keys under my control to the Town Manager's Office.

Sincerely,



Kathy Lewis Thompson  
15 Drinkwater Road  
Exeter, NH 03833

6.12.18

To the Town of Exeter Board of Selectpersons

I served on the Town of Exeter Arts Committee from 2004 to 2008 and rejoined the Committee in 2018. I looked forward to again serving the Town and working with dedicated volunteers. Being a member of the Committee in different decades gave me a unique perspective on what makes the Committee successful. Confidence and support by the Town Office is crucial.

I would like to thank Anne Surman and Don Clement for their continued efforts and support. However, I am disappointed that others in the Town Office do not share that feeling. In short, it is pointless to remain on a Town Committee that lacks Town support. It is with regret that I am formally resigning from the Town of Exeter Arts Committee.

Dean Scott

A handwritten signature in cursive script that reads "Dean Scott".

*Town Manager's Office*

JUN 13 2018

*Received*

Darius X. Thompson  
15 Drinkwater Road, Exeter, NH 03833  
T. 603.686.813  
darius.thompson@gmail.com

12 June 2018

Town of Exeter Selectboard  
Town Manager  
10 Front Street  
Exeter, NH 03833

To Town of Exeter Selectboard and Town Manager:

Regretfully after volunteering for the Exeter Arts Committee in an unofficial capacity since 2010 and officially as an Exeter Arts Committee Member since 2017, I am submitting this letter to you.

Exeter has a lot of volunteers who donate their time and expertise for numerous committees, events, groups and causes, all for the greater good of Exeter. Volunteers are not looking for any accolades, or kudos, we all serve to make our community better and inclusive.

Speaking truth to power is never easy, but support from the Selectboard and the Town Manager for the Exeter Arts Committee has been non-existent except for Selectboard Rep Ann Surman, and Selectboard Rep Don Clement.

It is sad to have a former Selectboard Chair and Rep, who along with the Town Manager when serving as Chair, was presented with documented issues with the committee members did nothing to support or address the Exeter Arts Committee, who was conveniently absent when votes for Exeter Arts Committee came before the board, who now as a citizen, will not hesitate to let you know he was a Selectboard member, is now advocating for a group in Exeter which has not always followed the rules and process he is advocating for so publicly now. When the Selectboard implemented a no alcohol policy in the Town Hall Gallery, it was surprising to learn this policy was ignored by a verbal agreement with the Town Manager and TEAM is in part an example of poor leadership of the Selectboard and is indicative of how the Town Manager is not being held accountable by the Selectboard.

There was a great opening statement at the last Selectboard meeting by Chair Julie Gilman regarding issues related to the Exeter Arts Committee, but it was just a statement. Leadership requires the ability to stand up for what is right, speak out against what is wrong with actions to support, residents, volunteers and committees. Effectively immediately I resign from the Exeter Arts Committee. I will provide all keys under my control to the Town Manager's Office.

Respectfully,



Darius X. Thompson  
15 Drinkwater Road  
Exeter, NH 03833

The Board of Selectmen  
Town of Exeter, NH  
10 Front Street  
Exeter, NH 03833-3792

June 12, 2018

Dear Board of Selectmen:

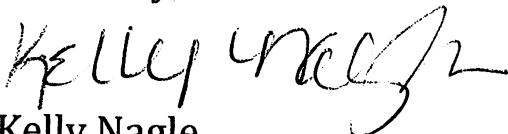
I would like to inform you that I am resigning from my volunteer position as a member of the Exeter Arts Committee, effective immediately.

I joined the Committee in February, hoping to support the town in its effort to continue to bring the arts to Exeter.

As of late, I feel as though the Town has not supported it's own Arts Committee. Without that support, I feel like any of my time spent would be for nothing.

I do want to note that as our appointed Committee Selectperson, Anne Surman, has been incredibly helpful to and supportive of the Arts Committee. This is not a reflection on her.

Sincerely,

  
Kelly Nagle