



**REGULAR MEETING OF THE**  
**GREATER NEW HAVEN WATER POLLUTION CONTROL AUTHORITY**  
**BOARD OF DIRECTORS**  
**WEDNESDAY, NOVEMBER 9, 2022 6:00 P.M.**  
**260 EAST STREET**  
**NEW HAVEN, CONNECTICUT**

**AGENDA**

1. Approval of minutes of October 12, 2022 – Regular Meeting.
2. Public participation relating to agenda items.
3. Consideration and approval of a resolution determining the Schedule of Regular Meetings for 2023.
4. Consideration and approval of a resolution authorizing the Treasurer, Gabriel Varca, to invest, as permitted under Sections 7-400 and 3-27b of the Connecticut General Statutes, as amended, the Authority's funds received as proceeds from the sale of bonds, notes or other obligations, or other funds, in United States Treasury securities and/or the Connecticut Short-Term Investment Fund participation certificates, for an aggregate amount not to exceed \$12,000,000.00.
5. Consideration and approval of a resolution authorizing the Executive Director, Sidney J. Holbrook, to negotiate, execute and deliver a task order with Brown and Caldwell for professional services relating to the 2022 CMOM Pump Station Evaluation Program, for an aggregate amount not to exceed \$66,000.00.
6. Executive summary and department updates and presentations.
7. Consideration and approval, as necessary, of any other new business of the Authority.
8. Call to the public.
9. Adjournment.



## **Greater New Haven Water Pollution Control Authority**

260 East Street New Haven, CT 06511 203 466 5280 p 203 772 1586 f [www.gnhwpca.com](http://www.gnhwpca.com)

### **THE GREATER NEW HAVEN WATER POLLUTION CONTROL AUTHORITY SCHEDULE OF REGULAR MEETINGS FOR 2023.**

The Greater New Haven Water Pollution Control Authority will hold its Regular Monthly Meetings on the 2<sup>nd</sup> Wednesday of the month, at 6:00 PM, at the Administrative Offices, 260 East Street, New Haven Connecticut.

**January 11, 2023**

**February 8, 2023**

**March 8, 2023**

**April 12, 2023**

**May 10, 2023**

**June 14, 2023**

**July 12, 2023**

**August 9, 2023**

**September 13, 2023**

**October 11, 2023**

**November 8, 2023**

**December 13, 2023**



**Greater New Haven Water Pollution Control Authority**

260 East Street New Haven, CT 06511  
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DATE: November 2, 2022  
TO: Sidney J. Holbrook, Executive Director  
FROM: Gary Zrelak, Director of Operations  
RE: Task Order Recommendation  
**Brown and Caldwell**  
**2022 CMOM Pump Station Evaluation Program**

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Sid:

I request that the above-mentioned recommendation be added to the November 9, 2022 Board Meeting Agenda for resolution.

This request is to provide the Authority with professional services for the 2022 CMOM Pump Station Evaluation Program. This project will involve performing condition assessments at our pump stations to prioritize and define needs at each site. This evaluation is required to be performed every five years per our CMOM program.

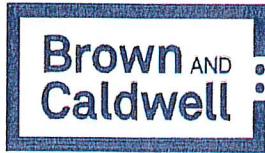
I recommend approval of the attached Brown and Caldwell proposal dated November 1, 2022. The amount of these services shall not exceed Sixty-six Thousand Dollars (\$ 66,000.00).

This project is budgeted 100% from the Authority's Approved Operating Funds.

Gary Zrelak  
Director of Operations

e-copy: Gabe Varca, Director of Finance & Administration  
Lou Criscuolo, Deputy Director of Finance and Administration  
Tom Sgroi, Director of Engineering  
Joseph Megale, Deputy Director of Operations

175 Capital Boulevard, 4th Floor  
Rocky Hill, CT 06067  
Tel: 860.303.3917  
www.browncaldwell.com



November 1, 2022

Joseph Megale  
Deputy Director of Operations  
The Greater New Haven Water Pollution Control Authority  
260 East Street  
New Haven, CT 06511

**2022 CMOM Pump Station Evaluation Program**

Dear Mr. Megale,

Brown and Caldwell (BC) is pleased to submit our Proposal to the Greater New Haven Water Pollution Control Authority (Authority) in response to your Request for Proposals for the 2022 CMOM Pump Station Evaluation Program. BC is readily available and excited to get started on this important project.

**>>> Experienced & Proven Team**

It is critical that the Authority has a team that you can trust. Nick Stevens has demonstrated his project leadership over his 15 years working with the Authority on numerous and diverse projects. Nick is familiar with many of the pump stations included within the scope of this project. Eric Muir has a 17-year working history with the Authority and understands your organization. As Client Manager, he will be directly accountable for the Authority's satisfaction with BC's services.

**>>> Local & Responsive**

Eric Muir and Nick Stevens are located in BC's Rocky Hill, CT office and are readily available to serve the Authority. They understand the importance of timely completion of this project. BC can quickly mobilize to perform the field inspection of these sites. Our local delivery team is less than an hour from the Authority's offices and your needs are their priority.

**>>> Practical Solutions**

As part of this contract, BC's role is to be a partner with the Authority and supplement and support your mission. BC's team is focused on being a partner with the Authority, to be cost effective in delivery and help develop cost effective recommendations for any deficiencies discovered in the field.

Thank you for the opportunity to present our Proposal. We hope you see the value BC brings with our qualified team, relevant experience and ability to meet your objectives. We look forward to discussing our qualifications with you. Should you have any questions, please contact Nick Stevens at 860.241.5548 or [nstevens@brwncald.com](mailto:nstevens@brwncald.com), or Eric Muir at 860.241.5547 or [emuir@brwncald.com](mailto:emuir@brwncald.com).

Very truly yours,

**Brown and Caldwell**

A handwritten signature in blue ink, appearing to read "Nick Stevens".

Nick Stevens, PE  
Project Manager

A handwritten signature in blue ink, appearing to read "Eric Muir".

Eric Muir, PE  
Client Manager



## Section 1: Project Understanding

As part of the Authority's CMOM program, the Authority performs a condition assessment of its 30 pump stations every five years excluding pump stations which have been recently upgraded or are in the process of being upgraded to proactively prioritize and address issues that may be present in the field.

The Authority's most recent assessment was conducted in 2017. Eleven pump stations were evaluated during this assessment with the remaining 19 pump stations excluded due to being recently upgraded/renovated or upgrades/renovations were actively being planned.

Being five years' time from the previous assessment, the Authority is seeking professional services to reconduct the CMOM Pump Station Evaluation Program. Visual inspection and detailed evaluation of 13 of 30 pump stations is to be included as part of this effort. The remaining 17 pump stations have been renovated since 2013 or are in the process of being renovated.

BC will perform the following pump station evaluation activities to assist the Authority.

1. Perform a condition assessment and criticality analysis of the pump stations in terms of physical condition and operating performance, which includes structural, mechanical and electrical/instrumentation examinations. Photos will be taken to document existing conditions.
2. Prioritize the list of repairs/refurbishment projects needed to prolong life expectancy and assist with efficient economic, and environmentally compliant operation.
3. A report will be developed to document our findings and provide costs and timeframes for implementation identified improvements.

Maintaining communications and positive working relationships with the Authority, Synagro, and other organizations relative to this project will facilitate the success of the above-listed critical elements. Additionally, this project will require the review of extensive manufacture information, historical O&M data, tributary information, and current O&M information (to be provided by the Authority). Visual inspections will be performed to adequately evaluate all applicable assets.

# Better Results

»» Experienced & Proven Team + Local & Responsive + Practical Solutions

## Section 2: Project Approach

Our project approach is proven and yet personalized—we have used it successfully before and it will provide a step-by-step guide for assessing the condition and performance of each of the stations. The flow chart below provides a snapshot overview of our approach to successfully evaluating the condition and performance of the Pump Stations throughout the collection system.

### Approach Overview

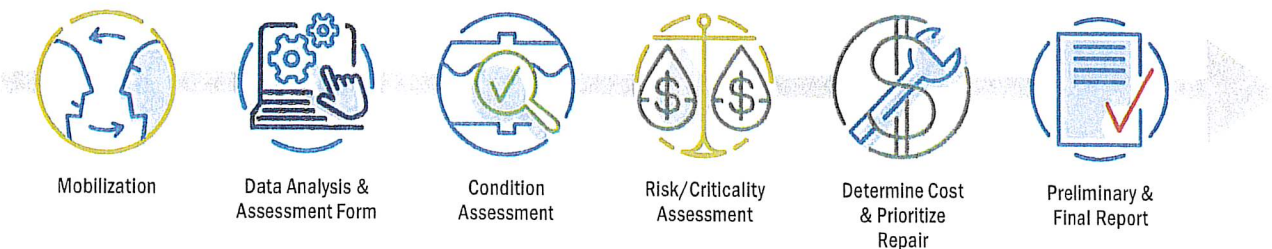


Figure 1 // Our proven approach will evaluate the condition and performance of the pump stations throughout the collection system.

In our approach, we will first evaluate each asset in terms of its physical condition and operating performance. This assessment will help determine the likelihood and consequence of failure (or criticality) of various station elements. Afterwards, we will estimate the costs to repair and develop a reliable, prioritized list of defensible repairs.

### Task 1: Project Management, Mobilization and Kickoff

The mobilization phase involves establishing the project work plan and schedule, which will include reviewing a field assessment plan, meeting with the Authority, discussing data needs, and developing a health and safety plan.

BC will schedule a project kickoff call with the Authority within 10 days of the notice to proceed. At this meeting, we will review the project scope, define big picture criteria on how our condition assessments are performed, and verify our understanding of the Authority's goals. We will also present a draft project work plan and schedule for review and input from the Authority.

We will use our time at the kickoff workshop to identify data needs and discuss data quality and availability. We will seek input from Authority staff on our proposed failure modes and effects analysis (FMEA) approach to defining a "failure" (see Table 2) of each major asset type as well as performing and establishing indicators of impending failure. Finally, we will work with the Authority to define preferences and standard procedures for implementing our recommendations (e.g., what level of repair would be completed by the Authority or operator versus by an outside contractor, the level of redundancy, risk, etc.).

Table 2 // Types of Failures

Failure Categories	Examples	Data Sources
Performance	Does not meet design flow rate	Comparison of design documents with field flow measurements and operations personnel
Reliability	Multiple unplanned maintenance activities	CMMS work order information
Condition	Physical deterioration	Physical inspection and specialty testing such as vibration, oil analysis, and thermography
Obsolescence	Spare parts are no longer manufactured	Equipment vendors/warehouse personnel
Cost	A more cost-effective alternative is available	Design engineers and operators



## Task 2: Data Analysis and Assessment Form

Before we visit each site, an evaluation of available station information will provide our team with the familiarity necessary to complete effective, onsite condition assessments. In addition, the background information can provide details that would otherwise be unobservable with the eye (for instance, equipment's repair trends). The data gathering portion of this type of work, including receiving input from O&M staff, is critical to completing a comprehensive and efficient condition assessment of the pump stations.

Below is a list of desired information critical to the project's success:

- Previous engineering studies and reports
- As-built drawings
- Station work order history (CMMS reports)
- SCADA operational data
- O&M submittals and equipment data sheets
- Pump station flow data
- Records of power failures or station interruptions
- GIS files with planimetric and piping data

- Station and equipment condition data and equipment upgrade requests

Reviewing this information prior to field inspections saves time by allowing BC to customize our assessment forms, develop a logical order for the field assessments, and understand what to expect in the field. Thus, we can make the best use of our time and your time. Further, BC proposes to use electronic condition assessment forms tailored to meet the Authority's needs and goals for this project.

We will develop a draft form based on our review of the available record of information mentioned above. Generally, we anticipate that these forms will contain (at a minimum) the major asset classes illustrated in Table 2 below.

During the assessments, the BC team will fill out forms in the field using a handheld electronic device. We have successfully used this method of assessment and data storage on other assessment projects. Our past work has proven that the device provides consistent data from different station assessments and an easy link to all data so that repeat visits are not required.

Table 3 // General Assessment Procedures for Various Assets

Assessment Element	Description
Site Assessment	Assess general condition of service areas, roads, parking, fencing, obvious health and safety concerns, access issues, odors, security, etc.
Structures (including Dry and Wet Wells)	Assess exterior/interior area of pumping facility building for noticeable deficiencies. Wet wells and dry wells will be assessed for visual evidence of spalling, degradation, and other visual deficiencies, efflorescence, and leaking. Hammer sounding will be used to locate invisible areas of reinforcement corrosion, and delamination. Sump pumps and emergency shut-off will be checked for operability. Steel structures and miscellaneous metal items will be visually inspected for corrosion, loss of section, coating deterioration, or excessive deformation.
Pump Overview	Visually assess manufacturer, model type, drive and fuel type, age and mechanical condition.
Horizontal and Vertical Pumps	Assess pumps will for issues including vibration, cavitation, bearing noise, shaft vibration or deflection and excessive noises. Pump mounting and bases will be checked for loosen mounts or cracks.
Pump Motors	Assess individual pump motors for abnormal noise, excessive heat, obvious vibration, and any visual deficiencies.
Sluice Gates/Screens	Assess performance operability and condition of gates and screens tributary to facilities.
Submersible Pumps	Individual motors will not be visually assessed. The operability of the pumps will be assessed.
Piping and Valves	Assess the suction isolation valve, discharge isolation valve, and check valve for each pump for operability, with malfunctions/leakage noted.
HVAC	Visually assess HVAC units for operability, vibrations, and corrosion. Ducts and louvers will be inspected for leakage and proper operation.
Electric Systems	Record electric deficiencies including dry or cracked cables, corrosion, loose electrical contacts, and similar issues with regard to power distribution system, switchgears, MCCs, VFDS, fire alarm, interior lighting, communication, and security systems/devices.
Generator	Assess generator performance while is facility powered off. Assess manufacture, installation, and age of unit. If practical, generator will be run with pumps operating.
Portable Emergency Generator	Assess the performance of generator including manufacture and age.
Facility Sites	Assess all entry doors, hatches, lighting, steel access chamber integrity, roof, plumbing, and any other visual deficiencies.
Instrumentation	Assess control panels, bubblers, compressors, RTUs, floats, and telemetry.

## Task 3: Condition Assessment of Stations

There are five broad subtasks within the approach: dry well assessment, wet well assessment, and condition and performance ranking. While performing the assessments, we will keep a photo database for each station. Authority staff will participate in site visits and assist with access to equipment, equipment operation, health and safety activities, and responses to O&M related questions.

### Dry Well Condition Assessment Procedure

BC will photograph each lift station, equipment, potential issues, and other points of interest. Table 3, on the preceding page, also provides a listing of items we would typically assess at a pump station.

### Wet Well Condition Assessment Procedure

BC will visually inspect the wet wells where access is possible. The water level in the wet well will be lowered by starting the pumps. In addition:

- A visual inspection along with soundings and scratch testing to determine potential concrete degradation will be conducted.
- Condition of the wet well walls, slabs, piping, valves, floats, ladders, and rails will be visually inspected.

### Condition and Performance Ranking

The on-site assessment of each pumping facility will result in an objective score ranging from 1 to 5 for each significant asset using the condition and performance (C&P) ranking criteria. Figure 4 illustrates potential ranking options. The Authority will have a chance to change/revise the ranking criteria during the finalization of the assessment form.

Condition and performance rankings will be categorized into five regions corresponding with the urgency for rehabilitation. BC will use the C&P rankings for the pumping

facilities to develop a program of rehabilitation and/or O&M activities to mitigate these risks. The recommended actions corresponding to the regions will be used as a guide for further action.

**Region 1: Good Condition and Performance.** Assets with low C&P ranking scores of 1 or 2 will be in this category. Recommended action for these types of assets will be "No Immediate Action Required," as no failure is expected for assets categorized in this region.

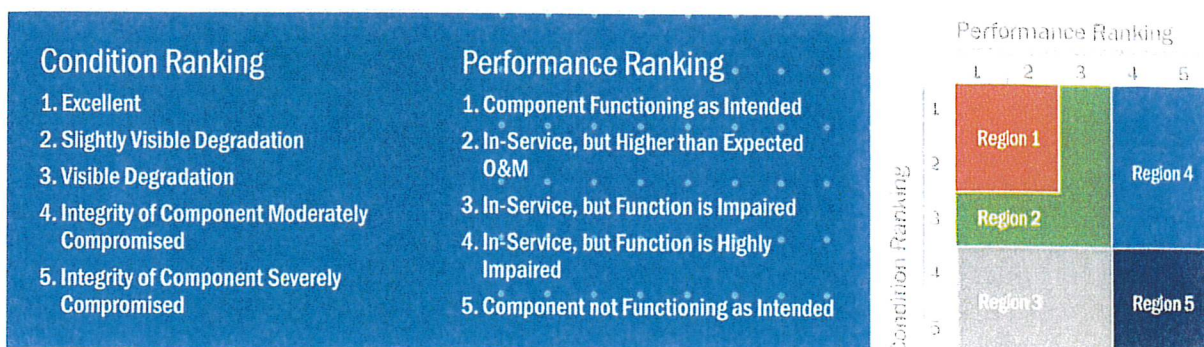
**Region 2: Moderate Condition and Performance.** Assets with at least one moderate ranking score of 3 will be in this category. Recommended action for these types of assets will be "Initiate More Detailed Inspection" in order to determine the potential risks of failure.

**Region 3: Poor Condition Ranking.** Assets with poor condition ranking scores of 4 or 5, but are nonetheless performing well (performance ranking scores of 1, 2, or 3), will be in this category. Recommended action for these types of assets will be "Schedule Corrective Action Work Order for Near Term." Although the assets are in service and functioning, issues related to the condition of these assets should be addressed.

**Region 4: Poor Performance Ranking.** Assets with poor performance ranking scores of 4 or 5, but with condition ranking scores of 1, 2, or 3 will be in this category. Recommended action for these types of assets is "Immediate Corrective Action Required," as the asset is not functioning properly, or failure is imminent.

**Region 5: Poor Condition and Performance.** Assets with poor condition and poor performance scores of 4 or 5, will be in this category. Recommended action for these types of assets will be "Replace/Refurbish," as the asset is not functioning properly, and the integrity of its components are either moderately or severely compromised.

Figure 4 // Results of the condition and performance rankings are readily viewed using this matrix, helping prioritize refurbishment and repair activities.



BC can conform to any scoring methodology preference of the Authority. Chris Garrett and Jackie Sidman are PACP/MACP/LACP certified and familiar with NASSCO quick rating system.



Risk is the most important concept of asset management. Our team will work with you to quantify and assess the risks posed by the inability of pump station assets to meet intended functions and required levels of services. We will then develop informed rehabilitation projects or recommend additional O&M procedures to mitigate risks.

Risk is managed through achieving the goals of minimized life-cycle costs while maintaining required levels of service. Risk is expressed as a function of the “likelihood” that a pump station asset will fail to meet its level of service requirement and the “consequence” that this asset failure would have on the level of service. The condition and performance ranking represents the “likelihood of failure” side of the equation, while the “consequence of failure” side of the equation will be based on our team’s experience and confirmed in a work session with the Authority.

To prioritize the work proposed for each pump station and address the identified condition and performance issues, BC will develop consequence of failure rankings for significant assets at each pump station. This exercise will be conducted in collaboration with the Authority.

BC will prepare an overall risk/criticality score for assets and each lift station using the condition and performance and consequence rankings. This score will be the basis for prioritizing rehabilitation and O&M projects and reveal the most critical, highest risk assets and pump stations for Task 5.

BC will analyze the findings of the risk assessment for all pump stations and develop a list of recommended repairs and/or O&M actions in order of priority. This will include an opinion of probable cost estimates for the design and construction of repair, replacement, or refurbishment items.

The probable cost estimates will be conducted using

the standards of the American Association of Cost Estimating (AACE) for planning-level, Class 5 estimates. In addition, valuable cost estimating information from each pump station’s work order history may be available and considered. If the ideal solution for addressing an asset’s condition is not clear, a life-cycle cost analysis will be used to compare alternatives.

## Task 4: Develop Preliminary and Final Report

BC will provide an Evaluation Report that can be used as a working document to aid in organizing each station’s data and budgeting for recommended improvements. We will include a summary of all finding and recommendations, including estimated costs to repair identified deficiencies.

The report will include the following information:

- General site information, station description, and site map
- Details of condition assessments
- Tabulated inventory of all major assets
- Overall condition and performance scores for major assets
- Results of condition assessment
- Risk/criticality assessment
- Prioritized listing of repairs and construction cost estimates
- Appendix with condition assessment forms, site photos, tabulated recommendations, and estimated costs

Subsequent to the Authority providing reviews and comments, BC will update and finalize the report.

## Why Select BC?

- **Exceptional client service**—so that the Authority can serve its customers in an exceptional manner
- **Superior project delivery** through a best-in-class Project Manager, Nick Stevens and a proven approach that aligns well with your processes
- **Innovative, smart solutions** from some of the most renowned Technical Experts in the Nation
- **Built-in collaborative measures** that leverage the resources of our entire company
- **The results you want and deserve**

# Better Results

Thank you for this opportunity - we can't wait to get started.

## Section 3: **Project Schedule and Cost**

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### Project Schedule

BC will deliver the final TM deliverable to the Authority 4 months after the notice to proceed. We expect one month for mobilization, work plan preparation, and conducting the site visit (anticipated before the end of 2022). We expect two months to analyze the data, develop recommendations and associated cost estimates and draft the report. Target delivery date for the draft report is February 15th, 2023. The report will then be finalized within two weeks of receiving the Authority's review comments.

### Compensation

Compensation for services shall be on a lump sum basis of \$66,000. Services will be invoiced monthly based on a percent complete.