CITY OF YUBA CITY STAFF REPORT

Date:	October 5, 2021
То:	Honorable Mayor & Members of the City Council
From:	Public Works Department
Presentation by:	Diana Langley, Public Works Director
Summary	
Subject:	Groundwater Well Rehabilitation Pilot Testing and Preliminary Design
Recommendation:	A. Adopt a Resolution awarding a Professional Services Agreement to Murraysmith, Inc. of Portland, OR for pilot testing and preliminary engineering design for Groundwater Wells Nos. 5 and 8 in the amount of \$69,450 plus \$15,000 contingency, with the finding that it is in the best interest of the City
	B. Authorize a supplemental appropriation and related transfers in the amount of \$84,450 from unallocated water funds to Account No. 971293-65501 for the Groundwater Well Rehabilitation pilot testing and preliminary design report
Fiscal Impact:	\$84,450.00 – Account No. 971293-65501 (Groundwater Well Rehabilitation)

Purpose:

Provide additional water supply sources for the City by rehabilitating deactivated groundwater wells.

Background:

The City of Yuba City purchased 16 former Hillcrest Water Company well sites in 2001 for water supply purposes; these groundwater wells have since been deactivated and the serviced regions were connected to the City's surface-water distribution system. Groundwater Well Sites Nos. 5, 8, and 9 were identified for future emergency use, while the remaining wells were appropriately abandoned due to well quality, age, and estimated costs to rehabilitate. Table 1 provides information specific to each well site.

Well Site	Location	Nominal Capacity (gpm)	Nominal Capacity (mgd)	Historical MCL Exceedances
5	Franquette Drive	850	1.22	Iron and Manganese
8	La Grande Avenue	800	1.15	Arsenic, Iron, and Manganese
9	Edwin Drive	600	0.86	Arsenic, Iron, and Manganese

Table 1: Groundwater Well Sites Nos. 5, 8, and 9

Total:	2,250	3.23	

gpm = gallons per minutes mgd = million gallons per day

MCL – Maximum Contaminant Level

Well Sites 5 and 8 do not currently have any form of on-site treatment. Well Site 9 is currently equipped with an ATEC Systems wellhead treatment system to reduce arsenic, iron, and manganese concentrations. Staff recently had representatives from ATEC Systems service the treatment system so that the well can be brought back online should the need arise.

The current California drought has impacted the City's surface-water supply for this year, as well as the upcoming year if rainfall totals and runoff do not increase significantly during this next winter. The Public Works Department is pursuing multiple avenues to conserve and increase water supply to address the projected shortage, including supplementary groundwater supply, as outlined in the water supply outlook and emergency water restrictions Council item on July 20, 2021. The City has one functioning groundwater well at the Water Treatment Plant, which it utilized as backup during the 2012-2016 drought and the current drought, and a contract for design of a second groundwater well at the facility was approved by Council on September 7, 2021.

Analysis:

Public Works also recommends the rehabilitation of Well Sites 5 and 8 to provide additional water supply and storage during drought and emergency situations. In order to design, plan, and budget the project, a professional services consultant will need to evaluate the feasibility and requirements for rehabilitation and potable water treatment.

Staff contacted Murraysmith, Inc. of Portland, OR to evaluate Well Sites 5 and 8 and provide a recommendation for next steps. Murraysmith provided the attached scope of work and cost proposal to perform pilot testing, in partnership with ATEC Systems, and prepare a preliminary engineering design report (Attachment 1a). The pilot testing will evaluate whether or not the treatment system will be effective in reducing the arsenic, iron, and manganese levels that historically exceed the Maximum Contaminant Level at those sites. Murraysmith works closely with ATEC Systems, and their lead consultant is an industry leader for development of on-site treatment systems. City Council is authorized to award a contract for specialty professional services without competitive bidding per Municipal Code Section 2-6.14.

Murraysmith estimates that the contract scope will be completed within two months and the well sites could potentially be ready for reactivation in spring 2022. Once the rehabilitation and on-site treatment project is complete and the City is able to reactivate the wells, Well Sites Nos. 5 and 8 can be brought online should the need arise to supplement surface-water supplies, and the groundwater from these wells will be mixed with the surface water in the water distribution system.

Fiscal Impact:

The total cost for the pilot testing and preliminary engineering design report is \$69,450. Staff is requesting a contingency in the amount of \$15,000 if the need for additional testing or other work arises in relation to the contract services.

Public Works is also requesting an appropriation from unallocated water funds to fund this contract and the overall project. The Department did not create or fund a CIP project for groundwater well

rehabilitation during the spring CIP budget approval process, as the statewide water shortage concerns escalated after that period.

The total cost of the Groundwater Well Rehabilitation Project is unknown at this time, but will be better quantified with the completion of the preliminary engineering design report; staff will return to Council with an updated estimate and request for additional supplemental appropriation as the project moves forward.

Alternatives:

- 1. Do not approve the agreement and do not move forward with rehabilitating Groundwater Wells Nos. 5 and 8, which will eliminate a potential source of water supply for the City.
- 2. Direct staff to conduct a formal competitive Request for Proposals process, which will delay the project and will be unlikely to locate additional consultant firms.

Recommendation:

A. Adopt a Resolution awarding a Professional Services Agreement to Murraysmith, Inc. of Portland, OR for pilot testing and preliminary engineering design for Groundwater Wells Nos. 5 and 8 in the amount of \$69,450 plus \$15,000 contingency, with the finding that it is in the best interest of the City.

B. Authorize a supplemental appropriation and related transfers in the amount of \$84,450 from unallocated water funds to Account No. 971293-65501 for the Groundwater Well Rehabilitation pilot testing and preliminary design report.

Attachments:

- 1. Resolution
 - a. Murraysmith, Inc. Proposal

Prepared by:

<u>/s/ Scarlett O. Harrís</u>

Scarlett O. Harris Administrative Analyst I

Reviewed by:

Department Head

City Attorney

Submitted by:

18/ Dave Vaughn

Dave Vaughn City Manager

DL

SLC by email

ATTACHMENT 1

RESOLUTION NO.

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF YUBA CITY AWARDING A PROFESSIONAL SERVICES AGREEMENT TO MURRAYSMITH, INC. OF PORTLAND, OR FOR PILOT TESTING AND PRELIMINARY ENGINEERING DESIGN FOR GROUNDWATER WELL REHABILITATION IN THE AMOUNT OF \$69,450 PLUS A \$15,000 CONTINGENCY

WHEREAS, the City of Yuba City desires to increase groundwater supply sources to address emergency and long-term water supply and storage needs; and

WHEREAS, the City purchased 16 former Hillcrest Water Company well sites in 2001 and identified three (3) sites for potential rehabilitation; and

WHEREAS, Governor Newsom issued Executive Order N-10-21 on July 8, 2021 in response to growing statewide water supply concerns for 2021 and 2022, and the City subsequently entered Stage 2 "Water Warning" of the Water Shortage Contingency Plan; and

WHEREAS, one of the ways that the City is responding to projected water supply shortages is increasing groundwater supply availability through construction of a second groundwater well at the Water Treatment Plant and the rehabilitation of existing deactivated Hillcrest groundwater well sites; and

WHEREAS, in order to move forward with the design and construction phases of the rehabilitation of Groundwater Well Sites Nos. 5 and 8, certain pilot testing and preliminary engineering design report services are required to determine the feasibility and requirements of the project construction and future potable water treatment; and

WHEREAS, Murraysmith, Inc. of Portland, OR is the sole provider of these necessary pilot testing and preliminary design services and its lead consultant is the industry leader in this specialty field; and

WHEREAS, the City desires to award a Professional Services Agreement to Murraysmith, Inc. of PortaInd, OR in the amount of \$69,450 for pilot testing and preliminary engineering design services for the rehabilitation of Groundwater Well Sites Nos. 5 and 8.

NOW, THEREFORE, be it resolved by the City Council of Yuba City as follows:

1. The City Council finds that an award to Murraysmith, Inc. is appropriate on grounds including that Murraysmith is the only consultant firm which provides the unique services of pilot testing and preliminary design for this type of project and provides the expertise of an industry leader in this field. It would not be feasible to conduct a competitive Request for Proposals process due to the specialty nature of the proposed work. This exemption from competitive bidding is authorized per Municipal Code Section 2-6.14. As such, the City Council finds that it is in the best interest of the City to make a sole source award to Murraysmith, Inc. for pilot testing and preliminary engineering design for Groundwater Wells Nos. 5 and 8 in anticipation of a groundwater well rehabilitation project.

2. The City Council hereby awards, in the amount of \$69,450, to Murraysmith, Inc. of Portalnd, OR for pilot testing and preliminary engineering design for Groundwater Wells Nos. 5 and 8, and finds that the award is in the best interest of the City. The City Council further authorizes the City Manager, or designee, to enter into an agreement with Murraysmith, Inc. for pilot testing and preliminary engineering design for Groundwater Wells Nos. 5 and 8 consistent with the terms of this Resolution and the material terms of the proposal attached hereto, and subject to approval of the agreement as to legal form by the City Attorney. A \$15,000 contingency is hereby also authorized for the agreement, only to be accessed upon written authorization by the City.

3. This Resolution shall become effective immediately.

The foregoing resolution was duly and regularly introduced, passed, and adopted by the City Council of the City of Yuba City at a regular meeting thereof held on the 5th day of October, 2021.

AYES:

NOES:

ABSENT:

Marc Boomgarden, Mayor

ATTEST:

Ciara Wakefield, Deputy City Clerk

APPROVED AS TO FORM COUNSEL FOR YUBA CITY:

Shannon Chaffin, City Attorney Aleshire & Wynder, LLP

Exhibit(s):

A. Proposal from Murraysmith, Inc.

EXHIBIT A

EXHIBIT A

SCOPE OF WORK Pilot Testing and Preliminary Engineering Report for Arsenic, Iron & Manganese Removal Yuba City

Background

Yuba City's drinking water comes from the Feather River. The water is pumped from the river to the Water Treatment Plant (WTP) located in North Yuba City. The WTP treats 36 million gallons per day (MGD) of drinking water and serves a population of over 73,000 people. However due to recent water shortages and growing concerns related to future drought conditions the City has decided to supplement their surface water supply with three existing groundwater Wells 5, 8, and 9. The City has recently started up the Well 9 treatment plant and want to construct similar treatment systems on the other two wells. The City has requested that Murraysmith conduct pilot testing for Wells 5 and 8 to remove arsenic, iron and manganese

This Scope of Services has been separated into four tasks for clarity and is described in detail below.

Scope of Services

Consultant will perform the following services.

Task 1 - Project Management

Objective

Provide overall leadership and team strategic guidance aligned with the Yuba City staff objectives. Coordinate, monitor, and control the project resources to meet the technical, communication, and contractual obligations required for developing and implementing the project scope.

Activities

1.1 Invoices/Status Reports

Consultant will prepare monthly invoices, including expenditures by task, hours worked by project personnel, and other direct expenses with the associated backup documentation. Monthly status reports will accompany each invoice and include comparisons of monthly expenditures and

cumulative charges to budget by Task, including cost-to-complete, earned value, cash flow, and certified firm participation.

1.2 Management and Coordination of Staff

Consultant will manage and coordinate the technical and scope issues of the overall project. Progress meetings will be conducted as appropriate. Murraysmith will also coordinate with the owner to communicate the status of the project.

In addition, Murraysmith' s standard Health and Safety Plan (HASP) will be used for this project. It is the Consultant's policy to promote and foster a safe work environment for the team both inside the office and in the field. The HASP will align with all local Occupation Health and Safety Administration (OSHA) requirements, client safety plans and program, and contractor safety plans.

Based on the Consultant's assessment of the probably risks and demands of this project, HASP will consist of the Murraysmith + Quincy Office Safety Handbook plus the Driver Safety Handbook.

1.3 Coordination of Subconsultants

Consultant will coordinate with subconsultants on specific tasks, scope, and budget. Conduct progress meetings as appropriate.

Task Deliverables

- Consultant shall deliver to the Yuba City a monthly invoice and status report covering:
 - Work on the project performed during the previous month.
 - Meetings attended.
 - Problems encountered and actions taken for their resolution.
 - Potential impacts to submittal dates, budget shortfalls or optional services.
 - o Budget Analysis.
 - o Issues requiring project team action.

Assumptions

Consultant assumes a Notice to Proceed date by Monday October 6, 2021.

- Consultant will conduct one two hour video conference workshop to review pilot testing data and the draft preliminary design report with the Owners engineering and operations staff.
- Project duration will be 2 months; therefore it is assumed that there will be up to 2 progress payments/status reports.

Task 2 – Pilot Testing

Murraysmith's subconsultant ATEC Systems, Inc. (ATEC) will provide pilot testing services for both Well 5 and Well 8. A schematic of the pilot system is shown in Figure 1. ATEC will provide the following:

- A portable, automated pilot testing trailer will be provided for the test. The equipment will include a booster pump, the filter, chemical feed system, flow meters, valves, and pressure gauges. The pilot testing equipment will be used at each of the two Yuba City well sites.
- Field testing equipment will be provided to test for pH, silica, iron, manganese, free and total chlorine.
- Laboratory testing will be provided for arsenic, iron and manganese by the City.
- Chemical feed for ferric chloride, chlorine and permanganate will be provided.
- Testing will be conducted for up to one week and will include at least two complete filter cycles with hourly sampling followed by less frequent sampling during the remainder of the test.
- Testing will be conducted on water pumped from the individual well sites.
- A sample of backwash water will be collected and tested for settling time, suspended solids and Iron and manganese concentration.
- The pilot system will require a 1" female or male pipe thread connection and at least 25 psi of pressure.
- An electrical outlet (120 v, 10 amp) will also be required.



Figure 1. Pilot Testing Schematic

Sampling Plan

Pilot tests would be conducted with the pilot equipment operating 8 to 24 hours per day. Initial testing conditions will include optimizing the chemical feed dose and filter loading rates. Once optimal conditions are defined the plant will be operated at a constant operating condition for the remainder of the test.

Samples are collected at 60-minute intervals for the first two filter runs of the pilot test. Subsequent samples may be less frequent. The following field tests are normally taken.

Field Testing Parameter	Filter Inlet	Filter Outlet	Typical Frequency
pН	Х	Х	60 minutes
Free and Total Chlorine Residual	х	Х	60 minutes
Arsenic, Total	х	Х	3-4 per day
Iron, Total	х	Х	60 minutes
Manganese, Total	Х	Х	60 minutes
Chlorine Solution Strength	(in solution tank)		Daily or more frequently, if concentration is changed.

Backwash effluent samples will also be collected and analyzed to help in the preparation of any backwash water treatment, disposal, or recycling recommendations.

Results of the pilot testing will be analyzed to determine the efficiency of the filters at removing arsenic, iron and manganese from the source water. The data will be presented in tabular and

graphical form showing operating conditions, removal efficiencies, and chlorine dose and residual levels.

Task Deliverables

• PDF and Excel file(s) of pilot test results from both Well 5 and 8 presented in tabular and graphical form.

Assumptions

- The City's operation staff will run the well during the duration of pilot testing.
- The City will provide the required connections for testing and divert or collect discharged finished water and backwash water appropriately.
- Pilot testing at each well will be conducted over a two-day period.

Task 3 – Surge Analysis

Murraysmith' s subconsultant Fluid Hammer, LTD will conduct a surge analysis. Fluid Hammer will model several scenarios (5 to 10 cases depending on the complexity of the system with and with protection) and size the vertical surge tanks if needed. Tabulated and graphical results for each modeling scenario will be provided.

Task Deliverables

• PDF and Excel file(s) modeling results for both Well 5 and 8 surge analysis presented in tabular and graphical form.

Assumptions

- The City's has a hydraulic model available in either KYPIPE platform or as an EPANET file.
- Surge protection is most likely needed based on the assumption of the current use of horizontal pressure tanks being used for mainlining system pressures.
- The City will conduct the laboratory testing for iron, manganese, and arsenic.

Task 4 – Preliminary Design Report

Murraysmith will prepare Preliminary Design Report (PDR) detailing the results of the pilot testing and an analysis of the variables used in the pilot test and surge analysis. The report will include an evaluation of the technical feasibility of using the treatment process on the source water, development of a basis of design and cost estimates for a full-scale facility with the identified design capacities for both Well 5 and Well 8. The Preliminary Design Report will be provided as a draft for review by Utility staff and management, for presentation to the Owner and for submission to the State Regulatory Agency. A final version will incorporate comments from the reviews.

The report will include:

- Ownership, operation, and management information
- Source water background and source water quality information
- Existing treatment and operational practices
- Pilot testing and analytical methodologies
- Pilot testing results, discussion, and recommendations
- A basis of design for treatment modifications including:
 - Treatment vessel sizing and design criteria
 - o Media requirements
 - o Backwashing requirements
 - Site planning requirements with a site plan drawing
 - o Backwash water disposal, or recycling requirements
 - o Piping requirements
 - o Electrical and SCADA requirements
 - o Building requirements
 - Process monitoring and analytical equipment recommendations
- A schedule for design, permitting, approval construction and start-up
- Design-Build Options Summary
- A preliminary cost estimate for completion of the project

Task Deliverables

- One Draft Preliminary Design Report
- One Final Preliminary Design Report with comments and revisions incorporated from the Draft PDR

Budget

Payment will be made at the Billing rates for personnel working directly on the project, which will be made at the Consultant's Hourly Rates, plus Direct Expenses incurred. Billing rates are as shown in Attachment 1. Subconsultants, when required by the Consultant, will be charged at actual costs plus a 10 percent fee to cover administration and overhead. Direct expenses will be paid at the rates shown below. The initial estimated maximum total fee to be invoiced under this Agreement is \$69,450, which shall not be exceeded without written authorization from Yuba City. A breakdown of the costs by tasks is attached (See Attachment 2).

Direct Expenses

Expenses incurred in-house that are directly attributable to the project will be invoiced at actual cost. These expenses include the following

Computer Aided Design and Drafting	\$18.00/hour
GIS and Hydraulic Modeling	\$10.00/hour
Mileage	Current IRS Rate
Postage and Delivery Services	At Cost
Printing and Reproduction	At Cost
Travel, Lodging and Subsistence	At Cost

Project Schedule

Murraysmith is available to begin work immediately. Pilot testing, surge analysis, and the draft report specification will be completed within 30 days of notice to proceed.

Description	Schedule (6 Weeks)
Notice To Proceed	-
Pilot Testing	1 Week
Draft Report	3 Weeks
Review Workshop	1 Day
Final Report	2 Weeks



Attachment 1 - 2021 SCHEDULE OF CHARGES

Personnel:

Labor will be invoiced by staff classification at the following hourly rates, which are valid from January 1, 2021 through December 31, 2021. After this period, the rates are subject to adjustment.

Billing Classifications	2021 Rates	Billing Classifications	2021 Rates			
Principal Engineer VI	\$280	Cost Estimator III	\$260			
Principal Engineer V	\$270	Cost Estimator II	\$210			
Principal Engineer IV	\$260	Cost Estimator I	\$160			
Principal Engineer III	\$250	Construction Manager VIII	\$238			
Principal Engineer II	\$240	Construction Manager VII	\$230			
Principal Engineer I	\$230	Construction Manager VI	\$213			
Professional Engineer IX	\$222	Construction Manager V	\$197			
Engineering Designer IX	\$214	Construction Manager IV	\$187			
Professional Engineer VIII	\$210	Construction Manager III	\$170			
Engineering Designer VIII	\$205	Construction Manager II	\$158			
Professional Engineer VII	\$201	Construction Manager I	\$133			
Engineering Designer VII	\$194	Inspector VII	\$197			
Professional Engineer VI	\$191	Inspector VI	\$181			
Engineering Designer VI	\$185	Inspector V	\$164			
Professional Engineer V	\$181	Inspector IV	\$152			
Engineering Designer V	\$175	Inspector III	\$135			
Professional Engineer IV	\$171	Inspector II	\$123			
Engineering Designer IV	\$168	Inspector I	\$105			
Professional Engineer III	\$165	Technician IV	\$165			
Engineering Designer III	\$165	Technician III	\$150			
Engineering Designer II	\$155	Technician II	\$130			
Engineering Designer I	\$145	Technician I	\$115			
Principal III	\$299	Project Coordinator IV	\$160			
Principal II	\$280	Project Coordinator III	\$145			
Principal I	\$255	Project Coordinator II	\$130			
Project Manager III	\$230	Project Coordinator I	\$120			
Project Manager II	\$205	Administrative III	\$120			
Project Manager I	\$180	Administrative II	\$110			
		Administrative I	\$99			

Project Expenses:

Expenses incurred that are directly attributable to the project will be invoiced at actual cost. These expenses include the following:

CADD Hardware/Software	\$18.00/hour
Modeling and GIS Hardware/Software	\$10.00/hour
Mileage	Current IRS Rate
Postage and Delivery Services	At Cost
Printing and Reproduction	At Cost
Travel, Lodging, and Subsistence	At Cost

Outside Services:

Outside technical, professional, and other services will be invoiced at actual cost-plus 10 percent to cover administration and overhead.AA

	LABOR CLASSIFICATION (HOURS)																
									Subconsulta	ints							
	Principal Engineer VI	Principal Engineer III	Professional Engineer VII	Engineering Designer II	Engineering Designer IX	Administrative I	Hours	Labor	ATEC Systems	Fluid Hammer	Multiplier Su % Markup	bconsultant Total with Markup	Expenses	CADD Units \$18/hr	GIS Units \$1	0/hr	Total
	\$280	\$250	\$201	\$155	\$214	\$99											
Average Billing Rate Estimated per Classification/Staff	\$280	\$250	\$201	\$155	\$214	\$99	1										
Staff Name	Odell	Scroggs	gress	Mosiman	cloud	gillis											
Task 1 - Project Management																	
Task 1.1 - Project Management	4		20			16	40	\$ 6,724			1.1 \$	-	\$ -	\$	- \$	- \$	6,724
Task 1 Subtotal	4	0	20	0	0	16	40	\$ 6,724	\$-	\$ -	\$	-	\$ -	\$	- \$	- \$	6,724
Task 2 - Pilot Testing																	
Task 2.1 - ATEC Systems							0	\$-	\$ 6,000		1.1 \$	6,600	\$ -	\$	- \$	- \$	6,600
Task 2.2 - Pilot Testing Support	8	8	8	8			32	\$ 7,088			1.1 \$	-	\$ 2,000	\$	- \$	- \$	9,088
Task 2 Subtotal	8	8	8	8	0	0	32	\$ 7,088	\$ 6,000	\$ -	\$	6,600	\$ 2,000	\$	- \$	- \$	15,688
Task 3 - Surge Anaysis																	
Task 3.1 - Hydraulic Modeling and Surge Analysis				-			0	Ş -		\$ 10,000	1.1 \$	11,000	Ş -	Ş	- Ş	- Ş	11,000
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Task 4 - Preliminary Design Report	10		10	50	10		122	ć 22.004			116			ć		ć	22.004
Task 4.1 - Draft Preliminary Design Report	16		40	50	16		122	\$ 23,694			1.1 \$	-		Ş	- Ş	- Ş	23,694
Task 4.2 - Review Workshop	2		2	2	0		5	\$ 1,272 \$ 11,072		+	1.1 Ş	-		\$ ¢	- <u>></u> -	- Ş	11.072
Task 4.5 - Final Freminiary Deisgn Report	°	0	<u> </u>	72	°	0	184	\$ 11,072 \$ 36,038	Ś.	<u>خ</u>	ې	-	,	ې د	- , . ć	- Ş	36.038
	20	0	02	12	24	0	104	\$ 50,038	-		Ş	-		<i>γ</i>			30,038
TOTAL - ALL TASKS	38	8	90	80	24	16	256	\$ 49,850	\$ 6,000	\$ 10,000	\$	17,600	\$ 2,000	\$	- \$	- \$	69,450

(Attachment 2) Yuba City - Pilot Testing and Preliminary Engineering Report for Iron & Manganese Removal

PROPOSED FEE ESTIMATE