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August 19, 2019

Mr. Nick Lawler, P.E.
General Manager
Littleton Electric Light and Water Departments
39 Ayer Road
Littleton, Massachusetts 01460

Subject: Proposal for Professional Services Related to
Preliminary PFAS Treatment Study and Conceptual Facility Planning,
PFAS in Groundwater Supply at the Spectacle Pond Water Treatment Plant

Dear Mr. Lawler:

CDM Smith Inc. (CDM Smith) appreciates the opportunity to submit this proposal to assist the Littleton Electric Light and Water Departments (LELWD, or OWNER). We present this proposed scope based on our August 12th meeting with you and our recent PFAS project experience. This proposed study would be a first step in addressing PFAS concerns and evaluating Littleton's options concerning PFAS in the groundwater supply at the Spectacle Pond Water Treatment Plant (WTP).

Project Background

The Spectacle Pond WTP represents one of several water supply sources in LELWD's system. Water from this groundwater supply well is presently conveyed via a raw water pipeline and treated in a mid-1990s WTP, primarily designed to remove iron and manganese. Generally, the plant includes raw water ozonation, intermediate pumping, membrane filtration, and finished water pumping to the distribution system. LELWD has indicated that recent sampling shows a combined PFAS concentration above 20 parts per trillion (the Health Advisory level presently under consideration by the Massachusetts Department of Environmental Protection). LELWD has reported that it has participated in discussions with MassDEP and other parties as well as notifying customers of the findings and now seeks to better understand PFAS solutions, options and associated capital planning needs.

As discussed, while GAC is often identified as the preferred PFAS treatment technology, GAC's capacity to remove the compounds can exhaust in a finite amount of time, which varies depending on site-specific conditions such as other constituents in the water source that may also consume the GAC's absorption capacity. In CDM Smith's experience, other treatment technologies, such as Ion Exchange, have also been shown to remove PFAS compounds with performance equal to or better than GAC, depending on source water quality, and should be considered both in terms of capital and O&M costs. As such, bench scale testing of the Spectacle Pond Well water is advisable before designing a PFAS treatment solution, and prior to bench scale testing a Preliminary PFAS study is the first step.

Further, based on our discussion of the many other LELWD ongoing and/or planned water facility projects, we believe it would be prudent to conduct at this time some conceptual master planning activities





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including discussion of potential opportunities to achieve multiple objectives or combine projects for the benefit of Littleton. As such, in addition to the Preliminary PFAS Treatment Study, this proposed scope of services incorporates facilities planning elements and a workshop. The outcome of the workshop would be an improved understanding of the status and interrelationships of all the LELWD water facilities planning issues and generation of a list of focused next steps.

1.0 Scope of Services

Proposed services are outlined below:

Task 1.1 – Spectacle Pond Water Quality Analysis

- Review, present, and summarize all existing, available PFAS data furnished by LELWD.
- Recommend additional sampling and water quality analyses. It is assumed LELWD will collect and fund the laboratory analysis of any additional samples.
- Review the basic well operation and existing water quality and treatment operations. This review will comment upon operational practices and upon the existing plant's effectiveness of iron and manganese removal, as these inorganic constituents can hinder the ability for future downstream processes to meet expectations for PFAS removal. The review will also include comments regarding the lack of sewer and space availability at the Spectacle Pond WTP.
- Outline the scope of recommended bench-scale testing.

Task 1.2 – PFAS Regulatory and Treatment Data Collection and Summary

- Summarize the current state of regulatory issues related to PFAS. CDM Smith will present remarks on the United States EPA Health Advisory as well on several states' current approach to PFAS, to lend perspective for LELWD consideration. This broad view will be valuable as these compounds are the subject of actively-evolving regulations nationally.
- Solicit literature and budgetary cost advice from Granular Activated Carbon (GAC) vessel and media suppliers including Calgon, Evoqua, Cabot/Norit, and TIGG.
- Solicit literature and budgetary cost advice from ion exchange vessel and resin suppliers including Purolite, Calgon, and Evoqua.
- Identify required MassDEP drinking water treatment permit applications.

Task 1.3 – Spectacle Pond Well WTP Planning

- Develop preliminary design criteria, including design flow, influent water quality characteristics, treated water targets, and physical and performance criteria for potential future PFAS-removal processes including Granular Activated Carbon (GAC) and Ion Exchange.
- Solicit vendor information on temporary rental GAC and Ion Exchange treatment units, in case LELWD needs to consider rapid deployment of PFAS removal.



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- Provide recommendations for bench-scale testing protocols and columns as well as the estimated bench-scale program costs and timeline.
- Provide concept level engineer's opinion of probable project cost (OPPC) for a new PFAS treatment facility to supplement the existing treatment works (**Alternative 1**). In addition, the OPPC will include allowances for replacement of major process equipment and building systems in the existing WTP, which are deemed to be nearing the end of their service life (selection of equipment to be included in replacement costs will be made through discussions with LELWD officials).
- Provide concept level engineer's opinion of probable project cost (OPPC) for a completely new treatment facility to include PFAS removal and to replace the existing treatment works (**Alternative 2**).
- For both alternatives, create timelines depicting likely sequence of bench scale testing, project permitting, design, bidding, and construction.

Task 1.4 –Planning Tasks and Workshop

- Engineer to review the 2008 Boxborough report, the 2017 LELWD Water System Capacity Report, the 2017 Water System Asset Management Report, and any existing available evaluations of a potential transmission main between Spectacle Pond WTP and the Whitcomb Ave. Wells.
- Present at a Planning Workshop at LELWD the findings of Tasks 1.1 – 1.3 as well as relevant findings of the noted existing reports.
- At the Workshop, facilitate discussion between Engineer and LELWD staff (and any stakeholders or Commissioners that LELWD wishes to invite) on water system master planning ideas for PFAS treatment and WTP facilities options, including but not necessarily limited to:
 - Possible consolidation of treatment operations for Spectacle Pond Well and Whitcomb Avenue Wells.
 - Possible location of a combined WTP at town-owned land near LELWD headquarters in concert with any potential sites to relocate the existing soccer fields.
 - Potential routes for a transmission main from the Spectacle Pond Well site to a consolidated WTP.
 - Future extension of water service from the LELWD system to Boxborough.
 - Emergency connections with other neighboring water systems and potential for mutual assistance to aid in response to PFAS samples, or any other contaminant.



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- Discuss with participants the potential benefits and obstacles of each option as well as brainstorm potential solutions to overcome challenges for those options that appear to have the best overall value to LELWD.
- With input from Workshop attendees, prioritize the most feasible/viable options for further future consideration and identify next steps.
- Prepare a Workshop Summary.

Task 1.5 - Technical Memorandum

- Prepare a draft Technical Memorandum presenting the work performed in Tasks 1.1 through 1.3 and append the Workshop Summary. Submit five hard copies for LELWD review and one .pdf format electronic version.
- Following receipt of LELWD comments on the draft Technical Memorandum, incorporate comments and finalize the Technical Memorandum. Submit five hard copies and one .pdf format electronic version.

Owner's Responsibilities

LELWD shall assist CDM Smith to provide the Scope of Services above, including:

- Furnish to CDM Smith any information identified in the Scope of Work above and any other available information pertinent to the project including reports and data relative to previous designs, investigations, and assessments at the project sites. Specifically, at a minimum, furnish to CDM Smith:
 - Safety Data Sheets for all chemicals presently in use at the Spectacle Pond treatment facility
 - All available source water quality (not limited to PFAS) for the well at the Spectacle Pond WTP
 - All available treated water quality data (not limited to PFAS) exiting the existing plant
 - Capacities for well pump, minimum and maximum
 - Drawings of the existing Spectacle Pond WTP
 - Documentation of any existing reviews of the potential transmission main routes from the Spectacle Pond WTP to the Whitcomb Avenue WTP
 - Plans and detailed cost estimates for the Whitcomb Avenue WTP
- Arrange for safe access to and make all provisions for CDM Smith to enter upon public or private property as required for CDM Smith to perform services under this Agreement.



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- LELWD management and key staff attendance and involvement in project meetings and site visits is critical as it relates to providing CDM Smith data and information of LELWD’s facilities for the benefit of the project.

2.0 Period of Service

CDM Smith is available to begin work immediately upon receipt of an executed Agreement. CDM Smith shall perform Tasks 1.1- 1.3 and present the results to LELWD in the Task 1.4 Planning Workshop, within 2.5 months of receipt of an executed Agreement. Draft Technical Memorandum shall be submitted to LELWD for review within 3 months of receipt of an executed Agreement. CDM Smith will then revise the Technical Memorandum and deliver the Final Technical Memorandum within two weeks of receipt of LELWD comments.

The following table shows the anticipated project milestone dates:

Milestone	Date
Receipt of Executed Agreement	August 22, 2019 (assumed)
Planning Workshop	November 6, 2019
Submit Draft Technical Memorandum	November 22, 2019
Receipt of OWNER’s Comments	December 6, 2019 (assumed)
Submit Final Technical Memorandum	December 20, 2019

3.0 Payment

- 3.1 For services under this Agreement, CDM Smith will be paid a lump sum amount of \$49,400 for performance of Tasks 1.1-1.5.
- 3.2 If additional work is requested by OWNER, CDM Smith will propose a budget for task requested and receive written authorization from OWNER prior to proceeding.
- 3.3 CDM Smith shall submit monthly statements for services rendered as a percentage of the lump sum amount in accordance with estimates of completion. OWNER shall pay within 30 days of invoice receipt.
- 3.4 OWNER is a tax-exempt organization.

4.0 Miscellaneous

- 4.1 This Agreement is to be governed by the law of the Commonwealth of Massachusetts.
- 4.2 Nothing herein shall be construed to give any rights or benefits hereunder to anyone other than OWNER and CDM Smith.
- 4.3 At any time during the life of this Agreement should a substance be uncovered or encountered at the project site that would void or otherwise adversely impact CDM Smith’s professional liability insurance, CDM Smith reserves the right to renegotiate the terms and conditions of this



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Agreement, the fees for CDM Smith's services, and CDM Smith's continued involvement in the project.

- 4.4 CDM Smith shall procure and continue to maintain during the performance of this Agreement the minimum insurance coverage required by Massachusetts law for protection from claims under workers' compensation acts, claims for damages because of bodily injury including personal injury, sickness or disease or death of any and all employees or of any person other than such employees, and from claims or damages, because of injury to or destruction of property related to this Project.
- 4.5 CDM Smith's Commercial General Liability Insurance and Automobile Liability Insurance policies shall cover liabilities arising out of CDM Smith's performance of the work under this Agreement and shall be primary insurance with respect to the interest of CDM Smith.
- 4.6 CDM Smith agrees to indemnify and hold harmless the OWNER and OWNER's officers and employees from and against damages, costs, liabilities, and expenses, including reasonable attorneys' fees, to the extent caused by CDM Smith's negligence in the performance of its services under this Agreement.
- 4.7 The OWNER agrees that CDM Smith's services are on behalf of, and for the exclusive use of, the OWNER for this Project and that all documents furnished to the OWNER are instruments of service and shall be utilized solely for this Project. Any reuse without written verification or adaptation by CDM Smith for other than the specific purpose intended will be at OWNER's sole risk and without liability or legal exposure to CDM Smith. OWNER shall hold harmless CDM Smith and CDM Smith's independent consultants from, all claims, damages, losses and expenses including all attorney's fees arising from such reuse.
- 4.8 Notwithstanding any language to the contrary contained in this Agreement, neither party shall be liable to the other for lost profits or any consequential, special, or indirect damages in any way arising out of this Agreement however caused under a claim of any type or nature based on any theory of liability (including but not limited to contract, tort, or warranty) even if the possibility of such damages has been communicated.
- 4.9 CDM Smith is an independent contractor and is responsible for the means and methods used in performing its services under this Agreement.
- 4.10 The standard of care applicable to CDM Smith services will be the degree of skill and diligence normally employed by professional engineers or consultants performing similar services at the same time, in the same locale, and under similar circumstances. The OWNER agrees that services provided will be rendered without any other warranty, expressed or implied.
- 4.11 The obligation to provide further services under this Agreement may be terminated with or without cause (a) by OWNER upon 7 days written notice to CDM Smith or (b) by CDM Smith upon 7 days written notice to OWNER. In the event of any termination, CDM Smith will be paid for all services rendered to the date of termination, all reimbursable expenses and termination expenses.



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4.12 Any provision of this Agreement held to be void or unenforceable shall be deemed stricken. All remaining provisions shall continue to be valid and binding. The parties agree that this Agreement may be reformed to replace such stricken provision or part thereof with a valid and enforceable provision which comes as close as possible to expressing the intention of the stricken provision.

This Agreement constitutes the entire Agreement between OWNER and CDM Smith, and supersedes all prior written or oral understandings between them in respect to the subject matters covered hereby. Please contact Lisa Gove at (617) 452-6654 with any questions or issues relative to this Agreement.

We believe this proposed scope and schedule meets Littleton's need to briskly move forward with gaining a better understanding of the PFAS sample results and potential solutions while also allowing the opportunity think about how a PFAS solution might fit in an overall LELWD water system plan. We propose to complete this work in fall 2019 which should allow for a next step bench scale testing project (an approximately a 4 to 5 month duration) to be completed ahead of a spring Town Meeting.

If this Agreement meets with your approval, please indicate your acceptance by signing and returning one original copy of the executed Agreement to my attention. Please make sure the authorized amount is as listed in Section 3.1 above.

Very truly yours,

Lisa H. Gove, P.E., BCEE
Associate/Client Service Leader
CDM Smith Inc.

ACCEPTED BY OWNER:

Name and Title:

Nick Lawler, General Manager

Date: 8/20/2019

cc: Al LeBlanc and Jeff Diercks, CDM Smith