STAFF REPORT

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Mark Marlowe, P.E., Director of Castle Rock Water
Matt Benak, P.E., Water Resources Manager
Walt Schwarz, P.E., CIP Project Manager

Title: **Resolution Approving a Second Amendment to the Plum Creek Water Purification Facility Expansion Project Construction Agreement with Garney Companies, Inc. for Work Package Two** *[1929 Liggett Road Castle Rock, CO]*

Executive Summary

Castle Rock Water (CRW) staff requests Town Council approval of a resolution (***Attachment A***) approving a Second Amendment to the Plum Creek Water Purification Facility (PCWPF) Expansion Construction Agreement (**Exhibit 1**) with Garney Companies, Inc. (Garney).

The amount of the contract amendment is $6,739,585 and represents Work Package #2 (WP#2). This portion of the construction consists of purchasing the ozone equipment package for the advanced treatment system as well as high service and membrane feed pumps. Ozone equipment being purchased with WP#2 includes ozone generators and destruct systems, liquid oxygen system, and side stream ozone injection systems. The design team is working on a third and final work package to be presented to Town Council around April 2025. WP#3 (Third Amendment) will include the balance of project work.

As previously presented to Town Council, the PCWPF Expansion construction contract will be a Guaranteed Maximum Price Construction Management (GMPCM) arrangement. PCWPF is one of the most advanced water treatment plants in the nation and has won numerous awards including the Engineering Excellence Award 2022 (American Council of Engineering Companies). Construction work is to be awarded in three separate work packages. Garney was selected as the Construction Manager and General Contractor (CM/GC) through a competitive process and has a proven track record in the water and wastewater industry. GMPCM was successfully utilized by the Town for design and construction of the PCWPF Project completed in 2014 and

PCWPF Advanced Treatment (AT) Project completed in 2021 (CM/GC was Garney for AT project). Upon authorization to award WP#2, Garney will begin ordering the ozone and vertical turbine pump packages. Garney plans to begin site mobilization in October 2024 with overall construction completion of the project planned for Spring 2028 (including startup of new facility).

The Initial Guaranteed Maximum Price (IGMP) for WP#2 based on 60% design documents, including General Conditions (GCs) and other fees, developed by the Town and the design consultant in cooperation with Garney, was $6,609,541. The Final Guaranteed Maximum Price (FGMP) for WP#2 is $6,739,585. A cost increase due to owner directed changes in scope with the ozone material and equipment package. Staff recommends executing an Amendment to the contract with Garney for WP#2 to construct the associated components of the Project.

Current known and estimated project costs are shown below:

Burns & McDonnell Engineering (BMcD)	Design (including $119,444 contingency)	$ 2,508,324
TCR Permit Fees	Est. based on PCWPF Advanced Treatment project	$ 120,000
Garney Companies	Pre-construction services	$ 311,022
BMcD	Constr. Phase Engineering Services (estimated at 6% of Construction cost)	$ 4,016,202
Garney Companies	Construction costs	
	WP#1 (FGMP)	$ 18,571,591*
	WP#2 (FGMP)	$ 6,739,585*
	WP#3 (IGMP)	$ 41,821,534**
	TOTAL	**$ 74,088,258**

*Actual
**Current Estimate

Notification and Outreach Efforts

This is a secure facility located out of the public view. As such, the only notification and outreach associated with this project is through the budgeting process with Council where this item was identified as a major capital project for Castle Rock Water.

History of Past Town Council, Boards & Commissions, or Other Discussions

Town Council approved Resolution 2023-055 on April 18, 2023 approving a Services Agreement with BMcD for the design of the PCWPF Expansion.

Town Council approved Resolution 2023-152 on December 19, 2023 approving a Construction Contract with Garney for Preconstruction Services on the PCWPF Expansion.

Town Council approved Resolution 2024-046 on May 7, 2024 approving a First Amendment to the Construction Contract with Garney for Work Package #1 on the PCWPF Expansion.

CRW staff presented a services agreement with BMcD to complete Construction Phase Engineering Services on the PCWPF Expansion to the CRW Commission at their meeting held on May 22, 2024. CRW Commission recommended Town Council approval of the Resolution as introduced.

CRW staff presented this item to the CRW Commission at their meeting held on June 26, 2024. CRW Commission recommended Town Council approval of the Resolution as introduced.

Discussion

A need for a sustainable long-term water supply was identified in the Town's Water Resources Strategic Master Plan and one of the major goals of that plan is establishment of a renewable, sustainable water supply that accounts for 100% of the annual demand for water in Castle Rock by 2065. Renewable water sources include East Plum Creek alluvial wells, surface water using existing Town Water Rights, and imported surface water from outside of the Plum Creek Basin (e.g., WISE water). PCWPF also purifies a majority of Castle Rock's reusable water supplies.

PCWPF is currently a 6 Million Gallon per Day (MGD) facility receiving raw water from four main sources: Castle Rock Reservoir 1 (CRR1 - connected with diversion on Plum Creek (PCD) near Sedalia and the source of most of CRW's reusable water), CR1 (a diversion on East Plum Creek near PCWPF), various alluvial wells along East Plum Creek (renewable) and deep (Denver Basin/nonrenewable) groundwater wells. CRW is currently working with BMcD under separate contract on the Chatfield Pump Back Project. This pump back project will supply water to CRR1 and Castle Rock Reservoir 2 (CRR2) from Chatfield Reservoir, expanding CRW's renewable water sources and providing a high quality, low total dissolved solids (TDS) water source for TDS blending and additional renewable water yield. CRW is also working on redesigns for the two surface water diversions that feed PCWPF, CR1 and PCD. Both of these diversions are unable to operate at the fully permitted intake due to design issues leading to sanding and debris shutting down the diversions during various creek conditions. These redesigns are currently scheduled for construction in 2025 through 2026.

The original PCWPF project was completed in 2014 and included 6 MGD capacity pretreatment facilities with aeration, rapid mix, flocculation, sedimentation, and greensand filtration. The greensand filtration was followed by membrane filtration and chemical addition to form chloramines for a disinfection residual in the distribution system. Other facilities constructed with the original PCWPF include a 174,000-gallon clearwell, high service pump station, chemical storage and feed systems. Where practical, areas like the chemical storage facilities were designed and constructed planning ahead for expansion to 12 MGD (no changes are needed to chemical storage with this project). Additionally, items like engineered knock-out masonry wall sections are in place to facilitate access to the new pretreatment building.

In 2021 the PCWPF AT project was completed and added 6 MGD capacity of advanced treatment systems such as pre-ozone, biologically active carbon (BAC) filtration (previously greensand filters converted to BAC), advanced oxidation with ozone and hydrogen peroxide, granular activated carbon (GAC) adsorption, and ultraviolet (UV) disinfection. The multiple barrier approach was designed to treat source waters for removal of pathogens, organics, regulated drinking water contaminants, and nonregulated contaminants of emerging concern (CECs). The primary goals of the PCWPF AT Project were to meet or exceed requirements of the US EPA Safe Drinking Water Act, as well as additional requirements from the Colorado Department of Public Health and Environment (CDPHE) and meet or exceed requirements for direct potable reuse to allow reuse of all of CRW's reusable supplies. The facility already meets the treatment requirements for the latest drinking water standards issued by US EPA in 2024, the standards for perfluoro alkyl substances (PFAS), three years ahead of the deadline for water providers across the country. This project also included a 1,250-kilowatt (kW) diesel powered generator to power the AT Building up to 12 MGD capacity.

In order to continue using and expanding renewable water sources, CRW must implement our long-term plan to expand PCWPF's current treatment capacity of 6 MGD up to 12 MGD. Expanding PCWPF will coincide with the completion of CRR2 and redesign and improvement of CR1 and PCD and provide for keeping up with growing demands as the Town adds additional residents and businesses. Once expanded, PCWPF will be the largest water treatment facility in CRW's system.

In general terms, with this project CRW will expand all treatment processes, modify the solids handling processes, install a new emergency electrical generator for the original PCWPF Building (houses high service pumping), and increase laboratory areas for additional sampling and water quality testing needs. For example, treatment system improvements will include a new building adjacent to the existing pretreatment building to house 6 MGD capacity of a new rapid mix basin, flocculation and sedimentation treatment steps, and new BAC filter bays. The project will add three membrane filtration racks with 78 modules each to match existing racks. Ozone system improvements will include additional liquid oxygen storage with vaporizers, new ozone generators with a chiller, ozone injection and destruct skids, and a new ozone loop reactor made of stainless-steel piping. Ten GAC filters will also be added in an expansion of the PCWPF

AT building. ***Attachment B*** provides a general layout of the proposed expansion of PCWPF.

CRW staff is utilizing the GMPCM project delivery method for construction of the PCWPF Expansion Project. The GMPCM method involves hiring a CM/GC to perform contract administration and to guarantee a maximum price for the complete project. The owner and CM/GC agree on the price before the construction phase begins and all work is awarded through a competitive subcontractor bidding process.

The Owner, CM/GC and Engineer work collaboratively to design a project that fits a given budget and adjustments to the project design and/or budget are made during the design phase to ensure a successful project that meets the Owner's expectations regarding cost, quality and schedule. The CM/GC's expertise in construction, contracting, and estimating can influence decisions made by the design consultant to keep project costs to a minimum in a manner consistent with the owner's objectives for quality and functionality. With this end in mind, CRW selected Garney Companies, Inc. in December 2023 through a competitive process that included advertising for requests for qualifications and requests for proposals.

Garney's preconstruction services include, but are not limited to; project management, budgeting, estimating, scheduling, constructability reviews, value analysis of all systems and components, determination of sequencing the work, information and reporting systems, subcontractor bid strategies and procurement throughout the construction document design phase. Garney attends all regularly scheduled project meetings during the design phase.

WP#1 was awarded to Garney in May 2024 and allows Garney to purchase equipment systems with long lead times and to maximize earthwork and piping activities beginning later this year. The design team pulled the ozone system from WP#1 to allow Garney additional time to receive bids from Pinnacle Ozone Solutions, LLC (Pinnacle), another qualified ozone system provider. Garney also received additional bids for vertical turbine pumps which were moved from WP#1 to WP#2. WP#2 includes the ozone system and high service and membrane feed pumps that provide the best value and quality for the project. The new pump bid which is included with WP#2 is $180,372 less than pump pricing originally received during WP#1 bidding.

Pinnacle is US company based in Florida and their ozone generators are also made in the USA. They have research, manufacturing, and parts storage facilities in multiple states. Their team flew and met with our project design team (CRW, Garney, Burns & McDonnell Engineering) on May 29th. Based on a positive meeting with Pinnacle reviewing their systems, CRW staff proceeded to conduct Pinnacle ozone system reference checks. Staff made a site visit to tour and work with Operations staff at a potable water treatment facility in Dickinson, North Dakota (in service for 6 years). Staff also talked with facilities using Pinnacle ozone systems in Fayetteville, Arkansas and Abilene Texas (both in service about 9 years). Feedback received was all positive regarding system operations, maintenance (including parts availability), efficiency (have

maintained operating efficiencies since startup), and Pinnacle customer service. Pinnacle has been installing ozone systems for over ten years with 53 installations in service. Staff and the design team recommends awarding the ozone equipment package to Pinnacle.

Pinnacle submitted the low base bid compared with Pureflow's base bid. Base bid included adding three ozone generators to the existing three Pureflow generators onsite that were installed with the PCWPF AT project. In coordination with Garney and BMcD, CRW is also recommending to replace the existing three Pureflow ozone generators with two new Pinnacle ozone generators (will not change current PCWPF Expansion project overall total cost). Replacing the existing generators with two new Pinnacle ozone generators costs approximately $677,000. The new vertical turbine pump bids were less than pump bids with WP#1 and the construction contingency was reduced which combined to maintain the overall project GMP. It is also established in the project general conditions that construction contingency reduces further to a final 3% as designs are finalized.

Each generator is sized to treat 3 MGD so four generators will treat 12 MGD and the fifth generator is a redundant unit (incase another generator goes off line for maintenance). Some benefits for working with Pinnacle include the following:

- Long term maintenance becomes more cost effective and streamlined. One supplier means one set of spare parts
- Uses less of other connected equipment like chillers and compressors
- Does not use nitrogen boost
- Parts are stocked at their US based facilities
- Reference checks with other facilities using Pinnacle ozone generators for about nine years confirm that the system has maintained ozone production rates and operating efficiencies
- Operates more efficiently saving costs in electricity, liquid oxygen, and maintenance costs. Based on Pureflow's current operating conditions, the payback for installing two Pinnacle generators replacing three existing Pureflow units, is approximately 10 years
- Pinnacle will rewrite entire operating software that CRW SCADA team can then maintain

The total construction cost including FGMP's for WP#1 and WP#2, and the IGMP for WP#3 is $67,443,732. The cost has stayed the same compared with the original IGMP for total project.

Approving WP#2 allows Garney to purchase the ozone system and vertical turbine pumps. Both of these equipment packages have long lead times and these suppliers will, upon notification of award, begin working on submittal packages to be reviewed by the CRW design team.

A future final Work Package (WP#3) will also be advertised publicly by Garney and WP#3 will include the remaining work needed to complete the project (including construction of a new building and expansions to the pretreatment and GAC buildings). Garney will award WP#3 with multiple subcontracts broken out into specialties, for example electrical, masonry, and heating ventilation and air conditioning.

The schedule for constructing the facility proposed by Garney fits within the Town's expectations and requirements. The current plan is for Garney to mobilize and begin excavation construction activities in October 2024. Final construction completion of the project is scheduled for spring 2028. This completion schedule will be on time for when water from the facility will be needed to meet the summer demands of 2028.

Budget Impact

Funding for this project was included in the 2024 budget in the project fund shown below. Current account balance in this account is approximately $2,303,123. A budget amendment will be completed in 2024 to fully fund the project.

Project	Account Number	This Contract
Advanced Oxidation Facility	211-4375-443-77-75	$6,739,585

Staff Recommendation

Staff and CRW Commission recommend Town Council approval of the Resolution as presented.

Proposed Motion

"I move to approve the Resolution as introduced by title."

Alternative Motions

"I move to approve the resolution as introduced by title, with the following conditions: (list conditions).

"I move to continue this item to the Town Council meeting on _____ date to allow additional time to (list information needed)."

Attachments

Attachment A: Resolution
Exhibit 1: Second Amendment to the Construction Agreement
Attachment B: Location Map