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May 30, 2012

Mr. Timothy Wales, PE
City Engineer
Dept of Public Works - City of Saratoga Springs
City Hall
474 Broadway
Saratoga Springs, New York 12866

*Re: Proposal for Professional Services
Water Distribution System Modeling & Consulting
City of Saratoga Springs, Saratoga Co, New York
Chazen Proposal No. PM12-081*

Dear Mr. Wales:

The Chazen Companies (*Chazen*) are pleased to provide the City of Saratoga Springs with this proposal for professional services associated with the water system modeling of the City's water distribution system to assist in evaluating reported chlorine residual issues.

This proposal is outlined to provide professional services outlined hereon to the City of Saratoga Springs (hereinafter referred to as the Client).

Project Understanding

Based upon discussions with the City and review of information furnished, *Chazen* has the following project understanding:

- The City has been informed of potential deficient chlorine residuals within specific sections of the existing water distribution system.
- Due to the location of these reported deficiencies, it is critical that the City identify means to raise chlorine residuals to the minimum standards so that specific planned events may occur without delay.
- The City has already undertaken specific actions which have yielded no change in chlorine residuals and now believes there are other factors contributing to these events.
- It is the City's desire to engage a consultant to assist in performing the appropriate modeling of the water distribution system to define the root cause of the low chlorine residuals as well as defining what improvements may be made to boost chlorine residuals to be within the range of acceptable levels.

Scope of Services

The following represents the tasks that the Client has requested and are what *Chazen* believes are necessary to accomplish the desired objectives. Please refer to the Fee and Time Schedule Summary table near the end of this proposal for the costs and time schedules associated with each task.

Task 01: Hydraulic Water Model Creation

Scope - Chazen will develop a dynamic hydraulic model of the water distribution system using *WaterCAD*. The initial model will be arranged to correspond with the existing distribution facilities (include mains, hydrants, tanks, pumps, isolation valves, and control valves) along with detailed system characteristics (elevation datum, pipe materials, demand nodes). The initial model development will be based solely on readily available record data including but not limited to mapped facilities (including dimensions and operational controls), chlorine residuals, meter readings as well as other geo-spatial references.

Assumptions – For this task, Chazen assumes that at least 90% of the existing water distribution system has been mapped (including main sizes/locations, hydrant /valve locations, general elevation datum), and will be provided in AutoCAD format and is reasonably accurate for use in developing the existing conditions model. In the event there are additional portions of the City water distribution system not digitally mapped, but found in paper copy, Chazen can include those elements, under a technical service change order.

Task 02: Hydraulic Water Model Calibration

Scope – Upon receipt of the additional field data, Chazen will calibrate the model to achieve the model calibration targets of 5% to 10% accuracy of measured field conditions. We will utilize record data including hydrant pressure/flow tests and chlorine residual sampling as provided by the City. For this validation, three demand sets will be simulated, average day, maximum day and peak hourly demands. Fire flow will not be analyzed.

In the event additional field data is warranted to achieve targeted model accuracies, direction that we may offer to the City on obtaining such data would be included under Task 03.

We anticipate that model calibration will be an iterative process, however for the purpose of this proposal and budgeting, we have assumed no more than 3 iterations which include initial calibration using record data, a second and third iteration using data obtained in the field.

If calibration at some locations cannot be achieved within the time limit or within the suggested accuracy ranges, written suggestions will be made as to possible reasons for the discrepancy and what steps might be taken to improve calibration at those location.

Deliverables – At the completion of this task, it is intended to have a water model that is representative of a majority of the City's water distribution system and can be used by the City for future modeling efforts, whether it be for ongoing upgrades or to determine impacts from future private developments.

Task 03: Obtain Field Data

Scope – Following the initial model development and initial calibration, Chazen will determined what additional field data is necessary to further calibrate the water model. If no record data exists, then this task will be initiated prior to Task 02.

Chazen will provide locations for which additional field data is warranted. This will include hydrant pressure testing / flow and / or sampling for chlorine residual. Prior to field work, we will review proposed monitoring locations for concurrence by the City.

Assumptions – As part of this task, Chazen will provide two field staff for up to 20 hours to collect hydrant pressure and flow data, along with chlorine residuals at pre-defined locations. We assume that the City will provide one staff person to operate valves as necessary during this process.

Deliverables – All field data collected will be made available to the City for their records.

Task 04: Define System Improvements

Scope – Using the calibrated model, Chazen will identify water system improvements specific to the immediate concerns of low chlorine residuals adjacent to the race track. The proposed improvements will consider system hydraulics, constructability, cost, sustainability and operation and maintenance, but most importantly schedule to complete.

Such improvements may include, but are not limited to:

- Short term operational changes.
- Continued focus on distribution system maintenance (ie. finding and opening valves).
- Boosting of chlorine levels at specific locations adjacent to the race track and/or at the water treatment plant.

Assumptions – Chazen assumes that we will meet with the City Engineer/DPW staff once to review progress of work and then again to present our preliminary finds/recommendation. No other formal meetings are planned or budgeted.

Deliverables – Chazen will provide the City with a letter report defining options along with opinions of probable project costs to boost chlorine residuals in predefined areas of the water distribution system, specific to the race track. Representative schematics will be furnished to clarify design intent.

Services Not Included

The following tasks are not included as part of this scope of services:

- Final Project design / permitting
- Project bidding
- Construction Phase Services

Substantive Revisions

This Scope of Services was developed based on known conditions of the site as of the date of this proposal and discussions with the Client. Please note that regulatory agencies may request additional technical studies, plans and documentation not outlined herein. Should such work be requested, *Chazen* will prepare a technical services change order for the Client's review, and will commence work upon receipt of an executed copy of same.

Professional Services Fee Schedule

Chazen proposes to bill each task as indicated in the following Fee and Time Schedule Summary. Invoices will be issued monthly for all services performed during that month, and are payable in accordance with the Client's procedures. Lump Sum tasks will be billed commensurately with the percentage of the task, which has been completed. Time and Materials tasks will be billed in accordance with our approved staff roster and multiplier. Fees listed for Time and Materials tasks are estimates only. *Chazen* will make its best effort to complete each of these tasks within the estimated amounts, however it is possible that it will be necessary to exceed these amounts in order to complete the scope of services for each task. *Chazen* will not exceed any estimated fee amounts without written authorization from the Client.

Reimbursable expenses will be tracked and billed directly to the appropriate task. *Chazen's* proposed project schedule is based on our understanding of the requested services.

Fee Schedule Summary

Tasks		Fee Schedule		Proposed Schedules ⁽²⁾
Task No.	Task Description	Lump Sum Fee Bill ⁽¹⁾	Time and Material Estimate	Projected Start / End Dates
01	Hydraulic Water Model Creation	\$6,000		Start: Week 1 Finish: Week 2
02	Hydraulic Water Model Calibration	\$8,000		Start: Week 2 Finish: Week 4
03	Obtain Field Data	\$3,700		Start: Week 2 Finish: Week 3
04	Define System Improvements	\$5,000		Start: Week 4 Finish: Week 5
Sub-Totals		\$22,700		
Total Professional Service Fee		\$22,700		

¹ Lump Sum tasks will be billed according to milestone completions for each deliverable, or commensurately with the percentage of the task which has been completed.

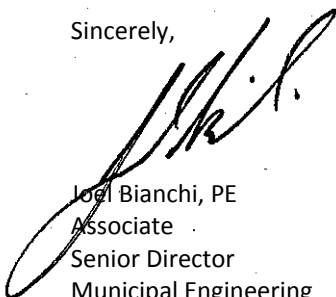
² Projected start and end dates are subject to change and are based on date from authorization to proceed. Because certain aspects of the project are outside of TCC's control (e.g., review agency schedules, actions, and approvals), TCC cannot guarantee completion of the project within these proposed schedules.

Agreement / Authorization

If the above stated scope and fee is acceptable, please forward written notification in accordance with the City's standard format as formal authorization to proceed.

If you have any comments, questions or need for additional information, please do not hesitate to call this office at (518) 273-0055.

Sincerely,



Joel Bianchi, PE
 Associate
 Senior Director
 Municipal Engineering

JMB/enc [Labor Estimate]

cc: Proposal Distribution List
 File

Reimbursable Expenses: *(when required)*

	No.	Contract Rate	
Mileage: Estimate miles at Contract rate <i>(over 35 miles one way)</i> .	120	miles @ \$0.55	\$66.00
Lodging: At Contract per diem rates <i>for the location of the facility</i> .		night(s) @	\$0.00
Meals: At Contract per diem rates <i>for the location of the facility</i> .		overnight(s) @	\$0.00
Other Allowable Expenses: Identify expenses below.			
A.	CI2 test Kits, copies & admin support		\$100.00
B.			
C.			
Total Reimbursable Expenses			\$166.00
Total Fee			\$22,736.00