Agenda Item9

DATE: August 7, 2023

TO: Honorable Mayor and Members of the City Council through City Manager

FROM: Josh Minshall, PE, Senior Civil Engineer, Public Works & Utilities (PW&U)
Chelsea Thompson, Deputy Director of Environmental Services, PW&U
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SUBJECT: Resolution Authorizing Award of Contract for Phase 3 of the Ellis Creek Water Recycling Facility Tertiary Treatment Expansion Project - Filter Additions and Miscellaneous Improvements to C. Overaa & Co.

RECOMMENDATION

It is recommended that the City Council adopt the attached Resolution Authorizing Award of Contract for Phase 3 of the Ellis Creek Water Recycling Facility Tertiary Treatment Expansion Project - Filter Additions and Miscellaneous Improvements to C. Overaa & Co.

BACKGROUND

The City has been a member of the North Bay Water Reuse Authority (NBWRA) since 2011 when the City Council authorized the City's participation through the execution of the NBWRA Memorandum of Understanding. The NBWRA was created in 2005 to coordinate interagency efforts to promote the use of recycled water in the North Bay. The City has participated in the development and preparation of the North Bay Water Reuse Phase 2 Program Feasibility Study, which includes the following City of Petaluma recycled water program expansion projects:

- Ellis Creek Water Recycling Facility (ECWRF) Tertiary Treatment Expansion Project (Tertiary Project) - expand ECWRF tertiary treatment capacity from 4.68 million gallons per day (mgd) to 6.8 mgd to meet peak summer demands and future recycled water demands.
- Urban Recycled Water Program Expansion – expand recycled water pipeline within the City of Petaluma potable water service area to irrigate parks, schools, business, and public landscape areas, and to serve as potable offset.
- Agricultural Recycled Water Program Expansion – expand the recycled water pipeline system for vineyard and agricultural irrigation outside the City of Petaluma potable water service area.

On September 17, 2018, by Resolution No. 2018-147 N.C.S, the City Council approved the City of Petaluma projects identified in the North Bay Water Reuse Program Phase 2 Final Environmental Impact Report/Environmental Impact Statement (EIR/EIS).

Petaluma's first recycled water customer was an agricultural irrigation customer in 1976, and in 1984, the City's recycled water program began expanding to additional ag, vineyard, golf course, and landscape irrigation customers to meet seasonal discharge prohibitions to the Petaluma River. Today, the City's recycled water program applies recycled water to approximately 2006 acres, most of which are agriculture, vineyards, and golf courses. About 10% of the City's recycled water is served within our potable water service area and considered potable offset (approximately 3% offset to potable demand), while about 68% of our recycled water is served to customers outside our water service area.

The City's participation in the NBWRA has helped to expand the urban recycled water program, providing potable offset through the irrigation of parks, schools, businesses, and other urban landscape areas. The City's recycled water program currently has a total of 23 customers, not including recycled water haulers and ECWRF which has onsite recycled water use. Among our urban customers are Kaiser Permanente, the Santa Rosa Junior College, and the Recology garbage trucks serving Petaluma, which were converted to use recycled water during the recent drought. Below is a table showing the City's existing recycled water program, as of 2022:

Table 1: Existing Recycled Water Program (2022)

Reuse Application	Category	No. of Properties	Area Applied (Acres)	Amount Distributed (MG)	% of Total Reuse
Landscape Irrigation (Urban)	Parks/LADS	15	47	29.5	4.4%
	Airport/Commercial (Kaiser)	3	22	4.6	0.7%
	Schools	7	108	30.9	4.6%
Golf Courses		2	264	154.0	22.9%
Agriculture	Pastures, Vineyards, Crops	13	1,565	302.4	45.1%
Other	Construction/Hauled	(17)	-	3.5	0.5%
	ECWRF Onsite Uses	(1)	-	119.0	17.7%
Total		23 (41 Total)	2,006	643.9	

The City of Petaluma has received grant funding for recycled water program expansion, several of which were received through the City's participation in NBWRA. The below table shows recycled water program expansion grant funding, including two grants for the Tertiary Project.

Table 2: Recycled Water Program Grant Funding

Project	Project Cost	Grant Funding Source	Grant Amount
Maria Drive Recycled Water Pipeline Extensions (Urban)	$3.218 M	2021 Reclamation Title XVI (NBWRA)	$804,427
		2023 DWR SMGA Implementation (Petaluma Valley GSA)	$2.6 M

Adobe Road Recycled Water Pipeline Extension (Agricultural)	$5.608 M	2021 Reclamation Title XVI (NBWRA)	$1.4 M
		2021 DWR Urban and Multibenefit Drought Relief Program	$3.2 M
Tertiary Treatment Expansion Project	$18.865 M (Grant Application Project Cost)	**2021 Reclamation Title XVI (NBWRA)**	**$4.716 M**
		2019 IRWM Prop 1 (NBWRA)	**$3.6 M**
Sonoma Mountain Alignment (Urban) - Completed	$2.64 M	2017 State Water Resources Control Board (SWRCB) Prop 1	$870,030
Recycled Water Facilities Planning (Recycled water portion of IWMP)	$452,623	SWRCB Water Recycling Funding Program (2022)	$226,311
Total			$16.42 M

Grant funding has helped offset about 50% of the total project costs for the projects listed above. In addition to the grants listed, the City of Petaluma was written into the 2021 Water Resources Development Act for $13.7 M in wastewater infrastructure funding, which includes recycled water projects.

Below is a table showing the City's current planned recycled water expansion projects, which are part of the NBWRA Phase 2 Program and have received multiple sources of grant funding, as shown in Table 2 above.

Table 3: Planned Recycled Water Program Expansion

Project	Project Description	Project Yield (Acre-feet per year or AFY)	Potable Offset?
Maria Drive Pipeline Extensions (Urban)	Add 3 sections (6,700 linear feet total) of recycled water pipeline to serve an additional 8 parks, 2 schools, 2 business parks, and 6 LADS.	78+ AFY	Yes
Adobe Road Pipeline Extension (Agriculture)	Extend the recycled water pipeline (14,000 linear feet) out of Adobe Road to create a looped system for resiliency and vineyard irrigation.	300-400 AFY	No
Tertiary Treatment Expansion Project	Upgrade existing ECWRF to increase tertiary filtration and disinfection capacity by 2.12 mgd.	712 AFY (Based on the additional peak production capacity of 2.12 mgd.)	-

In addition to the current planned expansion projects listed above, the City is planning its next phase of recycled water program expansion through the Integrated Water Master Planning (IWMP) process. The SWRCB will adopt regulations for Direct Potable Reuse by the end of this year, which will change the way we can use recycled water, providing opportunities for program expansion beyond use for irrigation only.

Current recycled water program study areas include:

- Additional non-potable reuse: urban and agricultural irrigation, dual-plumbing, industrial process water
- Recycled water storage for additional reuse
- Potable reuse options (Indirect Potable Reuse/Future Direct Potable Reuse)

The Tertiary Project includes facility upgrades at ECWRF to increase tertiary filtration and disinfection capacity by 2.12 mgd., producing an additional yield of 712 AFY. The existing facility can treat 4.68 mgd. to Title 22 tertiary disinfected standards. These improvements would allow the City to produce additional tertiary treated recycled water to meet peak summer demands, future demands for the planned Adobe Road and Maria Drive Recycled Water Pipeline Extension projects, and increasing recycled water demands.

Recycled water demand is seasonal since all current demand is for irrigation. Demand varies by year, as shown in Figures 1 and 2 below, and peak demand is typically in July or August. In recent drought years, recycled water demand exceeded supply through the irrigation season, and the City's recycled water program was not permitting new recycled water customers.

Figure 1: Average Daily Recycled Water Demand by Month (2016-2021)

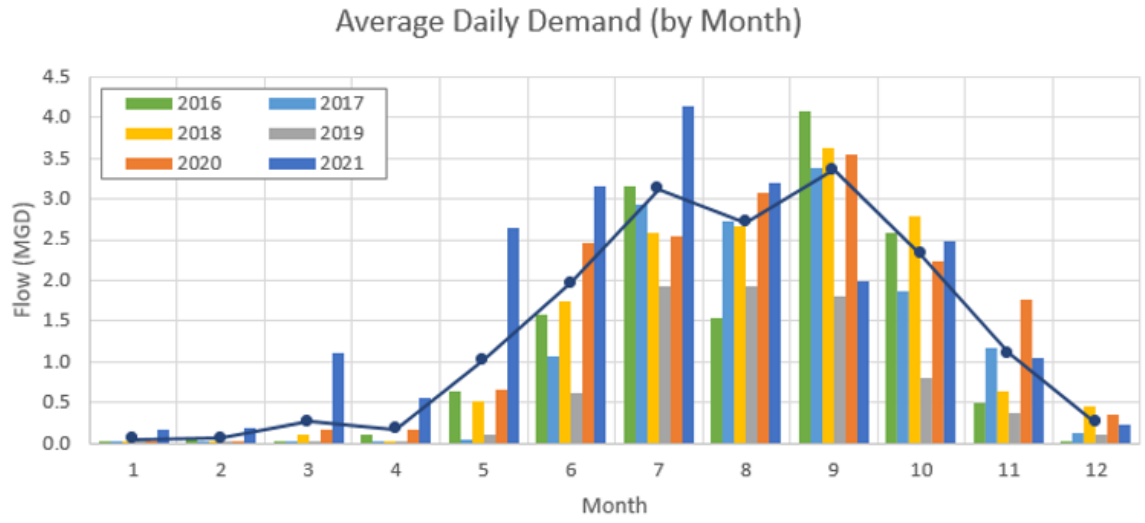
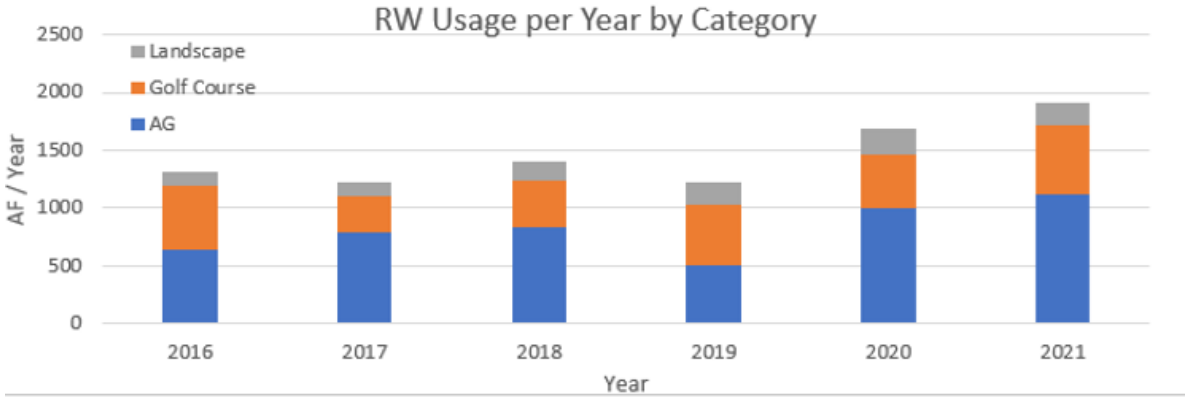


Figure 2: Recycled Water Use/Year by User Category



In 2021, the peak daily production of recycled water was 4.8 mgd., and 3.9 mgd. in 2022. For the current calendar year, through June 2023, the peak daily recycled water production has been 3.2 mgd. The max daily production of recycled water is about 4.7 mgd., with the average daily production at approximately 2.7 mgd. Increased tertiary production capacity is needed to authorize additional summertime recycled water customer demand.

The Adobe Road project is anticipated to serve additional recycled water customers for vineyard irrigation and increase recycled water demand by 300-400 AFY. Without the Tertiary Project and the increase in tertiary treatment system capacity, the City will not be able to serve the anticipated demand for the Adobe Road project.

The Tertiary Project has been divided into three phases. The first phase of the project is complete and entailed recoating the three UV channels. The second phase of the project is in construction and will expand the UV disinfection system. The third phase, which is being requested for authorization, will expand the filtration system with cloth media filters and will allow an increase in the tertiary recycled water production rates. If completed, the third project phase will include two cloth media filters, in addition to the 5 existing sand filter units. If either system is taken offline for maintenance, the other could operate and continue to provide a reduced level of service with little disruption. In addition, the use of differing filter technologies allows flexibility if there were a constraint in the supply chain for either sand filter media or cloth filter media components.

At the completion of the third project phase, the peak capacity for tertiary treatment would be increased from 4.7 to 6.7 mgd.

DISCUSSION

On June 15, 2015, the City Council adopted Resolution 2015-087 N.C.S. authorizing an agreement with Carollo Engineers for the design of the Tertiary Project. On January 6, 2020, the City Council adopted resolution 2020-001 N.C.S. to authorize an amendment to the agreement with Carollo Engineers. Since the 2015 City Council authorization of this project, and subsequent agreement amendment with Carollo Engineers, the design and implementation of the Tertiary Project was split into three phases, of which Phase 1 is complete and Phase 2 is in progress.

On November 7, 2022, City Council adopted Resolution 2022-173N.C.S. authorizing the award of the first phase of this project, which was completed in June 2023 and consisted of applying a durable coating to the UV disinfection channels in preparation for Phase 2.

Prior to Phase 2, the City Council adopted Resolution 2022-155 N.C.S. authorizing a purchase from Suez Treatment Solutions to begin procurement of the UV module system. The lead time for the fabrication of that equipment was long, and the pre-purchase allowed for a more streamlined construction schedule for the second phase of work.

On January 9, 2023, City Council adopted Resolution 2023-006 N.C.S. authorizing the award of the second phase of work to C. Overaa & Co. for UV equipment modification. The work for Phase 2 is in progress and includes upgrading the existing UV disinfection equipment and activating a third channel for treatment, in addition to various other improvements.

The scope of work for Phase 3 includes the construction of two new structural filtration units that will each have a cloth media filtration system, electrical and control improvements, and additional pumping capacity. Additionally, as part of Phase 3, an existing carport will be replaced by a storage facility/garage that is a necessary addition to support the ongoing operational needs of the facility.

Phase 3 is essential to the Tertiary Project, and once completed, will allow the ECWRF to increase the production of tertiary-treated recycled water from the existing 4.7 mgd. to 6.7 mgd. at peak capacity.

On May 18, 2020, in Resolution 2020-064 N.C.S. the City Council made a sole source finding to allow for pre-negotiation of the AquaDisk filtration system, with Aqua-Aerobics Systems Inc. as a sole source vendor. The purchase of this system is included in this project award.

City staff and Carollo Engineers, the City's engineering consultant for the Tertiary Project, prepared design documents and specifications for the project and issued a Notice Inviting Bids on April 28, 2023. On June 22, 2023, three (3) bids were received as follows:

Name of Bidder	Bid Total
***C. Overaa & Co.**	**$ 9,811,000**
Myers & Sons Construction	$10,288,888
Pacific Infrastructure	$10,620,000

***Lowest Responsible Bidder**

The lowest responsible bidder, C. Overaa & Co., is a contractor capable of completing the work specified for this project, including filtration system installation. They have a diverse portfolio of projects including constructing and installing water treatment infrastructure. C. Overaa & Co. has successfully completed numerous complex municipal and private projects involving wastewater treatment plant equipment for more than 20 years, including the successful installation of Digester No. 2, associated heating and mixing components, hot water loop, heat exchanger, and gravity belt thickener No. 2 at the ECWRF during the Solids Handling Upgrade Project, as well as UV disinfection improvements at the Shasta Lake Wastewater Treatment Plant, among others, proving their reliability in installing complex water treatment infrastructure.

C. Overaa & Co. has a Class A California State Contractor's License No. 106793 which expires on May 31, 2025, that qualifies the Contractor to perform the work. There have been no bid protests and the time to protest the proposal has lapsed. For these reasons, it is recommended that Council adopt the resolution awarding the contract to the lowest responsible bidder, C. Overaa & Co., in the amount of $9,811,000.

Construction activity on-site is currently planned to begin around January 2024, near the completion of the second phase of work, and scheduled to be completed around August 2024, to meet the preferred schedule and to allow for the procurement of materials that require longer lead times. The project is expected to have minor impacts on recycled water production during construction. However, these impacts will be minimized by coordinating shutdowns within a strict

schedule. Furthermore, shutdowns will be attempted to be scheduled as best as practical to occur prior to the summer peak recycled water season.

Of note, the Tertiary Project will be constructed in an existing staff parking space. A future project to construct a new staff parking lot at ECWRF will be brought to City Council for consideration and recommended for authorization.

It is recommended that the City Council adopt the attached resolution authorizing the award of the contract for Phase 3 of the Ellis Creek Water Recycling Facility Tertiary Treatment Expansion Project to C. Overaa Co. to complete the tertiary treatment upgrades project.

PUBLIC OUTREACH

This agenda item appeared on the City's tentative agenda document on July 10, 2023, which was a publicly noticed meeting.

COUNCIL GOAL ALIGNMENT

The City Council has identified "Our Environmental Legacy" as one of its key strategic initiatives for 2021-2023.

- #46 – "Establish and promote a citywide sustainability program leading with exemplary environmental practices."
- #42 – "Find ways for City operations to reduce greenhouse gas emissions, conserve water, decrease waste, and minimize the use of fossil fuels and investigate and pursue options for carbon sequestration."
- #53 – "Continue to expand recycled water services to support local agriculture and groundwater and surface water resources."
- #70 – "Continue to focus on water conservation and urban recycled water expansion."

CLIMATE ACTION/SUSTAINABILITY EFFORTS

The City anticipates ongoing water supply challenges as a result of climate variability and longer drought periods. The City seeks to address future water shortages and conserve potable water resources by expanding the recycled water program. The City's recycled water program is a critical component of our water supply portfolio and will continue to be central to the integrated planning efforts of the IWMP.

This proposed action supports the above goals, and when implemented will increase the production of recycled water to meet greater demands for irrigation and future approved uses for recycled water throughout Petaluma.

The Petaluma Climate Action Framework Section 3, "Adaptation & Social Resilience" identifies the following climate action goal: "Develop resilient infrastructure and community readiness, including backup sources of water, power, and communications." This project promotes the reliability of water sources by allowing for increased availability of recycled water and enhances

the resilience of the tertiary filtration treatment system with different technology and process configuration options to better accommodate maintenance shutdowns.

ENVIRONMENTAL REVIEW

The original Environmental Impact Report (EIR) for the ECWRF was certified in August 2002 and subsequently modified in April 2004, August 2005, February 2006, and May 2007 (SCH # 2007052146). On May 7, 2007, the City Council adopted Resolution 2007-080 N.C.S. certifying an addendum to the ECWRF EIR approving proposed project revisions and adopting findings of fact regarding changes to the ECWRF to increase peak capacity for tertiary treatment from 4.0 to 6.7 MGD.

On August 14, 2018, the Sonoma County Water Agency Board, acting as the lead agency for the North Bay Water Reuse Authority (NBWRA) and as the lead agency pursuant to the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) certified the NBWRA Phase 2 Final Environmental Impact Report/Environmental Impact Statement (FEIR/EIS) (SCH #2017072051). On September 17, 2018, the City Council, acting as an NBWRA member agency and as a responsible agency under CEQA adopted Resolution 2018-147 N.C.S. approving and declaring the City's intent to carry out City projects identified in the NBWRP Phase 2 EIR/EIS, adopting a mitigation monitoring and reporting plan, and a statement of overriding considerations. The Phase 2 Program projects evaluated in the EIR/EIS included increasing the tertiary capacity at the ECWRF from 4.7 million gallons per day to 6.8 million gallons per day, expanding the urban recycled water distribution system, and agricultural recycled water expansion. The environmental impacts related to the tertiary process upgrades have been addressed in the environmental review conducted as part of the original Ellis Creek EIR, the May 7, 2007, addendum, the original Water Recycling Enhancement Plan EIR, the December 2015 and May 2018 addenda, August 14, 2018, NBWRA FEIR/EIS, and Resolution 2018-147 N.C.S. adopted September 17, 2018. No separate, subsequent, or supplemental environmental review is warranted for this action.

FINANCIAL IMPACTS

Recycled water demand for irrigation varies by year, however, in general, increased production of recycled water allows for additional distribution and correspondingly increases consumption charges. Recycled water demand is anticipated to increase over time, as the City continues to explore reuse options beyond irrigation.

Revenues from the City's recycled water program for the 3 years 2020-2022 are as follows:

	2020	2021	2022
Recycled Water Revenue	$491,815.74	$729,873.52	$829,873.58

Currently, the City can recycle 45% to 48% of plant influent. In 2020 the City produced 735 million gallons of recycled water (45% of the total annual influent flow); in 2021 the City produced 804 million gallons of recycled water (48% of the total annual influent flow); and in 2022 the City produced 689 million gallons of recycled water (45% of the total annual influent flow).

With an increase in tertiary treatment capacity by an additional 712 AFY, the City's recycled water revenues may increase by approximately $310,984 per year at the current recycled water rate. Currently, the recycled water rate for all customers (urban and agricultural) is half the potable rate except for a few historic agricultural customers who have high demand and lower rates locked into long-term agreements. These agreements include storage requirements and easements for distribution infrastructure in exchange for reduced rates. Based on the revenues and consumptions shown above, the average price received is $409.85, $429.34, and $436.78 for the years 2020, 2021, and 2022, respectively. The high volume of water used by agricultural users with long-term agreements pulls these unit prices down to well below 50% of the potable rate. As new users purchase recycled water and as these long-term agreements expire, this average unit price and recycled water revenues will continue to rise. However, it is important to consider the historical context of these existing long-term agreements.

Until the summer of 2013, the City paid agricultural users to take disinfected secondary effluent produced at ECWRF during the irrigation season. The City implemented agricultural irrigation to comply with an order from the San Francisco Bay RWQCB that restricts the City's treated wastewater discharges to the Petaluma River between May 1 and October 30. Agricultural users began paying the City a commodity charge in the summer of 2013 (in accordance with the aforementioned individual agreements), at which point the City replaced deliveries of secondary effluent to agricultural users with tertiary treated effluent. This project represents the completion of a long-standing vision to maximize tertiary treatment as outlined in the North Bay Water Reuse Program Phase 2 Feasibility Study (available here: https://www.nbwra.org/wp/wp-content/uploads/NBWRP-P2-FS-Report-Final.pdf; see Section 3.1.2, page 3-4).

Regarding the long-term vision and cost-effectiveness of recycled water, it is important to point out that the City is in the process of preparing an Integrated Water Master Plan (IWMP). This study is partially funded by grants and provides us with a unique opportunity to take a holistic view of all water supply development opportunities, including recycled water program expansion. Through this effort, projects will be scored in a way that will represent a complete project cost to our decision-makers and community for their feedback and input on future planning.

As part of this effort, staff plans to perform a financial analysis of the recycled water program to determine the cost of recycled water production and program expansion, as well as review recycled water rates. As part of this recycled water rate analysis, staff plans to consider and recommend structured rate options for (1) urban recycled water customers, (2) agricultural recycled water customers, and (3) seasonal agricultural users that will incentivize recycled water storage during winter months.

While the effluent from the Ellis Creek Water Recycling Facility was once considered to be something that needed to be "disposed of" in order to meet regulatory requirements (to not discharge between May 1 and October 30), high-quality tertiary treated recycled water is now considered to be a valuable commodity that is in demand and can be sold at a market rate determined by the City. Completion of the tertiary expansion project will ensure that the City is well-positioned in being able to produce, distribute, store, and sell recycled water for beneficial reuse. This is especially important as we continue efforts to improve the resiliency of our water

supply during future droughts. The IWMP process is well underway and will soon involve community stakeholders and input from Council in helping to determine future recycled water demands, priorities for uses and distribution, and optimal recycled water rates.

The total project budget for the three phases of the Tertiary Project is $19.5 M. When factoring in the $8.3 M in grant funding for this project (42.6% grant-funded), it is estimated that cost recovery for the project will occur between 12 and 15 years, assuming that the additional 712 AFY is sold at the current recycled water rate (which increases with inflation and potable rate increases). By the time the tertiary project is online, and the Adobe and Maria Drive projects have been completed, new recycled water rates may be adopted with a revised structure for different users, thus providing additional revenue and potentially reducing the payback period further.

The total approved budget for the Tertiary Filtration Expansion Project is $18,792,000, as shown in the FY 2023/2024 Proposed Operating and Capital Improvement Project Budget. The Filtration Expansion and Miscellaneous Improvements Project is Phase 3 of the overall project, and the lowest responsible project bid was $9,811,000.

Phase 1 was completed for $265,500, and Phase 2, which is currently in progress was awarded for $3,061,000. The Phase 3 award for $9,811,000 results in a construction contract cost subtotal of $13,137,500, for a net cost increase of $791,500 compared to the FY 23/24 budget. However, the FY 23/24 budget did not include all the grant funding due to the timing of the funding agreements.

In 2019, the City of Petaluma's Tertiary Project was awarded $3.6 M in funding with a 50% City match from DWR Prop 1 funds through NBWRA. The DWR grant funding requires project completion (Phase 3) by December 2024.

In 2021, the City received a second grant through NBWRA for the Tertiary Project from Reclamation Title XVI funding. The Reclamation funding is $4.7 M with a 25% City match based on a project estimate of $18.8 M. The application for this grant funding was authorized by City Council on March 21, 2022 AGENDA LINK and the formalized agreement for this additional grant funding is in progress.

All grant funding for the tertiary treatment upgrades project was awarded as one project, which includes Phases 1, 2, and 3.

Parking improvements at ECWRF will be required due to the loss of staff parking from the completion of the Tertiary Project. Parking improvement costs are not included in the current construction contract and a future increase to the overall project budget will likely be needed to offset the loss of parking.

Project funding is shown below as Wastewater Capital Funds for FY 23/24. The grant funding sources are shown in the total Project Budget because these funds would be received following the completion of the project during FY 24/25. The following is a breakdown of the project budget categories for Phases 1, 2, and 3:

Itemized Budget Breakdown C66401416	FY 23/24 Budget	Previously Approved Project Budget	Amended Total Project Budget
Uses			
Design/Planning/Environmental	$ 180,000	$ 1,751,000	$ 1,751,000
Administration/Legal Services	$ 8,000	$ 16,000	$ 16,000
Construction Contracts	$5,793,000	$12,346,000	$13,137,500
Construction Management	$ 900,000	$ 1,501,000	$ 1,501,000
Contingency	$1,448,000	$ 2,817,000	$ 2,817,000
CIP Overheads	$ 165,000	$ 361,000	$ 361,000
TOTAL	**$8,494,000**	**$18,792,000**	**$19,583,500**

Funding Sources	FY 23/24 Budget	Total Project Budget
Wastewater Capital Funds	$8,494,000	$11,283,500
2019 DWR Prop 1 Grant (NBWRA)	**-**	**$ 3,600,000**
2021 Reclamation Title XVI Grant (NBWRA)		**$ 4,700,000**
TOTAL	**$8,494,000**	**$19,583,500**

ALTERNATIVES

City Council may choose not to adopt this resolution. If this resolution is not adopted, the tertiary filtration expansion will not be installed, and the City will not be able to increase the production of recycled water. Additionally, the existing system will remain without the added filtration system redundancy and is thus less resilient to disruption of service. If Phase 3 is not completed, the City will also risk not meeting grant agreement requirements for the buildout and operation of the system, which includes work already completed and in progress as part of Phases 1 and 2. The operation of the system is ultimately dependent on the completion of Phase 3.

Additionally, if Phase 3 of this project is not completed, the City will not be able to produce enough recycled water in peak summer months to fulfill the anticipated recycled water demand of 300-400 AFY for irrigation needs associated with the planned Adobe Road Recycled Water Pipeline Extension. Accordingly, the City would lose revenues associated with this expansion of the distribution system. The Adobe Road expansion project is funded by two grants, which are at risk if the City decides not to proceed with that project.

ATTACHMENTS

1. Resolution
2. Site Map