

## ITEM 5.2

### CITY MANAGER'S REPORT APRIL 10, 2023 CITY COUNCIL REGULAR MEETING

**ITEM:** **RECEIVE UPDATE FOR AQUIFER STORAGE AND RECOVERY, APPROVE AMENDMENT NO. 1 WITH CAROLLO ENGINEERS, INC. CIP PW 22-36 AND APPROVE BUDGET AMENDMENT**

**RECOMMENDATION:** **Adopt Resolution to Approve Amendment No. 1 with Carollo Engineers, Inc. for the Aquifer Storage and Recovery, CIP PW 22-36 and Approve Budget Amendment**

**CEQA STATUS:** **Staff has determined the CEQA status for the project to date as exempt according to California Environmental Quality Act Article 18 §15262, "Feasibility and Planning Studies"**

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#### **SUMMARY:**

Aquifer Storage and Recovery (ASR) is a water resources management technique for actively storing water underground during wet periods for recovery when needed. The injection and extraction of water is accomplished using a well and is permitted through the State Water Board.

On January 10, 2022 Council approved the creation of Capital Improvement Project (CIP) PW 22-36 ASR and a professional services agreement with Carollo Engineers, Inc. (Carollo) for completing the engineering feasibility study and preliminary design for the project. As a result of Carollo completing the ASR feasibility study and initial design, they determined that the proposed site location is feasible for the ASR project. At the request of staff, Carollo has provided a proposal to provide additional engineering services needed to support the next design and bidding phases of the project.

Staff requests that Council approve Amendment No. 1 with Carollo for the services included in Tasks 1-6 of their proposal for a cost of \$1,547,242 for additional research, design and bidding assistance services. Sufficient funds were not included in the adopted FY 22/23 Budget for CIP PW 22-36; therefore, staff requests that Council approve a budget amendment allocating \$1,701,966 (including 10% contingency) of the Water Fund 5620.

#### **BACKGROUND:**

The City's drinking water comes from two sources, local groundwater and surface water purchased from the South San Joaquin Irrigation District (SSJID). The City's water supply historically has been very reliable and staff has taken the necessary steps to plan for future growth and the corresponding water needs; however, there are emerging risks that the ASR project could help mitigate.

**APRIL 10, 2023 CITY COUNCIL REGULAR MEETING**

**APPROVE AMENDMENT NO. 1 WITH CAROLLO ENGINEERS, INC. FOR AQUIFER STORAGE AND RECOVERY, CIP PW 22-36 AND APPROVE BUDGET AMENDMENT**

These risks include but are not limited to, prolonged droughts, new State regulatory requirements, emerging groundwater contaminants, and management of upstream reservoirs.

On January 10, 2022 Council approved the creation of CIP PW 22-36 Aquifer Storage and Recovery and a Professional Services Agreement with Carollo Engineers, Inc. Carollo for completing an engineering feasibility study and preliminary design for the project. Carollo has completed the ASR feasibility study and initial design and has determined that the proposed site location in River Islands is favorable for the ASR project. Carollo Engineers, Inc. has provided a proposal to provide additional engineering services required for the next phases of the ASR project.

**REASON FOR RECOMMENDATION:**

An ASR project would considerably enhance reliability and mitigate emerging risks to the City’s water supply by pumping and storing surface water acquired from SSJID during wet periods into the ground allowing for later retrieval and utilization during dry seasons, droughts, or instances of water supply shortage.

**CEQA STATUS:**

Staff has determined the CEQA status for the project to date as exempt according to California Environmental Quality Act Article 18 §15262, “Feasibility and Planning Studies”. Staff will be retaining the De Novo Planning Group to prepare an Initial Study/Mitigated Negative Declaration for this project during this next phase.

**FISCAL IMPACT:**

Amendment No. 1 in the amount of \$1,547,242 for the ASR design and bidding assistance services with Carollo. Staff requests that Council approve a budget amendment allocating \$1,701,966 (including 10% contingency) of the Water Fund 5620. Sufficient funds were not included in the adopted Fiscal Year 22/23 budget for these costs, and therefore, staff is requesting Council approve the following budget amendment:

Increase Transfers Out		
5620-99-00-990-90-10		\$1,701,966
Increase Transfers In		
5690-99-00-393-00-00	PW 22-36	\$1,701,966
Increase Expenditures		
5690-80-00-420-12-00	PW 22-36	\$1,701,966

**APRIL 10, 2023 CITY COUNCIL REGULAR MEETING**

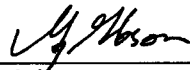
**APPROVE AMENDMENT NO. 1 WITH CAROLLO ENGINEERS, INC. FOR  
AQUIFER STORAGE AND RECOVERY, CIP PW 22-36 AND APPROVE BUDGET  
AMENDMENT**

**ATTACHMENTS:**

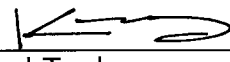
- A. Resolution Approving Amendment No. 1 with Carollo Engineers, Inc. for the Aquifer Storage and Recovery, CIP PW 22-36 and Approving Budget Amendment
  
- B. Amendment No. 1 with Carollo Engineers, Inc. to Provide the Lathrop Aquifer Storage and Recovery Well Design Services , CIP PW 22-36

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**APRIL 10, 2023 CITY COUNCIL REGULAR MEETING**  
**APPROVE AMENDMENT NO. 1 WITH CAROLLO ENGINEERS, INC. FOR**  
**AQUIFER STORAGE AND RECOVERY, CIP PW 22-36 AND APPROVE BUDGET**  
**AMENDMENT**

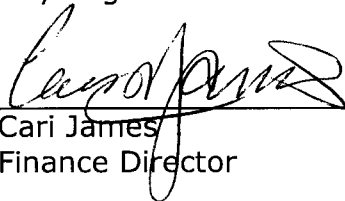
**APPROVALS:**

  
\_\_\_\_\_  
Greg Gibson  
Senior Civil Engineer

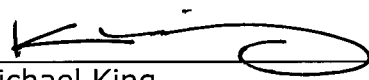
04/03/2023  
Date

 FOR  
\_\_\_\_\_  
Brad Taylor  
City Engineer

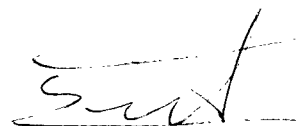
4/5/2023  
Date

  
\_\_\_\_\_  
Cari James  
Finance Director

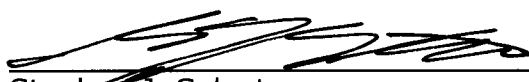
4/5/2023  
Date

  
\_\_\_\_\_  
Michael King  
Assistant City Manager

4/4/2023  
Date

  
\_\_\_\_\_  
Salvador Navarrete  
City Attorney

4-4-2023  
Date

  
\_\_\_\_\_  
Stephen J. Salvatore  
City Manager

4-5-23  
Date

**RESOLUTION NO. 23-**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LATHROP APPROVING AMENDMENT NO. 1 WITH CAROLLO ENGINEERS, INC. FOR THE AQUIFER STORAGE AND RECOVERY, CIP PW 22-36 AND APPROVING BUDGET AMENDMENT**

**WHEREAS**, the City's drinking water comes from two sources, local groundwater and surface water purchased from the South San Joaquin Irrigation District (SSJID); and

**WHEREAS**, the City's water supply historically has been very reliable and staff has taken the necessary steps to plan for future growth and the corresponding water needs; however, there are emerging risks that the ASR project could help mitigate; and

**WHEREAS**, these risks include but are not limited to, prolonged droughts, new State regulatory requirements, emerging groundwater contaminants, and management of upstream reservoirs; and

**WHEREAS**, an ASR project would considerably enhance reliability and mitigate emerging risks to the City's water supply by pumping and storing surface water acquired from SSJID during wet periods into the ground allowing for later retrieval and utilization during dry seasons, droughts, or instances of water supply shortage; and

**WHEREAS**, on January 10, 2022 City Council approved the creation of Capital Improvement Project PW 22-36 Aquifer Storage and Recovery and a Professional Services Agreement with Carollo Engineers, Inc. for completing an engineering feasibility study and preliminary design for the project; and

**WHEREAS**, Carollo has completed the ASR feasibility study and initial design and has determined proposed site location is favorable for the ASR project; and

**WHEREAS**, at the request of staff, Carollo Engineers, Inc. has provided a proposal to provide additional engineering services for the next phases of the ASR project described under Tasks 1-6 of their proposal for a cost not to exceed \$1,547,242; and

**WHEREAS**, sufficient funds were not included in the adopted Fiscal Year (FY) 22/23 Budget, so therefore, staff is requesting that Council approve a budget amendment allocating \$1,701,966 (including an approximate 10% contingency) of the Water Fund 5620 for Carollo to continue provide engineering design services for the CIP PW 22-36 ASR project; and

**WHEREAS**, the CEQA Status for this project to date has been determined by staff to be exempt according to California Environmental Quality Act Article 18 §15262, "Feasibility and Planning Studies".

**NOW, THEREFORE, BE IT RESOLVED**, the City Council of the City of Lathrop does hereby approve Amendment No. 1 with Carollo Engineers, Inc. in the amount of \$1,547,242 for continued engineering support services for the CIP PW 22-36 Aquifer Storage and Recovery; and

**NOW, THEREFORE, BE IT FURTHER RESOLVED**, the City Council of the City of Lathrop hereby approves the budget amendment to the following accounts:

Increase Transfers Out		
5620-99-00-990-90-10		\$1,701,966
Increase Transfers In		
5690-99-00-393-00-00	PW 22-36	\$1,701,966
Increase Expenditures		
5690-80-00-420-12-00	PW 22-36	\$1,701,966

**NOW, THEREFORE, BE IT FURTHER RESOLVED**, the City Council of the City of Lathrop hereby determines this action is exempt according to California Environmental Quality Act Article 18 §15262, "Feasibility and Planning Studies".

The foregoing resolution was passed and adopted this 10<sup>th</sup> day of April 2023, by the following vote of the City Council, to wit:

AYES:

NOES:

ABSTAIN:

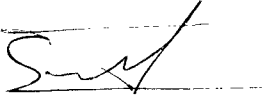
ABSENT:

\_\_\_\_\_  
Sonny Dhaliwal, Mayor

**ATTEST:**

\_\_\_\_\_  
Teresa Vargas, City Clerk

**APPROVED AS TO FORM:**

  
\_\_\_\_\_  
Salvador Navarrete, City Attorney

**AMENDMENT NO. 1**

**TO THE AGREEMENT BETWEEN THE CITY OF LATHROP AND  
CAROLLO ENGINEERS, INC.**

**TO PROVIDE THE LATHROP AQUIFER STORAGE AND RECOVERY  
WELL DESIGN SERVICES, CIP PW 22-36**

**THIS AMENDMENT** (hereinafter “AMENDMENT NO. 1”) to the agreement between **Carollo Engineers, Inc.**, and the City of Lathrop dated April 10, 2023 (hereinafter “AGREEMENT”) dated for convenience this \_\_\_ **day of April 2023**, is by and between **Carollo Engineers, Inc.** (“CONSULTANT”) and the **City of Lathrop**, a California municipal corporation (“CITY”);

**RECITALS:**

**WHEREAS**, CONSULTANT is specially trained, experienced, and competent to perform Professional Engineering Consulting Services for the City of Lathrop, which are required by this agreement; and

**WHEREAS**, CITY selected the CONSULTANT pursuant to said qualifications; and

**WHEREAS**, on January 10, 2022, CONSULTANT and CITY entered into an AGREEMENT to provide the Lathrop Aquifer Storage and Recovery and Feasibility Study and Funding Support, CIP PW 22-36, not to exceed \$301,744; and

**WHEREAS**, CONSULTANT provided scope of work attached hereto as Exhibit “A” for Amendment No. 1 for Lathrop Aquifer Storage and Recovery Well Design Services, CIP PW 22-36.

**NOW, THEREFORE**, CONSULTANT and the CITY agree as follows:

**AMENDMENT NO. 1 TO AGREEMENT**

- (1) **Scope of Service. Section (1) of the AGREEMENT for Consulting is hereby amended to add the following:**

CONSULTANT agrees to perform Engineering Services in accordance with Tasks 1 – 6 of the scope of work and fee proposal provided by CONSULTANT, attached hereto as Exhibit “A” in addition to the scope of work in the original AGREEMENT dated January 10, 2022.

CONSULTANT agrees to diligently perform these services in accordance with the upmost standards of its profession and to CITY’S satisfaction.



CITY OF LATHROP – CONSULTING SERVICES AGREEMENT AMENDMENT NO. 1  
WITH CAROLLO FOR LATHROP AQUIFER STORAGE AND RECOVERY WELL  
DESIGN SERVICES, CIP PW 22-36

**(2) Compensation. Section (2) of the AGREEMENT for Consulting Services is hereby amended as follows:**

City hereby agrees to pay CONSULTANT an additional sum of **\$1,547,242** for services set forth in Tasks 1-6 listed of Exhibit “A” of this Amendment No.1, with a total sum not to exceed of \$1,848,986 (\$301,744 for the original AGREEMENT, \$1,547,242 for AMENDMENT NO. 1). CONSULTANT shall be paid within thirty (30) days of receipt of billings containing all information contained in Paragraph 5 of the original AGREEMENT. Compensation for any task must be equal to or less than the percentage of task complete. In no event shall CONSULTANT be entitled to compensation for work not included in the original scope of work and this AMENDMENT unless a written change order or authorization describing the extra work and payment terms has been executed by CITY’S Authorized Representative prior to the commencement of the work.

**(3) Effective Date and Term**

The effective date of AMENDMENT NO. 1 is **April \_\_\_\_, 2023**, and it shall terminate no later than **June 30, 2024**. All other terms of the original AGREEMENT shall remain in full force and effect.

**(4) Applicability to Original Consultant AGREEMENT**

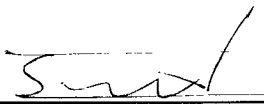
All terms and conditions set forth in the AGREEMENT dated January 10<sup>th</sup>, 2022 are still in effect and are incorporated by reference herein and said AGREEMENT is incorporated by reference herein.

**(5) Signatures**

The individuals executing this AMENDMENT NO. 1 represent and warrant that they have the right, power, legal capacity, and authority to enter into and to execute this AMENDMENT NO. 1 on behalf of the respective legal entities of the CONSULTANT and the CITY. This agreement shall inure to the benefit of and be binding upon the parties hereto and their respective successors and assigns.

CITY OF LATHROP – CONSULTING SERVICES AGREEMENT AMENDMENT NO. 1  
WITH CAROLLO FOR LATHROP AQUIFER STORAGE AND RECOVERY WELL  
DESIGN SERVICES, CIP PW 22-36

Approved as to Form: City of Lathrop  
City Attorney

  
\_\_\_\_\_  
Salvador Navarrete Date 4-4-2023

Recommended for Approval: City of Lathrop  
Public Works Director

\_\_\_\_\_  
Michael King Date

Approved by: City of Lathrop  
390 Towne Centre Drive  
Lathrop, CA 95330

\_\_\_\_\_  
Stephen J. Salvatore Date  
City Manager

Consultant: Carollo Engineers, Inc.  
2880 Gateway Oaks Drive, Suite 300  
Sacramento, CA 95833

Federal ID # \_\_\_\_\_  
Business License # \_\_\_\_\_

\_\_\_\_\_  
Signature Date

\_\_\_\_\_  
Print Name and Title

\_\_\_\_\_  
Signature Date

\_\_\_\_\_  
Print Name and Title

**EXHIBIT A  
SCOPE OF SERVICES**

**CITY OF LATHROP**

**AND**

**CAROLLO ENGINEERS, INC.**

**AQUIFER STORAGE AND RECOVERY WELL DESIGN**

**PURPOSE OF PROJECT**

This Scope of Services defines Carollo Engineers, Inc.'s (CONSULTANT) scope, schedule, and budget for furnishing design services for the Aquifer Storage and Recovery (ASR) Well Design Project (Project). The project scope generally includes design of a new ASR well (Well ASR1) with a proposed production capacity of 900 gpm (aquifer storage of up to 1450 acre-feet per year [AFY]), site mechanical improvements, electrical facilities, and ancillary piping. Treated surface water will be supplied to the ASR well from the nearby South San Joaquin Irrigation District (SSJID) turnout (see Attachment 1). Production water will be discharged to the existing storage tanks adjacent to the ASR well site.

This scope of services has been developed based on prior work and findings from the Aquifer Storage and Recovery Feasibility Study and Funding Support Project (CIP PW 22-36) and includes preliminary and detailed design, project bidding and engineering services during construction, ASR well commissioning, and related support tasks.

**CONSULTANT'S SERVICES**

CONSULTANT will perform the following services:

- Task 1: Project Coordination and Administration
- Task 2: Data Collection and Preliminary Design
- Task 3: DWSAP Report and Outside Agency Permitting
- Task 4: Detailed Design
  - Package 1: ASR Well Drilling, Development, and Testing
  - Package 2: ASR Well Equipping and Site Improvements
- Task 5: Permitting Assistance
- Task 6: Bidding Assistance
- Task 7: Package 1 (Well Drilling) Engineering Services During Construction
- Task 8: Package 2 (Well Equipping) Engineering Services During Construction
- Task 9: ASR Well Commissioning
- Optional Task 10: Additional Monitoring Well Depth and Coring
- Optional Task 11: Grant Administration Support

## **TASK 1 – PROJECT COORDINATION AND ADMINISTRATION**

This task provides for the following:

### **Task 1.1 Project Monitoring and Administration**

Maintain project coordination between the City of Lathrop (CITY) and CONSULTANT team members, including subconsultants. This task includes development of the QA/QC plan and Project Guide, preparation of monthly status reports, internal team meetings, regular correspondence with team members, and review of work progress for quality and completion. Monthly status reports will include the following:

- Description of work completed in reporting period
- Percentage complete to date by task and subtask
- Schedule and budget status
- Deliverable status
- Key decisions and action items
- Potential project issues

### **Task 1.2 Kickoff and Project Progress Meetings**

Monitor project schedule and budget on a continuous basis and prepare monthly invoices and progress reports for submittal to CITY.

This task includes one project kickoff meeting, monthly (virtual) design progress meetings, and three project progress meetings to convene with CITY staff, discuss review comments, and track key decision items. The kickoff meeting will be held shortly after Notice to Proceed. Project progress meetings are scheduled to occur after CITY review of the draft Preliminary Design Report, 60% design, and 90% design deliverable milestones.

### **Task 1 Deliverables**

- QA/QC Plan and Project Guide
- Monthly invoices, project status reports, and schedule updates
- Meeting agendas and minutes
- Decision item, action item, and comment log updates

### **Task 1 Meetings**

- Kickoff meeting (in-person)
- Preliminary Design Report review workshop (in-person)
- 60% design review workshop (in-person)
- 90% design review workshop (in-person)
- Monthly design progress meetings (12 assumed; virtual conference)

## **TASK 2 – DATA COLLECTION AND PRELIMINARY DESIGN**

This task provides for the following:

### **Task 2.1 Data Collection and Review**

Available project data will be collected and reviewed by CONSULTANT. This includes record drawings, local utility information, hydrogeologic data, groundwater quality information, water distribution system data, San Joaquin County Environmental Health Department data, and

findings of previous work. Available data will be used to inform the other work items under this task.

### **Task 2.2 Surveying and Mapping**

This task includes completion of a design-level topographic survey by O'Dell Engineering. The survey extent includes the proposed ASR well site, portions of the adjacent tank site, and a portion of the paved access road leading to the project area. See Attachment 1 for project location. Record drawings for the tank site will be reviewed to determine approximate as-built locations of underground facilities for background site map development.

### **Task 2.3 Geotechnical Investigation**

ENGEO has completed prior geotechnical investigations and furnished geotechnical recommendation for other improvements at and adjacent to the project site. ENGEO will be retained to review prior geotechnical data and provided updated geotechnical recommendations for the following:

- Earthwork and grading.
- Evaluation and mitigation of geologic hazards.
- Current seismic design parameters.
- Approximate depth to groundwater.
- Foundation recommendations for the ASR well building.
- On-grade concrete slabs.
- Flexible pavement improvements.

Structural improvements for this project are assumed to be limited to at-grade concrete equipment slabs, a wellhead pedestal, and a conventional single-story cement masonry unit (CMU) building. ENGEO's recommendations will be presented in a Geotechnical Report Update Memorandum and supplemented with existing geotechnical data that ENGEO has previously obtained in the immediate vicinity of the project site.

### **Task 2.4 Monitoring Well Installation and Analyses**

As described in the ASR feasibility study, Lohdorff & Scalmanini Consulting Engineers (LSCE) will obtain the services of a licensed well driller to complete a second on-site monitoring well to an approximate depth of 900 ft below ground surface (BGS). The monitoring well will be used to evaluate groundwater conditions to the stated depth and be used to determine the design depth of the ASR well.

### **Update Groundwater Mounding Analysis**

The quantity of the available recharge water is a major consideration with regard to assessing the feasibility of recharge. LSCE will conduct screening level groundwater/surface water modeling to assess the technical and practical feasibility of the proposed ASR project. The groundwater modeling evaluation will simulate the effects of recharge on the water table and vadose zones and also be used as a tool to evaluate volumes and rate(s) of recharge and to simulate how the groundwater responds under various recharge scenarios. LSCE will build upon previous work to efficiently develop GIS mapping solutions, numerical modeling, and will utilize supplemental information from the CITY. LSCE will also utilize information developed by previously conducted pumping tests and will rely on that information to refine aquifer parameters. MODFLOW and MT3DMS will be used to estimate groundwater flow,

mounding (groundwater rising), travel times, underground retention times (URT) and transport of recharge water. The modeling effort will yield calibrated aquifer parameters to augment future modeling efforts that will eventually be needed. The initial development of estimated injection volume will be conducted after the completion of Task 2.1 (data collection and review) and 2.4 (monitoring well installation) which will be critical to addressing the following questions:

- Where may aquifer recharge be feasible, at what rates, and native water quality.
- How much surface water may be available for recharging, when surface water is available, and what is its water quality.
- How much water is required to meet existing and future demands.

### **Update Geochemical Modeling**

LSCE will build upon previous work to efficiently conduct the modeling update. Geochemical analysis for this ASR phase of the project will be preliminary, focusing on known or potential geochemical issues. For this desktop geochemical evaluation, the geochemical modeling program PHREEQC or Geochemist's Workbench will be used to conduct a mixing analysis and to identify the potential for geochemical reactions that could result in a reduction in the injection efficiency of the ASR system. The chemistry of all potential water sources that might be mixed will need to be available including groundwater chemistry from all locations of potential injection wells as well as the chemistry of injected water. Mixing ratios will be derived from modeling efforts and the full spectrum of mixing ratios will be included in the modeling.

### **Task 2.5 Preliminary Design Report**

The Preliminary Design Report (PDR) will serve as the basis for final construction documents. The PDR will include findings and recommendations from the ASR feasibility study, data collection and review (Task 2.1), surveying and mapping (Task 2.2), geotechnical investigation (Task 2.3), and monitoring well installation (Task 2.4). Based on discussions with CITY staff, the ASR well will receive injection water from the nearby SSJID turnout; ASR well discharge water will be conveyed directly into the on-site CITY-owned storage tanks. Supplemental booster pumping out of the storage tanks is excluded from this scope of work.

The PDR will include a Class 5 estimate of probable construction cost as defined by AACE International and a preliminary construction schedule for project completion.

A draft PDR will be submitted for CITY review and then refined and resubmitted in final version following the PDR review meeting. All key decisions, action items, and responses to CITY comments will be tracked and submitted with the final PDR.

### **Task 2 Assumptions**

- CITY will furnish all available reports and studies, including hydrogeologic data, groundwater quality information, water distribution system data, and hydraulic model files where required.
- Record drawings and as-built data for the SSJID and CITY improvements on the ASR well site will be sufficient for development of yard piping drawings; supplemental potholing and utility locating are excluded from this scope of work.

- All project improvements will occur within the ASR well site and the adjacent (existing) storage tank site as shown on Attachment 1.
- Design of off-site improvements is excluded from this project.
- Based on the ASR feasibility study, a pH adjustment system will be required prior to injecting SSJID-supplied water. Assumptions for the pH adjustment system include:
  - SSJID water will be supplied at a pH ranging from approximately 7.8 to 8.0.
  - pH will be adjusted to down to approximately 7.0 to 7.2 prior to injection.
  - Recovered water pH will be raised from approximately 7.0-7.2 to approximately pH 7.9 prior to discharge to the CITY distribution system.
  - pH reduction will be by either carbon dioxide or sulfuric acid. CONSULTANT will perform a planning level alternatives analysis with process flow diagrams, preliminary site layouts, and planning level cost estimates for each (two alternatives total).
  - pH increase will be by caustic soda. No alternative chemicals will be evaluated.
  - CONSULTANT will use the RTW model to evaluate chemical doses required based on expected water quality as provided by the CITY.
  - The PDR will document design doses, chemical strength, storage volumes, and other chemical system design criteria for selected alternative.
  - CITY will provide:
    - Water quality from SSJID to be used for modeling chemical doses required to achieve target pH changes.
    - Target CITY distribution system pH.
    - Water quality of the water recovered from the ASR well for modeling chemical doses required to achieve target pH changes.
- Distribution system water quality modeling is excluded from this scope of work.
- Structural improvements for this project are assumed to be limited to at-grade concrete equipment slabs, a wellhead pedestal, and a conventional single-story cement masonry unit (CMU) building to house the ASR well pedestal and related electrical equipment.
- The local storm drainage and/or sanitary sewer collection systems are sufficiently sized to handle periodic pump-to-waste flows from the ASR well; CITY staff will provide confirmation of available storm and/or sewer system capacity via hydraulic modeling or other methods.
- All deliverables will be provided in electronic format (PDF).

### **Task 2 Deliverables**

- Draft and final Geotechnical Update Memorandum
- Draft and final Preliminary Design Report

### **TASK 3 – DWSAP REPORT AND OUTSIDE AGENCY PERMITTING**

The State Water Resources Control Board (SWRCB) has recently recognized that it is the best interest of the state to develop a comprehensive regulatory approach for ASR projects and has adopted general water discharge requirements for ASR project that inject drinking water into groundwater (Order No. 2012-0010-DWQ or ASR General Order). The ASR General Order provides a consistent statewide regulatory framework for authorizing both pilot ASR testing and permanent ASR projects. LSCE and CONSULTANT will conduct a pre-application meeting with both the RWQCB and the California Division of Drinking Water (DDW) to review the proposed well site and approach to construct and test Well ASR1. LSCE will evaluate and summarize the DDW permitting requirements for Well ASR1 and prepare the required DDW submittal. The initial DDW submittal document will request siting concurrence for the new well based on compliance with SWRCB setbacks. Concurrence on the well siting is required to proceed with the design and construction of the well. LSCE will also make other DDW submittals for the preliminary and final amended water supply permit. The preliminary water supply permit includes well design information, site plan, and preliminary Drinking Water Source Assessment and Protection (DWSAP) application. The Final water supply permit submittal will include updates to the information from the preliminary submittal in addition to the Operations Plan, well and chlorination data sheets, an engineering report, and final as-built diagrams.

LSCE will contact all applicable agencies as needed to establish permitting requirements for well drilling and construction, flood plain mitigations, encroachment permits, Waste Discharge Requirements, discharge to sanitary sewer, and electrical service application.

#### **Task 3 Deliverables**

- Notice of Intent (NOI) Application Package
- Preliminary and final DWSAP Report
- Well Completion Report

#### **Task 3 Assumptions**

- Any and all necessary temporary construction easements, permanent easements, and/or land acquisition services will be obtained and/or furnished by the CITY.

### **TASK 4 – DETAILED DESIGN**

Two separate design packages are assumed under this task:

- Package 1: ASR Well Drilling, Development, and Testing.
- Package 2: ASR Well Equipping and Site Improvements.

This scope of work assumes that Package 1 will be completed first and advertised for bid such that the well drilling, development, and testing operations will be completed prior to completion of Package 2 design.

#### **Task 4.1 Package 1 - Plans, Specifications, and Estimate**

LSCE will prepare 95% and 100% specifications and bid set submittals that will include detailed construction requirements that must be followed by the well drilling contractor during every phase of the project, including the minimum acceptable methods for drilling fluid control, conditioning of the borehole for casing and gravel envelope installation, well development and



testing, and performance standards. Other site-specific items will include requirements for site security/access control, sound barriers, containment and disposal of drill cuttings and handling of discharge water during development and test pumping in accordance with applicable local, state, and federal regulations.

LSCE will provide front end specifications to supplement CITY-provided front-end documents, tech specifications, drawings, engineers cost estimate and schedule.

#### **Task 4.2 Package 2 - 60% Plans, Specifications, and Estimate**

For Package 2, CONSULTANT will design site civil, mechanical, and electrical improvements for injecting treated surface water into the ASR well and discharging groundwater to the adjacent tank site.

CONSULTANT will develop 60% plans, specifications, and construction cost estimates for the ASR Well Design Project. The project is assumed to consist of the following basic elements:

- New ASR well.
- Installation of a new motor control center (MCC) and related electrical facilities.
- CMU building to house the ASR well, pH adjustment system(s), MCC, and variable frequency drive (if required).
- Ancillary site, civil, piping, and mechanical improvements.
- Carbon dioxide or sulfuric acid storage and feed system as determined in the PDR alternatives analysis.
- Caustic soda storage and feed system.

All cost estimates will be prepared in accordance with AACE International guidelines.

Following CITY review of the 60% design submittal, CONSULTANT will meet with CITY to solicit feedback, review comments, and discuss next steps.

#### **Task 4.3 Package 2 - 90% Plans, Specifications, and Estimate**

Following receipt of all CITY comments on the 60% design submittal, CONSULTANT will develop the 90% design submittal. All comments, decisions, and action items will be logged for record. CONSULTANT will provide a comments response log with the 90% design submittal for CITY review. Following CITY review of the 90% design submittal, CONSULTANT will meet with CITY to solicit feedback, review comments, and discuss next steps.

#### **Task 4.4 Package 2 - Bid Documents**

Following receipt of all CITY comments on the 90% design submittal, CONSULTANT will develop the Bid Documents submittal. All comments, decisions, and action items will be logged for record. CONSULTANT will provide a comments response log with the Bid Documents submittal for CITY review.

#### **Task 4 Deliverables**

- 60% design submittal (Package 2)
- 90% design submittal (Package 2)
- 95% design submittal (Package 1)

- Bid set submittal (Packages 1 and 2)

#### **Task 4 Assumptions**

- All deliverables will be provided in electronic format (PDF).
- CITY comments will be compiled into a single document for CONSULTANT review.
- CITY front-end documents will be provided for CONSULTANT review and use.
- Well drilling, development, and testing will be submitted as a separate design package.
- Soils are assumed to be adequate for traditionally founded structures; deep foundations will not be required.
- The proposed ASR well building will be sized to house the ASR wellhead, immediate downstream mechanical improvements, chemical storage and feed systems, and related electrical facilities (MCC and variable frequency drives, if required).
- ASR well injection and discharge connections will be made to existing on-site yard piping facilities.
- ASR well instrumentation will tie into existing on-site facilities.
- pH adjustment chemical system assumptions:
  - Chemical storage and feed will be housed inside the CMU building with the ASR well and electrical equipment. If carbon dioxide is selected, the storage will be in an outdoor tank. Separate rooms will be provided for each chemical.
- SCADA programming and integration services are excluded from this scope of work.
- Design of the following improvements are excluded from this scope of work:
  - Permanent and temporary emergency generators.
  - On-site fire protection facilities.
  - Off-site pipelines, including water, storm, and sewer facilities.
  - Natural gas facilities.
  - Site security improvements.
  - SCADA network upgrades and improvements.
  - The site is located on CITY owned property and no further easements or land acquisitions are required for project development.

#### **TASK 5 – PERMITTING ASSISTANCE**

This task provides for the following:

##### **Task 5.1 Permitting Assistance**

This task includes supplemental agency coordination and completion of necessary permits not included under Task 3. Coordination with the SWRCB, DDW, and San Joaquin County Environmental Health Department (SJCEHD) related to permitting for drilling, construction, and testing of the new well is anticipated. The contractor selected to drill the production well will be responsible for procurement and administration of the drilling permit. CONSULTANT and LSCE

will submit plans and applications and administer other permits as needed. This task assumes the CITY will be responsible for payment of all filing fees.

#### **Task 5 Assumptions**

- Forty (40) staff hours, including two meetings with agency leads in the Sacramento or Lathrop areas, are assumed for Task 5.1.
- CITY will retain a third-party CEQA consultant for environmental planning and permitting; CEQA, CEQA-Plus, and NEPA permitting efforts are excluded from CONSULTANT's scope of services.
- CONSULTANT will furnish technical data to the CEQA consultant under Task 5.1.

### **TASK 6 – BIDDING ASSISTANCE**

This task provides bidding assistance for two separate bid packages (Package 1 and Package 2) as described under Task 4. This task provides for the following:

#### **Task 6.1 Attend Pre-Bid Conference**

CONSULTANT's Project Manager or Project Engineer will attend the pre-bid conference for Package 2 as scheduled by the CITY and note any questions for later response by addendum.

#### **Task 6.2 Prepare Addenda**

CONSULTANT and/or LSCE will prepare addenda in response to questions received by the CITY in writing. CONSULTANT and/or LSCE will submit the addenda to the CITY directly for distribution to prospective bidders.

#### **Task 6.3 Bid Tab Analysis**

LSCE (Package 1) and CONSULTANT (Package 2) will review the submitted contractor bids and prepare a bid tab evaluation for the CITY.

#### **Task 6 Assumptions**

- CITY will administer the bid process, including posting bid advertisements, receiving questions from prospective bidders, issuing responses to questions (responses provided by CONSULTANT and/or LSCE), scheduling pre-bid conferences, receiving bids, publicly opening bids, and posting bid results.
- Up to two addenda for each bid package are assumed under this task.
- CITY will receive written questions from prospective bidders and provide to CONSULTANT and/or LSCE for response.
- CITY will distribute addenda to prospective bidders.

### **TASK 7 – PACKAGE 1 ENGINEERING SERVICES DURING CONSTRUCTION**

#### **Task 7.1 Pre-Construction Conference**

LSCE will attend a pre-construction conference with the contractor to answer technical or logistical questions concerning project approach and completion.

#### **Task 7.2 ASR Well Construction Oversight**

LSCE will provide the following services during construction of Package 1:

- Verify ASR well location.
- Witness conductor/surface casing installation.
- Monitor drilling operations and borehole construction.
- Inspect and verify casing and screen materials.
- Witness borehole conditioning and casing assembly installation.
- Inspect gravel pack and seal placement and estimate final quantities for installation.

## **TASK 8 – PACKAGE 2 ENGINEERING SERVICES DURING CONSTRUCTION**

### **Task 8.1 Pre-Construction Conference**

CONSULTANT's Project Manager and Project Engineer will attend a pre-construction conference with the contractor to answer technical or logistical questions concerning project approach and completion.

### **Task 8.2 Engineer Site Visits and Progress Meetings**

CONSULTANT's Project Manager or Project Engineer will attend regular progress meetings for the duration of construction. This task assumes attendance at up to 24 meetings over a 12-month construction duration.

### **Task 8.3 Respond to RFIs**

CONSULTANT will respond to requests for information (RFIs) submitted by the contractor to the CITY or Construction Manager. Responses will be submitted in writing and delivered to the CITY or third-party construction manager via email. Review of up to 15 RFIs is assumed under this task.

### **Task 8.4 Shop Drawing Submittal Review**

CONSULTANT will review shop drawing submittals for compliance with project plans and specifications. Review of 40 submittals and resubmittals is assumed under this task.

### **Task 8.5 Change Order Review**

CONSULTANT will review proposed change orders and assist the City and Construction Manager with response preparation. If required, supplemental drawings and specifications will be prepared for the change order response. Up to four change orders are assumed under this task.

### **Task 8.6 Final Acceptance Walk**

CONSULTANT's Project Manager or Project Engineer will attend a final acceptance job walk as scheduled by the City and Construction Manager and note any final items required for project completion.

### **Task 8.7 Record Drawings**

CONSULTANT will prepare record drawings based on as-built markups provided by the contractor or CITY's third-party construction manager.

### **Task 8 Assumptions**

- The total duration of construction will not exceed 12 months with active, on-site construction (excluding material procurement periods) requiring approximately 6 months. Due to uncertain conditions in material supply chains and the current bidding environment, this is a preliminary estimate of construction schedule based on available

information; the anticipated construction schedule will be updated as design progresses and submitted to the CITY with each design deliverable (see Task 4).

- Attendance at up to 24 on-site construction progress meetings is assumed.
- Responses to up to 70 RFIs and 100 shop drawing submittals are assumed.
- Responses to up to four design clarifications or change orders are assumed.
- Materials testing during construction will be the responsibility of the CITY or CITY's designated third-party construction manager.

## **TASK 9 – ASR WELL COMMISSIONING**

This task provides for ASR well “cycle one” commissioning support, including interim recharge, to evaluate the operation of the ASR well and adjust controls to optimize long-term operation. ASRS will prepare an O&M manual; conduct operator training; provide a first-year cycle-testing plan to guide ASR operations; monitor data from well operations during the first year after completion of wellhead facilities; and recommend any needed adjustments. The cycle one commissioning support is anticipated to occur over a duration of 12 months.

## **OPTIONAL TASK 10 – ADDITIONAL MONITORING WELL DEPTH AND CORING**

This optional task provides for modifications to the monitoring well construction described under Task 2.4. This option will not be initiated until approved by the CITY in writing.

### **Optional Task 10.1 Additional Monitoring Well Depth**

The optional task provides for drilling the monitoring well deeper than the depth stated under Task 2.4. The cost associated with this task includes drilling to a maximum depth of 1,500 ft BGS. If an intermediate depth (less than 1,500 ft BGS) is desired by the CITY, a modified drilling cost can be provided.

### **Optional Task 10.2 Wireline Coring of Monitoring Well**

This optional task provides for wireline coring of monitoring well (described under Task 2.4 and Optional Task 10.1) to better evaluate geophysical conditions and potential geochemical reactions to ASR operations in the target aquifer. The cost associated with this task includes wireline coring within the monitoring well to a maximum depth of 1,500 ft BGS. If an intermediate depth (less than 1,500 ft BGS) is desired by the CITY, a modified coring cost can be provided.

## **OPTIONAL TASK 11 – GRANT ADMINISTRATION SUPPORT**

CONSULTANT will assist CITY staff with administrative tasks required to comply with grant funding requirements. Anticipated tasks include preparation of quarterly progress reports, project completion reports, and post-construction reports. The final level of effort will depend on the grant awarded and CITY staffing needs. This task assumes up to 80 CONSULTANT staff hours, including one meeting with CITY staff.

## **TIME OF PERFORMANCE**

CONSULTANT will perform the scope of services for Task 1 through Task 6 over an assumed 12-month duration. The durations for Tasks 7 and 8 (Engineering Services During Construction) will be established following completion of Task 2 (Data Collection and Preliminary Design) but

currently assume a duration of 12 months. The duration of Task 9 (ASR Commissioning Support) assumes a duration of 12 months.

## **PAYMENT**

Payment to the CONSULTANT for services performed under this Agreement shall be based on the attached fee proposal (Attachment 2) on a time and materials basis. The not-to-exceed cost limit to the CONSULTANT's services, excluding optional tasks, shall be **\$2,280,423**.

Including optional tasks, the not-to-exceed limit to the CONSULTANT's services shall be **\$3,061,822**.



CITY OF LATHROP  
 AQUIFER STORAGE AND RECOVERY WELL DESIGN PROJECT  
 FEE PROPOSAL  
 MARCH 2023



	Carollo Engineers, Inc. <sup>(1)</sup>							Subconsultants <sup>(2)</sup>						Project Total
	Engineering	Senior CAD Tech.	CAD Tech.	Document Processor	Total Hours	Labor Cost	ODC (2)	Carollo Engineers Subtotal	O'Dell Engineer. (Survey)	Pezzoni Engineer. (Electrical)	ENGE (Geotech.)	LSCE (Hydrogeo.)	ASRS (ASR Systems)	
1 Project Coord. and Admin	114	-	-	-	114	\$ 30,518	\$ 2,136	\$ 32,654	\$ -	\$ -	\$ -	\$ 13,653	\$ 85,395	\$ 131,702
2 Data Collection and PDR	346	-	-	4	350	\$ 82,306	\$ 5,100	\$ 87,406	\$ 9,240	\$ 3,520	\$ 8,800	\$ 387,860	\$ 41,250	\$ 538,076
3 DWSAP Report	44	-	-	-	44	\$ 10,788	\$ 916	\$ 11,704	\$ -	\$ -	\$ -	\$ 27,500	\$ 8,131	\$ 47,335
4 Detailed Design	1,332	284	260	120	1,996	\$ 455,068	\$ 27,944	\$ 483,012	\$ -	\$ 51,480	\$ -	\$ 12,756	\$ 236,640	\$ 783,887
5 Permitting Assistance	40	-	-	-	40	\$ 10,788	\$ 560	\$ 11,348	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 11,348
6 Bidding Assistance	44	8	-	-	52	\$ 12,652	\$ 728	\$ 13,380	\$ -	\$ 770	\$ -	\$ 2,624	\$ 18,119	\$ 34,893
<b>Phase 1 (Design) Subtotal</b>	<b>1,920</b>	<b>292</b>	<b>260</b>	<b>124</b>	<b>2,596</b>	<b>\$ 602,120</b>	<b>\$ 37,384</b>	<b>\$ 639,504</b>	<b>\$ 9,240</b>	<b>\$ 55,770</b>	<b>\$ 8,800</b>	<b>\$ 444,392</b>	<b>\$ 389,535</b>	<b>\$ 1,547,242</b>
7 Package 1 ESDC	12	-	-	-	12	\$ 3,348	\$ 168	\$ 3,516	\$ -	\$ -	\$ -	\$ 96,096	\$ -	\$ 99,612
8 Package 2 ESDC	1,434	32	120	-	1,586	\$ 412,066	\$ 24,204	\$ 436,270	\$ -	\$ 10,230	\$ -	\$ -	\$ 141,900	\$ 588,400
9 Commissioning	72	-	-	-	72	\$ 18,008	\$ 1,168	\$ 19,176	\$ -	\$ -	\$ -	\$ -	\$ 25,993	\$ 45,169
<b>Phase 2 (ESDC) Subtotal</b>	<b>1,518</b>	<b>32</b>	<b>120</b>	<b>-</b>	<b>1,670</b>	<b>\$ 433,422</b>	<b>\$ 25,540</b>	<b>\$ 458,962</b>	<b>\$ -</b>	<b>\$ 10,230</b>	<b>\$ -</b>	<b>\$ 96,096</b>	<b>\$ 167,893</b>	<b>\$ 733,181</b>
<b>Project Total (excludes Optional)</b>	<b>3,438</b>	<b>324</b>	<b>380</b>	<b>124</b>	<b>4,266</b>	<b>\$ 1,035,542</b>	<b>\$ 62,924</b>	<b>\$ 1,098,466</b>	<b>\$ 9,240</b>	<b>\$ 66,000</b>	<b>\$ 8,800</b>	<b>\$ 540,488</b>	<b>\$ 557,428</b>	<b>\$ 2,280,423</b>
<b>Optional Tasks</b>														
10 Additional MW Depth and Coring	20	-	-	-	20	\$ 5,580	\$ 280	\$ 5,860	\$ -	\$ -	\$ -	\$ 731,379	\$ 22,000	\$ 759,239
11 Grant Administration Support	80	-	-	-	80	\$ 21,040	\$ 1,120	\$ 22,160	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 22,160
<b>Project Total (includes Optional)</b>	<b>3,538</b>	<b>324</b>	<b>380</b>	<b>124</b>	<b>4,366</b>	<b>\$ 1,062,162</b>	<b>\$ 64,324</b>	<b>\$ 1,126,486</b>	<b>\$ 9,240</b>	<b>\$ 66,000</b>	<b>\$ 8,800</b>	<b>\$ 1,271,867</b>	<b>\$ 579,428</b>	<b>\$ 3,061,822</b>

**Notes:**

(1) Rates are based on Carollo Engineers, Inc. Fee Schedule as of Jan 1, 2023 for California.

(2) Other direct costs (ODC) include mileage traveling to/from meetings at IRS Federal Rate, travel at cost and Project Equipment and Communication Expense (PECE) at \$14 per direct labor hour

(3) Includes Subconsultant markup of 10%.

**CAROLLO ENGINEERS, INC.  
FEE SCHEDULE**

**As of January 1, 2023  
California**

	<u>Hourly Rate</u>
<b>Engineers/Scientists</b>	
Assistant Professional	\$214.00
Professional	263.00
Project Professional	311.00
Lead Project Professional	330.00
Senior Professional	349.00
<b>Technicians</b>	
Technicians	161.00
Senior Technicians	224.00
<b>Support Staff</b>	
Document Processing / Clerical	143.00
<b>Project Equipment Communication Expense (PECE) Per DL Hour</b>	<b>14.00</b>
<b>Other Direct Expenses</b>	
Travel and Subsistence	at cost
Mileage at IRS Reimbursement Rate Effective January 1, 2023	\$.655 per mile
Subconsultant	cost + 10%
Other Direct Cost	cost + 10%
Expert Witness	Rate x 2.0

This fee schedule is subject to annual revisions due to labor adjustments.



**ATTACHMENT 1**



CITY DISTRIBUTION  
PUMP STATION

FUTURE CITY  
STORAGE TANKS

SSJID TURNOUT

W Stewart Rd

PROPOSED ASR  
WELL BUILDING

ASR TEST WELL  
LOCATION (APPROX.)

CITY STORAGE TANK

W Stewart Rd

600'-0"

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