

PROFESSIONAL SERVICES AGREEMENT
 Arrowhead Ranch Water Reclamation Facility Improvements
 Construction-Phase and Post-Construction Services
 City Project No. 121337

This Professional Services Agreement ("Agreement") is entered into and effective between CITY OF GLENDALE, an Arizona municipal corporation ("City") and Carollo Engineers, Inc., a Delaware corporation, ("Consultant") as of the ____ day of _____, 2017 ("Effective Date").

RECITALS

- A. City intends to undertake a project for the benefit of the public and with public funds that is more fully set forth in **Exhibit A**, Project (the "Project");
- B. City desires to retain the professional services of Consultant to perform certain specific duties and produce the specific work as set forth in the attached **Exhibit B**, Project Scope of Work ("Scope");
- C. Consultant desires to provide City with professional services ("Services") consistent with best consulting or architectural practices and the standards set forth in this Agreement, in order to complete the Project; and
- D. City and Consultant desire to memorialize their agreement with this document.

AGREEMENT

The parties hereby agree as follows:

1. Key Personnel; Other Consultants and Subcontractors.

- 1.1 Professional Services. Consultant will provide all Services necessary to assure the Project is completed timely and efficiently consistent within Project requirements, including, but not limited to, working in close interaction and interfacing with City and its designated employees, and working closely with others, including other consultants or contractors, retained by City.
- 1.2 Project Team.
 - a. Project Manager.
 - (1) Consultant will designate an employee as Project Manager with sufficient training, knowledge, and experience to, in the City's opinion, complete the project and handle all aspects of the Project such that the work produced by Consultant is consistent with applicable standards as detailed in this Agreement; and
 - (2) The City must approve the designated Project Manager.
 - b. Project Team.
 - (1) The Project Manager and all other employees assigned to the Project by Consultant will comprise the "Project Team."
 - (2) Project Manager will have responsibility for and will supervise all other employees assigned to the Project by Consultant.
 - c. Discharge, Reassign, Replacement.
 - (1) Consultant acknowledges the Project Team is comprised of the same persons and roles for each as may have been identified in **Exhibit A**.
 - (2) Consultant will not discharge, reassign, replace or diminish the responsibilities of any of the employees assigned to the Project who have been approved by City without City's prior written consent unless that person leaves the employment of Consultant, in which event the substitute must first be approved in writing by City.

- (3) Consultant will change any of the members of the Project Team at the City's request if an employee's performance does not equal or exceed the level of competence that the City may reasonably expect of a person performing those duties, or if the acts or omissions of that person are detrimental to the development of the Project.

d. Subcontractors.

- (1) Consultant may engage specific technical contractors (each a "Subcontractor") to furnish certain service functions.
- (2) Consultant will remain fully responsible for Subcontractor's services.
- (3) Subcontractors must be approved by the City.
- (4) Consultant will certify by letter that all contracts with Subcontractors have been executed incorporating requirements and standards as set forth in this Agreement.

2. **Schedule.** The Services will be undertaken in a manner that ensures the Project is completed timely and efficiently in accordance with the Project.

3. **Consultant's Work.**

3.1 Standard. Consultant must perform Services in accordance with the standards of due diligence, care, and quality prevailing among consultants having substantial experience with the successful furnishing of Services for projects that are equivalent in size, scope, quality, and other criteria under the Project and identified in this Agreement.

3.2 Licensing. Consultant warrants that:

- a. Consultant and its Subconsultants or Subcontractors will hold all appropriate and required licenses, registrations and other approvals necessary for the lawful furnishing of Services ("Approvals"); and
- b. Neither Consultant nor any Subconsultant or Subcontractor has been debarred or otherwise legally excluded from contracting with any federal, state, or local governmental entity ("Debarment").
 - (1) City is under no obligation to ascertain or confirm the existence or issuance of any Approvals or Debarments, or to examine Consultant's contracting ability.
 - (2) Consultant must notify City immediately if any Approvals or Debarment changes during the Agreement's duration. The failure of the Consultant to notify City as required will constitute a material default under the Agreement.

3.3 Compliance.

- a. Services will be furnished in compliance with applicable federal, state, county and local statutes, rules, regulations, ordinances, building codes, life safety codes, and other standards and criteria designated by City.
- b. Consultant must not discriminate against any employee or applicant for employment on the basis of race, color, religion, sex, national origin, age, marital status, sexual orientation, gender identity or expression, genetic characteristics, familial status, U.S. military veteran status or any disability. Consultant will require any Sub-contractor to be bound to the same requirements as stated within this section. Consultant, and on behalf of any subcontractors, warrants compliance with this section.

3.4 Coordination; Interaction.

- a. For projects that the City believes requires the coordination of various professional services, Consultant will work in close consultation with City to proactively interact with

any other professionals retained by City on the Project ("Coordinating Project Professionals").

- b. Consultant will meet to review the Project, Schedule and in-progress work with Coordinating Project Professionals and City as often and for durations as City reasonably considers necessary in order to ensure the timely work delivery and Project completion.
- c. For projects not involving Coordinating Project Professionals, Consultant will proactively interact with any other contractors when directed by City to obtain or disseminate timely information for the proper execution of the Project.

3.5 Work Product.

- a. Ownership. Upon receipt of payment for Services furnished, Consultant grants to City, and will cause its Subconsultants or Subcontractors to grant to the City, the exclusive ownership of and all copyrights, if any, to evaluations, reports, drawings, specifications, project manuals, surveys, estimates, reviews, minutes, all "architectural work" as defined in the United States Copyright Act, 17 U.S.C § 101, *et seq.*, and other intellectual work product as may be applicable ("Work Product").
 - (1) This grant is effective whether the Work Product is on paper (e.g., a "hard copy"), in electronic format, or in some other form.
 - (2) Consultant warrants, and agrees to indemnify, hold harmless and defend City for, from and against any claim that any Work Product infringes on third-party proprietary interests.
- b. Delivery. Consultant will deliver to City copies of the preliminary and completed Work Product promptly as they are prepared.
- c. City Use.
 - (1) City may reuse the Work Product at its sole discretion.
 - (2) In the event the Work Product is used for another project without further consultations with Consultant, the City agrees to indemnify and hold Consultant harmless from any claim arising out of the Work Product.
 - (3) In such case, City will also remove any seal and title block from the Work Product.

4. **Compensation for the Project.**

- 4.1 Compensation. Consultant's compensation for the Project, including those furnished by its Subconsultants or Subcontractors will not exceed \$3,259,500 as specifically detailed in **Exhibit D** ("Compensation").
- 4.2 Change in Scope of Project. The Compensation may be equitably adjusted if the originally contemplated Scope as outlined in the Project is significantly modified.
 - a. Adjustments to Compensation require a written amendment to this Agreement and may require City Council approval.
 - b. Additional services which are outside the Scope of the Project contained in this Agreement may not be performed by the Consultant without prior written authorization from the City.
 - c. Notwithstanding the incorporation of the Exhibits to this Agreement by reference, should any conflict arise between the provisions of this Agreement and the provisions found in the Exhibits and accompanying attachments, the provisions of this Agreement shall take priority and govern the conduct of the parties.
- 4.3 Allowances. An "Allowance" may be identified in **Exhibit D** only for work that is required by the Scope and the value of which cannot reasonably be quantified at the time of this Agreement.

- a. As stated in Sec. 4.1 above, the Compensation must incorporate all Allowance amounts identified in **Exhibit D** and any unused allowance at the completion of the Project will remain with City.
 - b. Consultant may not add any mark-up for work identified as an Allowance and which is to be performed by a Subconsultant.
 - c. Consultant will not use any portion of an Allowance without prior written authorization from the City.
 - d. Examples of Allowance items include, but are not limited to, subsurface pothole investigations, survey, geotechnical investigations, public participation, radio path studies and material testing.
- 4.4 Expenses. City will reimburse Consultant for certain out-of-pocket expenses necessarily incurred by Consultant in connection with this Agreement, without mark-up (the "Reimbursable Expenses"), including, but not limited to, document reproduction, materials for book preparation, postage, courier and overnight delivery costs incurred with Federal Express or similar carriers, travel and car mileage, subject to the following:
- a. Mileage, airfare, lodging and other travel expenses will be reimbursable only to the extent these would, if incurred, be reimbursed to City of Glendale personnel under its policies and procedures for business travel expense reimbursement made available to Consultant for review prior to the Agreement's execution, and which policies and procedures will be furnished to Consultant;
 - b. The Reimbursable Expenses in this section are approved in advance by City in writing; and
 - c. The total of all Reimbursable Expenses paid to Consultant in connection with this Agreement will not exceed the "not to exceed" amount identified for Reimbursable Services in the Compensation.

5. **Billings and Payment.**

5.1 Applications.

- a. Consultant will submit monthly invoices (each, a "Payment Application") to City's Project Manager and City will remit payments based upon the Payment Application as stated below.
- b. The period covered by each Payment Application will be one calendar month ending on the last day of the month.

5.2 Payment.

- a. After a full and complete Payment Application is received, City will process and remit payment within 30 days.
- b. Payment may be subject to or conditioned upon City's receipt of:
 - (1) Completed work generated by Consultant and its Subconsultants and Subcontractors; and
 - (2) Unconditional waivers and releases on final payment from all Subconsultants and Subcontractors as City may reasonably request to assure the Project will be free of claims arising from required performances under this Agreement.

5.3 Review and Withholding. City's Project Manager will timely review and certify Payment Applications.

- a. If the Payment Application is rejected, the Project Manager will issue a written listing of the items not approved for payment.

- b. City may withhold an amount sufficient to pay expenses that City reasonably expects to incur in correcting the deficiency or deficiencies rejected for payment.

6. Termination.

6.1 **For Convenience.** City may terminate this Agreement for convenience, without cause, by delivering a written termination notice stating the effective termination date, which may not be less than 15 days following the date of delivery.

- a. Consultant will be equitably compensated for Services furnished prior to receipt of the termination notice and for reasonable costs incurred.
- b. Consultant will also be similarly compensated for any approved effort expended, and approved costs incurred, that are directly associated with Project closeout and delivery of the required items to the City.

6.2 **For Cause.** City may terminate this Agreement for cause if Consultant fails to cure any breach of this Agreement within seven days after receipt of written notice specifying the breach.

- a. Consultant will not be entitled to further payment until after City has determined its damages. If City's damages resulting from the breach, as determined by City, are less than the equitable amount due but not paid Consultant for Services furnished, City will pay the amount due to Consultant, less City's damages, in accordance with the provision of Sec. 5.
- b. If City's direct damages exceed amounts otherwise due to Consultant, Consultant must pay the difference to City immediately upon demand; however, Consultant will not be subject to consequential damages more than \$1,000,000 or the amount of this Agreement, whichever is greater.

7. **Conflict.** Consultant acknowledges this Agreement is subject to A.R.S. § 38-511, which allows for cancellation of this Agreement in the event any person who is significantly involved in initiating, negotiating, securing, drafting, or creating the Agreement on City's behalf is also an employee, agent, or consultant of any other party to this Agreement.

8. **Insurance.** For the duration of the term of this Agreement, Consultant shall procure and maintain insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of all tasks or work necessary to complete the Project as herein defined. Such insurance shall cover Consultant, its agent(s), representative(s), employee(s) and any subcontractors.

8.1 **Minimum Scope and Limit of Insurance.** Coverage must be at least as broad as:

- a. **Commercial General Liability (CGL):** Insurance Services Office Form CG 00 01, including products and completed operations, with limits of no less than **\$1,000,000** per occurrence for bodily injury, personal injury, and property damage. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit.
- b. **Automobile Liability:** Insurance Services Office Form Number CA 0001 covering Code 1 (any auto), with limits no less than **\$1,000,000** per accident for bodily injury and property damage.
- c. **Professional Liability.** Consultant must maintain a Professional Liability insurance covering errors and omissions arising out of the work or services performed by Consultant, or anyone employed by Consultant, or anyone for whose acts, mistakes, errors and omissions Consultant is legally liability, with a liability insurance limit of \$1,000,000 for each claim and a \$2,000,000 annual aggregate limit.
- d. **Worker's Compensation:** Insurance as required by the State of Arizona, with Statutory Limits, and Employers' Liability insurance with a limit of no less than **\$1,000,000** per accident for bodily injury or disease.

8.2 Indemnification.

- a. To the fullest extent permitted by law, Consultant must defend, indemnify, and hold harmless City and its elected officials, officers, employees and agents (each, an "Indemnified Party," collectively, the "Indemnified Parties") for, from, and against any and all claims, demands, actions, damages, judgments, settlements, personal injury (including sickness, disease, death, and bodily harm), property damage (including loss of use), infringement, governmental action and all other losses and expenses, including attorneys' fees and litigation expenses (each, a "Demand or Expense" collectively "Demands or Expenses") asserted by a third-party (i.e. a person or entity other than City or Consultant) and that arises out of or results from the breach of this Agreement by the Consultant or the Consultant's negligent actions, errors or omissions (including any Subconsultant or Subcontractor or other person or firm employed by Consultant), whether sustained before or after completion of the Project.
- b. This indemnity and hold harmless provision applies even if a Demand or Expense is in part due to the Indemnified Party's negligence or breach of a responsibility under this Agreement, but in that event, Consultant will be liable only to the extent the Demand or Expense results from the negligence or breach of a responsibility of Consultant or of any person or entity for whom Consultant is responsible.
- c. Consultant is not required to indemnify any Indemnified Parties for, from, or against any Demand or Expense resulting from the Indemnified Party's sole negligence or other fault solely attributable to the Indemnified Party.

8.3 **Other Insurance Provisions.** The insurance policies required by the Section above must contain, or be endorsed to contain the following insurance provisions:

- a. **The City, its officers, officials, employees and volunteers are to be covered as additional insureds** of the CGL and automobile policies for any liability arising from or in connection with the performance of all tasks or work necessary to complete the Project as herein defined. Such liability may arise, but is not limited to, liability for materials, parts or equipment furnished in connection with any tasks, or work performed by Consultant or on its behalf and for liability arising from automobiles owned, leased, hired or borrowed on behalf of the Consultant. General liability coverage can be provided in the form of an endorsement to the Consultant's existing insurance policies, provided such endorsement is at least as broad as ISO Form CG 20 10, 11 85 or both CG 20 10 and CG 23 37, if later revisions are used.
- b. For any claims related to this Project, the **Consultant's insurance coverage shall be primary insurance** with respect to the City, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the City, its officers, officials, employees or volunteers shall be in excess of the Consultant's insurance and shall not contribute with it.
- c. Each insurance policy required by this Section shall provide that coverage shall not be canceled, except after providing notice to the City.

8.4 **Acceptability of Insurers.** Insurance is to be placed with insurers with a current A.M. Best rating of no less than A: VII, unless the Consultant has obtained prior approval from the City stating that a non-conforming insurer is acceptable to the City.

8.5 **Waiver of Subrogation.** **Consultant hereby agrees to waive its rights of subrogation which any insurer may acquire** from Consultant by virtue of the payment of any loss. Consultant agrees to obtain any endorsement that may be necessary to effect this waiver of subrogation. The Workers' Compensation Policy shall be endorsed with a waiver of subrogation in favor of the City for all work performed by the Consultant, its employees, agent(s) and subcontractor(s).

8.6 **Verification of Coverage.** Within 15 days of the Effective Date of this Agreement, Consultant shall furnish the City with original certificates and amendatory endorsements, or copies of any applicable insurance language making the coverage required by this Agreement effective. All certificates and endorsements must be received and approved by the City before work commences. Failure to obtain, submit or secure the City's approval of the required insurance policies, certificates or endorsements prior to the City's agreement that work may commence shall not waive the Consultant's obligations to obtain and verify insurance coverage as otherwise provided in this Section. The City reserves the right to require complete, certified copies of all required insurance policies, including any endorsements or amendments, required by this Agreement at any time during the Term stated herein.

Consultant's failure to obtain, submit or secure the City's approval of the required insurance policies, certificates or endorsements shall not be considered a Force Majeure or defense for any failure by the Consultant to comply with the terms and conditions of the Agreement, including any schedule for performance or completion of the Project.

8.7 **Subcontractors.** Consultant shall require and shall verify that all subcontractors maintain insurance meeting all requirements of this Agreement.

8.8 **Special Risk or Circumstances.** The City reserves the right to modify these insurance requirements, including any limits of coverage, based on the nature of the risk, prior experience, insurer, coverage or other circumstances unique to the Consultant, the Project or the insurer.

9. **E-verify, Records and Audits.** To the extent applicable under A.R.S. § 41-4401, the Consultant warrant their compliance and that of its subconsultants with all federal immigration laws and regulations that relate to their employees and compliance with the E-verify requirements under A.R.S. § 23-214(A). The Consultant or subconsultant's breach of this warranty shall be deemed a material breach of the Agreement and may result in the termination of the Agreement by the City under the terms of this Agreement. The City retains the legal right to randomly inspect the papers and records of the other party to ensure that the other party is complying with the above-mentioned warranty. The Consultant and subconsultant warrant to keep their respective papers and records open for random inspection during normal business hours by the other party. The parties shall cooperate with the City's random inspections, including granting the inspecting party entry rights onto their respective properties to perform the random inspections and waiving their respective rights to keep such papers and records confidential.

10. **No Boycott of Israel.** The Parties agree that they are not currently engaged in, and agree that for the duration of the Agreement they will not engage in, a boycott of Israel, as that term is defined in A.R.S. §35-393.

11. **Attestation of PCI Compliance.** When applicable, the Contractor will provide the City annually with a Payment Card Industry Data Security Standard (PCI DSS) attestation of compliance certificate signed by an officer of Contractor with oversight responsibility.

12. **Notices.**

12.1 A notice, request or other communication that is required or permitted under this Agreement (each a "Notice") will be effective only if:

- a. The Notice is in writing; and
- b. Delivered in person or by overnight courier service (delivery charges prepaid), certified or registered mail (return receipt requested).
- c. Notice will be deemed to have been delivered to the person to whom it is addressed as of the date of receipt, if:

- (1) Received on a business day before 5:00 p.m. at the address for Notices identified for the Party in this Agreement by U.S. Mail, hand delivery, or overnight courier service; or
- (2) As of the next business day after receipt, if received after 5:00 p.m.

- d. The burden of proof of the place and time of delivery is upon the Party giving the Notice.
- e. Digitalized signatures and copies of signatures will have the same effect as original signatures.

12.2 Representatives.

- a. Consultant. Consultant's representative (the "Consultant's Representative") authorized to act on Consultant's behalf with respect to the Project, and his or her address for Notice delivery is:

Carollo Engineers, Inc.
 George P. Maseeh, P.E., Senior Vice President
 4600 E. Washington Street, Suite 500
 Phoenix, AZ 85034

- b. City. City's representative ("City's Representative") authorized to act on City's behalf, and his or her address for Notice delivery is:

City of Glendale
 c/o Bill Passmore, P.E., Project Manager
 5850 W. Glendale Ave.
 Glendale, Arizona 85301

With required copy to:

City Manager
 City of Glendale
 5850 West Glendale Avenue
 Glendale, Arizona 85301

City Attorney
 City of Glendale
 5850 West Glendale Avenue
 Glendale, Arizona 85301

- c. Concurrent Notices.

- (1) All notices to City's representative must be given concurrently to City Manager and City Attorney.
- (2) A notice will not be deemed to have been received by City's representative until the time that it has also been received by the City Manager and the City Attorney.
- (3) City may appoint one or more designees for the purpose of receiving notice by delivery of a written notice to Consultant identifying the designee(s) and their respective addresses for notices.

- d. Changes. Consultant or City may change its representative or information on Notice, by giving Notice of the change in accordance with this section at least ten days prior to the change.

13. Financing Assignment. City may assign this Agreement to any City-affiliated entity, including a non-profit corporation or other entity whose primary purpose is to own or manage the Project.

14. Entire Agreement; Survival; Counterparts; Signatures.

14.1 Integration. This Agreement contains, except as stated below, the entire agreement between City and Consultant and supersedes all prior conversations and negotiations between the parties regarding the Project or this Agreement.

- a. Neither Party has made any representations, warranties or agreements as to any matters concerning the Agreement's subject matter.
- b. Representations, statements, conditions, or warranties not contained in this Agreement will not be binding on the parties.

- c. Inconsistencies between the solicitation, any addenda attached to the solicitation, the response or any excerpts attached as **Exhibit A**, and this Agreement, will be resolved by the terms and conditions stated in this Agreement.

14.2 Interpretation.

- a. The parties fairly negotiated the Agreement's provisions to the extent they believed necessary and with the legal representation they deemed appropriate.
- b. The parties are of equal bargaining position and this Agreement must be construed equally between the parties without consideration of which of the parties may have drafted this Agreement.
- c. The Agreement will be interpreted in accordance with the laws of the State of Arizona.

14.3 Survival. Except as specifically provided otherwise in this Agreement, each warranty, representation, indemnification and hold harmless provision, insurance requirement, and every other right, remedy and responsibility of a Party, will survive completion of the Project, or the earlier termination of this Agreement.

14.4 Amendment. No amendment to this Agreement will be binding unless in writing and executed by the parties. Electronic signature blocks do not constitute execution for purposes of this Agreement. Any amendment may be subject to City Council approval.

14.5 Remedies. All rights and remedies provided in this Agreement are cumulative and the exercise of any one or more right or remedy will not affect any other rights or remedies under this Agreement or applicable law.

14.6 Severability. If any provision of this Agreement is voided or found unenforceable, that determination will not affect the validity of the other provisions, and the voided or unenforceable provision will be reformed to conform with applicable law.

14.7 Counterparts. This Agreement may be executed in counterparts, and all counterparts will together comprise one instrument.

15. **Term.** The term of this Agreement commences upon the Effective Date and continues for a three (3) year initial period. The City may, at its option and with the approval of the Consultant, extend the term of this Agreement an additional one year. Consultant will be notified in writing by the City of its intent to extend the Agreement period at least thirty (30) calendar days prior to the expiration of the original Agreement period. There are no automatic renewals of this Agreement.

16. **Dispute Resolution.** Any controversy or claim arising out of or relating to this contract, or the breach thereof, shall be settled by arbitration administered according to the American Arbitration Association's Commercial Arbitration Rules, and judgment on the award rendered by the arbitrator may be entered in any court having jurisdiction thereof.

17. **Exhibits.** The following exhibits, with reference to the term in which they are first referenced, are incorporated by this reference.

Exhibit A	Project
Exhibit B	Scope of Work
Exhibit C	Schedule
Exhibit D	Compensation

(Signatures appear on the following page.)

The parties enter into this Agreement effective as of the date shown above.

City of Glendale,
an Arizona municipal corporation

By: Kevin R. Phelps
Its: City Manager

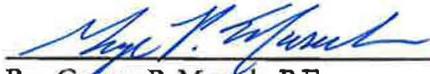
ATTEST:

Julie K. Bower (SEAL)
City Clerk

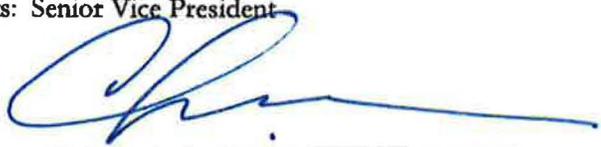
APPROVED AS TO FORM:

Michael D. Bailey
City Attorney

Carollo Engineers, Inc.,
a Delaware corporation authorized to do
business in Arizona



By: George P. Maseeh, P.E.
Its: Senior Vice President



By: Chad D. Meyer, P.E.
Its: Associate Vice President

EXHIBIT A
Professional Services Agreement

ARROWHEAD RANCH WATER RECLAMATION FACILITY (ARWRF) IMPROVEMENTS
CONSTRUCTION-PHASE AND POST-CONSTRUCTION SERVICES
Project No. 121337

PROJECT

DESCRIPTION OF PROJECT

The ARWRF is located north of Union Hills Drive and west of Loop 101 and treats wastewater from a tributary area located in the northern part of the City. The current treatment plant permitted capacity is 4.5 million gallons per day (mgd) maximum month average daily flow (MMADF). The plant provides tertiary treatment of incoming municipal wastewater and is considered an end-of-the-line facility. The treatment plant's current annual average daily flow (AADF) is approximately 3.0 mgd. The ARWRF utilizes a three-train conventional activated sludge, biological nutrient removal (BNR) aeration system including anoxic zones, followed by six rectangular clarifiers to provide secondary treatment. The ARWRF utilizes DynaSand™ continuous backwash, upflow filters for tertiary filtration, and a Trojan 3000+ UV system for disinfection. The ARWRF is permitted for and classified as an Arizona Department of Environmental Quality (ADEQ) Class A+ Reclaimed Water Facility. The ARWRF does not have solids handling facilities.

The ARWRF Improvements Project generally consists of improvements to the following plant systems in the form of replacement or renovations required to restore efficient and effective operation of the facility:

1. Headworks facility
2. Odor control system
3. Tertiary filters
4. Miscellaneous facility improvements (secondary clarifiers, NPW system, etc.)
5. Electrical, instrumentation and control system improvements

Evaluation and design-phase services for the ARWRF Improvements were completed under a previous contract. This contract covers construction-phase and post-construction services for implementation of the ARWRF Improvements.

EXHIBIT B
Professional Services Agreement

**ARROWHEAD RANCH WATER RECLAMATION FACILITY (ARWRF) IMPROVEMENTS
CONSTRUCTION-PHASE AND POST-CONSTRUCTION SERVICES**
Project No. 121337

SCOPE OF WORK

INTRODUCTION

The following Scope of Work describes the professional services to be performed by Carollo Engineers, Inc. (hereinafter referred to as the “ENGINEER”) associated with the Arrowhead Ranch Water Reclamation Facility (ARWRF) Improvements Project - Construction-Phase and Post-Construction Services (hereinafter referred to as the “Project”) for the City of Glendale (hereinafter referred to as the “CITY”).

The ARWRF Improvements Project is presently approaching the Final Design Submittal milestone under a separate professional services agreement. The Scope of Services presented herein is associated with the Construction Administration and Inspection Services, Start-up and Warranty Services, and SCADA and PLC Configuration Services to be performed by the ENGINEER. This Scope of Services assumes the CITY’s Notice-to-Proceed (NTP) for this Professional Services Agreement will be effective concurrently with the ARWRF Improvements Construction NTP to its construction manager at risk on **July 1, 2017**. Any additional study, design, or evaluation services deemed necessary by the CITY that extend beyond the term of the separate design-phase services agreement will be handled under Miscellaneous Services of this Agreement, upon approval by the CITY.

ASSUMPTIONS

1. Project will be procured using the Construction Manager at Risk (CMAR) project delivery method. MGC Contractors, Inc. has been selected as the CMAR.
2. The overall construction of the Project is anticipated to have a duration of 26 months, beginning July 1, 2017, with Substantial Completion targeted for July 8, 2019, and Final Completion targeted for August 6, 2019.
3. Construction-Phase services will include office-related engineering services during construction (ESDC) and field-related construction administration and inspection (CA&I) efforts.
4. Modifications to project delivery approach based on deviation from the anticipated CMAR project delivery, including but not necessarily limited to the following are NOT included in this Scope of Services and will be handled under Miscellaneous Services, if desired by the CITY:
 - a. Should the CITY be unable or unwilling to accept the CMAR guaranteed maximum price (GMP) and instead decide to procure and deliver the Project using a traditional “design-bid-build” delivery method, subsequent modifications to the front-end documents, technical specifications, and associated design drawings specifically applicable to the CMAR delivery method.
 - b. Additional services for bidding, including preparation of Bid Document sets, participation on a pre-bid conference, responding to Bidder questions, preparing applicable addenda, attendance at the Bid opening, assistance in evaluation of Bids, and participation in a pre-construction conference with the selected General Contractor.
5. *Standard of Care:* ENGINEER will be responsible to the level of competency and standard of care presently maintained by other practicing Professional Engineers performing the same or similar type

work at the time Notice to Proceed is issued. ENGINEER and CITY mutually agree that standard of care, as applied to design professional, shall be defined as the ordinary and reasonable care required and established by expert testimony of what a reasonable and prudent professional would have done under the same or similar circumstances.

6. Commissioning consultation or other related services on portions of the ARWRF outside of the facilities updated under the Facility Improvements Project and Electrical Improvements will be handled under Miscellaneous Services, if desired and approved by the CITY.
7. System SCADA Integration will be performed by the ENGINEER. As such, coordination with the selected CMAR and E,I&C Subcontractor during the Design Phase and construction will be completed by ENGINEER accordingly.
8. Final electrical system studies, including short circuit, protective device coordination, and arc flash hazard analysis shall be provided by the CMAR (or others) during construction, based on the actual equipment being provided.
9. Evaluation of new or significantly revised process technologies, facilities, and related appurtenances as a result of changes to the Scope of Services (Exhibit B) which may be required due to project budget limitations will be handled under Miscellaneous Services, upon approval by the CITY.
10. Specially customized and detailed SCADA/HMI training manuals are NOT included in this Scope of Services.
11. ENGINEER shall verify the control system equipment installation, networking, and communications status during ENGINEER and CMAR startup and integration as part of this Scope of Services

SCOPE OF SERVICES

The Scope of Services for the remaining overall ARWRF Improvements Project is based on the following major Work Breakdown Structure (WBS) elements:

- **Task 100 – Project Management and Administration**
- Task 200 – Facility Evaluation and Design Concept Development Services (*not used*)
- Task 300 – Detailed Design and Construction Documents (*not used*)
- **Task 400 – Construction Administration and Inspection Services**
- **Task 500 – Start-Up and Warranty Period Services**
- **Task 600 – SCADA and PLC Configuration Services**
- **Task 700 – Miscellaneous Services**

Specific efforts to be completed for the tasks (and sub-tasks) and the associated deliverables are defined further herein.

TASK 100 – PROJECT MANAGEMENT AND ADMINISTRATION

ENGINEER will perform general project management activities throughout the Construction Phase, as delineated in the following tasks and sub-tasks.

Task 101 – Monthly Project Control and Reporting

The ENGINEER will prepare and coordinate the necessary subconsultant agreements required for the project, and will coordinate and manage the subconsultants throughout the course of the project accordingly.

The ENGINEER will develop a quarterly cash flow schedule that will provide information regarding future funds needed to complete the project.

ENGINEER will prepare and provide monthly invoices and progress reports throughout the duration of the project as appropriate. Invoices will include:

- Total contract amount
- Total expenditures to date
- Less previous billings
- Total expenditures this period
- Amount remaining
- Total amount due

Task 102 – Quarterly Project Management Meetings

The ENGINEER will hold quarterly management meetings with the CITY. The total number of anticipated management meetings is eight. Management meetings are intended to provide the CITY with an executive summary of the following items:

- Construction progress
- Construction Administration and Inspection progress
- Construction cash flow
- Construction Administration and Inspection cash flow
- Key contractual issues
- Key technical issues Executive action items
- Other items as deemed necessary by the CITY

TASK 200 – FACILITY EVALUATION AND DESIGN CONCEPT DEVELOPMENT SERVICES

Not Used.

TASK 300 – DESIGN AND CONSTRUCTION DOCUMENTS

Not Used.

TASK 400 – CONSTRUCTION ADMINISTRATION AND INSPECTION SERVICES

The following section of the Scope of Services describes the engineering services associated with the CA&I effort for the Project.

Task 401 – Construction Administration Services

The Construction Administration Phase services as defined herein are based on the following assumptions:

1. The anticipated construction period will be a total of 26 months for the ARWRF Facility Improvements project, from CMAR Notice to Proceed to Final Completion.

2. The ENGINEER will furnish a Resident Project Representative (RPR) for the construction activities with resource utilization anticipated at 22 months full-time and 4 months half-time.
3. ENGINEER will provide additional support (office engineering presence) at all weekly progress meetings, and as further described in Task 401.1 – Representation on Behalf of the City.
4. Commissioning consultation or other related services on portions of the ARWRF outside of the facilities updated under the Facility Improvements Project are excluded.

Task 401.1 – Representation on Behalf of the City

The ENGINEER will consult with and advise CITY and act as its representative during construction. The extent and limitations of the duties, responsibilities and authority of ENGINEER as assigned herein shall not be modified, except as ENGINEER may otherwise agree in writing. All CITY instructions to Contractor(s) will be issued through ENGINEER who will have authority to act on behalf of CITY to the extent provided in this scope of services except as otherwise provided in writing. The ENGINEER must consult with the CITY on any issues resulting in changes to the scope of work, additional costs or changes to the project schedule, and must get the CITY'S approval before issuing instructions to the Contractor(s).

ENGINEER will not be responsible for the means, methods, techniques, sequences, or procedures of construction selected by Contractor(s) (unless otherwise specified in the construction contract documents) or the safety precautions and programs associated with the work of Contractor(s). The ENGINEER shall immediately notify the City of any construction activities that are not safe.

ENGINEER will make site(s) visits appropriate for the size of Project and type of construction at periods appropriate to the various stages of construction to inspect, as an experienced and qualified professional, the progress and quality of the executed work of Contractor(s) and to determine if such work is proceeding in accordance with the Contract Documents.

ENGINEER's efforts shall be directed toward providing a greater degree of confidence for CITY that the completed work of Contractor(s) will conform to the Contract Documents, but ENGINEER will not be responsible for the failure of Contractor(s) to perform the work in accordance with the Contract Documents.

On the basis of on-site examination of materials, equipment, and workmanship, ENGINEER will keep CITY informed of the progress of the work, will endeavor to guard CITY against defects and deficiencies in such work and will disapprove or reject work failing to conform to the Contract Documents. This task shall include the following items:

1. Conduct Preconstruction Conference: The ENGINEER will attend a preconstruction conference. At the conference, the ENGINEER will identify field services to be provided by the ENGINEER and discuss appropriate coordination procedures.
2. Provide Construction Administration, Quality Assurance, and Coordination: the ENGINEER will provide construction administration and quality control services during the course of construction to assure that the overall technical correctness of the construction phase services and that specified procedures are being followed and that schedules are being met. The ENGINEER will provide coordination functions during the construction phase as follows:
 - a. Hold coordination meetings with the CITY representative and other City staff as appropriate
 - b. Coordinate with regulatory and approving agencies and utilities as required
 - c. Coordinate the work of specialty subconsultants assigned to the Project
 - d. Verify Contractor's Material Safety Data Sheets (MSDS) are on file at the job site
3. Provide Project Documents: The ENGINEER will maintain and provide the following detailed project records and documentation during the construction phase: The Project records shall include correspondence, schedules, submittals, test data, project data, payments, change orders, meeting

minutes, clarifications, mark-ups of drawings and specifications, control system documentation, status reports and other such documentation. Project records shall be delivered to the CITY's representative upon completion of the construction contract.

Task 401.2 – Responses to RFIs

ENGINEER will render interpretation and responses necessary for the proper execution and progress of the Work at the ARWRF site on written request of either the CITY or the CMAR, and submit written responses to the CITY's representative accordingly. Responses will be provided within five working days upon receipt by the ENGINEER, or as agreed to by the CITY. ENGINEER will render all interpretations or decisions in good faith and in accordance with the requirements and intent of the Contract Documents.

Task 401.3 – Design Clarifications

ENGINEER will render Design Clarifications necessary for the proper execution or progress of the Work at the ARWRF site on written request of either the CITY or CMAR, and submit written responses to the CITY's representative accordingly. Responses will be provided within 15 working days upon receipt by the ENGINEER, or as agreed to by the CITY. ENGINEER will render all interpretations or decisions in good faith and in accordance with the requirements and intent of the Contract Documents.

Task 401.4 – Change Order Reviews

ENGINEER will review change order requests from the CMAR and provide opinion on the appropriateness of the change order request, in accordance with the Contract Documents. ENGINEER will provide written summary of opinion of change order request and submit to CITY'S' representative accordingly.

Task 401.5 – Submittal Reviews

ENGINEER will review and process the ARWRF Facility Improvements related equipment and material submittals (i.e. samples, schedules, shop drawings, test results, product data, and other data) that the CMAR is required to submit for conformance with the Contract Documents.

MOPO Plan Submittals: ENGINEER will review CMAR's various Maintenance of Plant Operations (MOPO) plan submittals and provide written comments to CITY relative to any identified design-related impacts or conflicts. ENGINEER will also participate in the development of MOPOs, including attendance at MOPO meetings.

CMAR Start-up and Testing Plan Submittals: ENGINEER will review CMAR's Start-Up and Testing Plan submittals for compliance with the Contract Documents, and provide written comments to CITY relative to any identified design-related impacts or conflicts. A meeting will be held (in lieu of one Monthly Progress Meeting) to review and discuss the Start-Up and Testing Plan submittals.

Vendor O&M Manual Submittals: During the course of the Work, ENGINEER will verify that the various certificates, Operations and Maintenance (O&M) manual updates, and other data required for assembly and furnished by CMAR are applicable to the items actually installed. ENGINEER will set up an index system, utilizing standard size, and type binders with a manual numbering system that corresponds to the established index system. ENGINEER will check each manual submitted for completeness, for conformance to the design concept of the project, and for conformance with the Contract Documents.

The CMAR's submittals will be stamped appropriately to indicate results of the ENGINEER's review. Such review will determine the suitability of the CMAR's proposed details for implementing the design, technical submittals conform to the design information given in the Contract Documents, and are consistent with the design intent represented in the specifications and drawings. Such review and approval

will not extend to means, methods, sequences, techniques, or procedures of construction selected by CMAR, or to associated safety precautions and programs, unless specifically required in the Contract Documents by the ENGINEER. The ENGINEER will also receive, review, and provide written comments to the CITY's (for general content as required by specifications) maintenance and operating schedules and instructions, guarantees, and certificates of inspection that are to be assembled by CMAR in accordance with the Contract Documents.

The submittal review process will be managed to provide timely review and response to the CMAR's submittals. ENGINEER will complete the review of submittals within 30 working days from ENGINEER's receipt of submittal, unless otherwise mutually agreed to by the CITY, CMAR and ENGINEER.

Task 401.6 – ARWRF Improvements O&M Manual Update

ENGINEER will prepare a supplement to the existing ARWRF Operation and Maintenance (O&M) manual outlining the intent of design for the ARWRF Facility Improvements components and integrating the manufacturers' requirements for equipment operation into the overall plant operations scheme. The ARWRF Facility Improvements O&M manual supplement will be written for use by CITY of Glendale personnel, structured for ease in locating and providing quick access to information. Three copies of the draft manual (outline form only) will be submitted to the CITY for review when the construction work is approximately 60 percent complete. Three copies of the 90 percent complete draft manual, in three-ring binder format, will be submitted to CITY for review when the construction work is approximately 90 percent complete. A marked-up version of the 90 percent complete manual will be available during the Start-Up phase. Three copies of the final manual, in three-ring binder and searchable PDF formats, will be submitted within 30 working days following completion of commissioning and receipt of written comments from the CITY. The O&M manual supplement will consist of the following items as they apply only to the ARWRF Facility Improvements project components. :

- Introduction and basis of the ARWRF Facility Improvements design, including physical characteristics and operating parameters.
- A description of each of the chemical unit processes that are applicable to the ARWRF Facility Improvements project.
- Standard operating procedures and process controls for each major sub-system that were part of the ARWRF Facility Improvements project, such as the Headworks, Filtration system, Secondary Clarifiers, Odor Control system, and influent splitter boxes.
- Start-up and shutdown procedures, abnormal or emergency operating procedures, troubleshooting and process monitoring and sampling procedures that is applicable to the ARWRF Facility Improvements project.
- Maintenance procedures, based on information presented in the manufacturer's equipment manuals, including preventive maintenance schedules recommended by the manufacturers on components that are applicable to the ARWRF Facility Improvements project.
- List of recommended spare parts.

Task 402 – Construction Inspection Services

The construction duration is anticipated to be a total of 26 months for the overall Project construction, from CMAR Notice-to-Proceed to project Final Completion.

Task 402.1 – Resident Engineering / General Inspections

ENGINEER will provide an on-site RPR for the purpose of conducting general inspections during the construction activities on the four principal project components at the ARWRF site. This on-site inspection is based on an equivalent total time of 1 half-time month (initially), 3 half-time months (at the

end of construction) and 22 full-time months for all other construction activity. The inspection schedule will initially be set for full-time, on-site inspection, on any day where work on the ARWRF Facility Improvements project is being conducted. In some instances, deviations in hours or number of Inspectors may be required to cover specific project needs or overtime work with the corresponding increase in manhours to be determined on a mutually agreeable basis by the CITY, CMAR, and ENGINEER. Additional inspection services may be required beyond that defined for the RPR (e.g. early-morning concrete pours, overnight MOPOs, etc.) and will be handled under Miscellaneous Services accordingly.

RPR will provide General Inspection for the ARWRF site, with responsibilities to include, but not limited to the following:

- Underground piping
- Aboveground piping and piping inside structures
- HVAC and plumbing
- Equipment installation (verifying that the item to be installed is the same as the approved submittal)
- Equipment start-up (verifying that manufacturer's recommendations as to lubrication, seal water connection, assembly, and similar installation items are complete)
- Coordinate with other disciplines to resolve conflicts
- MOPO consultation as appropriate, including coordination with ARWRF start-up items
- RFI responses, where appropriate
- Punch lists for major areas

Task 402.2 – Electrical Inspections

ENGINEER will provide electrical inspection on the ARWRF site, with responsibilities to include, but not limited to the following:

- Underground ductbanks
- Interface with local electrical utility, including the review of design submittals provided by APS, as may be required to resolve design, construction, testing, or other issues between the local electrical utility and ENGINEER's original design, as necessary
- Verify material and equipment to be installed is per specifications and approved submittals
- Equipment start-up (verify that major equipment items have proper electrical installation before it is energized)
- Coordinate with other disciplines to resolve conflicts
- Punch lists for major areas
- Coordinate and verify the data communication installation work is accomplished per design.

Task 402.3 – Special Inspections

ENGINEER will provide on-site Special Inspectors for purposes of conducting all necessary special inspections and will certify compliance with the CITY's applicable codes and standards in accordance with the most current International Building Code (IBC), as adopted by the CITY. ENGINEER will sign and attach professional seal to the latest City of Glendale Certificate of Special Inspection form approving the Work, when the CMAR has completed the Work covered by the Special Inspection requirements. Special Inspectors will be capable of interpreting and making field adjustments as required that comply with the intent of the Contract Documents. Special inspections will include building safety-related architectural, mechanical, and plumbing inspections.

Task 402.4 – Special (Structural) Inspections

ENGINEER will provide on-site Special (Structural) Inspection for building and process structure construction, including steel construction, concrete construction, and masonry construction in accordance with the most current IBC sections. Specific items will include, but not necessarily be limited to, cast-in-place concrete, bolts installed in concrete, reinforcing steel and pre-stressing steel tendons, structural welding, high strength bolting, structural steel members, structural masonry, and drilled piers. Special (Structural) Inspection of shade type structures (if required) will be based on the ENGINEER-approved shop drawings submitted by manufacturer (which are based on performance-based technical specifications only). It is assumed that no shop inspection of fabricators (per IBC) will be required.

Task 402.5 – Special (Geotechnical) Inspections

ENGINEER will provide on-site Special (Geotechnical) Inspection of existing site soil conditions, fill placement and load-bearing requirements greater than 12-inches deep, in accordance with the most current version of the IBC codes, including inspection of structural engineered fill and subgrade preparation; under-slab aggregate base course field density testing; foundation excavation observation for structures; soil excavation separation and stockpile management; inspection of structural and utility trench backfill; and laboratory testing with sampling per Contract Documents (including moisture density relations ASTM D698-A, sieve analysis, plasticity index and swell). Before placement of the prepared fill, the Special (Geotechnical) Inspection will determine that the site has been prepared in accordance with the approved soils report. During placement and compaction of the fill material, the Special (Geotechnical) Inspection will determine that the material being used and the maximum lift thickness comply with the approved soils report. The Special (Geotechnical) Inspection will determine that the in-place dry density of the compacted fill complies with the approved soils report.

Task 403 – Substantial and Final Completion Inspections

Following written notice from the CMAR, The ENGINEER will conduct an inspection to determine if the project or the work associated with interim milestones is substantially complete in accordance with the Contract Documents. If the ENGINEER considers the work substantially complete, the ENGINEER will deliver to the CITY and the CMAR the Certificate of Substantial Completion and the punch list, the date for completion of the punch list, and recommend the division of responsibilities between the CITY and the CMAR. If the work is not substantially complete, the process shall be repeated until the work is substantially complete.

The ENGINEER will, upon completion of the punch list items as notified by the CMAR, make final inspection to determine if the finished work has been completed to the standard required by the Contract Documents, determine whether required inspections and approvals for permit compliance have been satisfactorily completed, and CMAR has fulfilled the obligations so that ENGINEER may recommend, in writing, final payment to CMAR and may give written notice to CITY and the CMAR that the work is acceptable, subject to any conditions therein expressed and in consultation with the CITY whether the work is finally complete. At or before the final inspection, the ENGINEER will request the CMAR prepare and furnish;

1. Certification that all obligations for payment for labor, materials, or equipment related to the work have been paid or otherwise satisfied.
2. Certification that all insurance and bonds required of the CMAR beyond final payment is in effect and will not be canceled or allowed to expire without notice to the CITY.
3. Written consent of surety for final payment.
4. Record document information is complete and submitted.
5. Keys, manuals, required spare parts, guaranties and warranties, and other documents necessary for close-out of the work.

6. Verification of permit closeout including the Certification of Occupancy.

If the work is not finally complete, the process shall be repeated until the work is finally complete. Promptly after the work is determined to be finally complete and the ENGINEER determines that the CMAR has properly submitted the items required for final inspection, the ENGINEER will determine whether the CMAR is entitled to final payment and, if so, will so certify to the CITY.

The ENGINEER's certification that the CMAR is entitled to final payment constitutes the ENGINEER's representation to the CITY that:

1. The work complies with (a) the Contract Documents, (b) applicable building codes, rules or regulations of all governmental authorities having jurisdiction over the Project, and (c) applicable installation and workmanship standards
2. CMAR has submitted proper Final Completion close-out documents
3. CMAR is entitled to final payment

The ENGINEER will provide to the CITY, at the time it submits a signed final payment request from the CMAR, all Final Completion closeout documents.

ENGINEER will not be responsible for the acts or omissions of the CMAR, or subcontractor, or any of the CMAR(s)' or subcontractor(s)' agents or employees or any other persons (except ENGINEER's own employees and agents) at the site(s) or otherwise performing any of the CMAR(s)' work; however, nothing contained in Task 402, shall be construed to release ENGINEER from liability for failure to properly perform duties in accordance with this scope of services.

Task 404 – Construction Record Drawings

As-Built (Record) Drawings will be prepared by the ENGINEER, for new and rehabilitated facilities, to the level of competency and standard of care presently maintained by other practicing Professional Engineers performing the same or similar type work. ENGINEER will prepare all Construction Drawings of Record (conformed construction drawings using the Final Design Drawings and incorporating any construction changes by the CMAR) showing the changes made during the construction process. ENGINEER will submit three (3) copies of the project Drawings of Record (As-Built Drawings) on CDs in AutoCAD (or Microstation) and PDF format. The CDs in PDF format must include the seal and signature of the engineer of record. The CMAR will submit construction as-built drawings to the ENGINEER for the development of the Construction Record Drawings.

TASK 500 – STARTUP AND WARRANTY PHASE SERVICES

Task 501.1 – ARWRF Facility Improvements Start-Up Services

Start-Up services begin after completion of the construction phase. At the end of the successful Start-Up, the project will be considered “substantially complete” in accordance with Task 403. Start-Up of the facility improvements will be performed by the CMAR. The ENGINEER will be present during Start-Up and will be responsible for reporting operational issues, equipment performance issues, installation issues, discrepancies under warranties in the Contract Documents, and provide assistance for resolution of defects for correction under warranty.

Task 501.2 – ARWRF Facility Improvements Start-Up Plan

ENGINEER will review the ARWRF Improvements Start-Up Plan(s) and procedures prepared by the CMAR. The Start-Up Plan is anticipated to include identification of key milestone activities necessary for orderly Start-Up of the new ARWRF Facility Improvement project facilities. The milestone activities will

include coordination of chemical deliveries, completion of any construction activities required for substantial completion, and coordination of required CMAR maintenance activities, etc.

Task 501.3 – Initial Operational Support Assistance

After Start-Up services are complete, The ENGINEER will be present during the initial 30-day CITY operation of the newly constructed ARWRF facilities. The ENGINEER will be on-site for three days a week for four weeks assisting with possible operational issues, equipment performance issues, installation issues, discrepancies under warranties in the Contract Documents, and provide assistance for resolution of defects for correction under warranty. The Task 501.3 services will assist the CITY with the transition of the ARWRF from CMAR Start-Up to Owner Operation.

Task 501.4 – Equipment Performance Testing

ENGINEER will verify that equipment and systems performance, operational and acceptance field-testing and start-up are conducted as required by the Contract Documents and in the presence of the required personnel, and that CMAR maintains adequate records thereof. ENGINEER will observe, record, and report to the CITY representative whether or not the testing meets design intent relative to the test procedures and start-ups.

Task 501.5 – Warranty Support Services

The objective of the Warranty Support Services task is for the ENGINEER to provide “on-call” assistance to the CITY’s operational staff on an “as needed” basis for a period of 24 months. The ENGINEER will document the resolution to operational issues unique to the facility in a troubleshooting chapter in the Operations Manual. The ENGINEER will document the final operational procedures of each process associated mechanical equipment, and instrumentation and control system components. The ENGINEER will continue to document warranty issues, issue warranty requests to the CMAR, and follow up that warranty requests are satisfactorily resolved.

TASK 600 – SCADA CONFIGURATION AND INTEGRATION

Task 600 of the original PSA is amended to include the following additional scope to include SCADA Configuration and Integration associated with the Electrical Improvements.

SCADA and PLC programming is included as part of this Scope of Services and performed by the ENGINEER in Task 600 – SCADA and PLC Configuration Services. The level of effort includes a maximum of:

- Nine PLCs
- Six HMI Screens
- 600 I/O Points
- Zero OITs (OITs will be furnished and programmed by vendor/manufacturer).

An Allowance under Task 700 Miscellaneous Services will be included for possible additional networking equipment upgrades or SCADA and PLC Configuration Services that are undefined at this time.

The SCADA Configuration and Integration scope of work is based on the following:

1. This task includes all programmable logic controller (PLC) and human machine interface (HMI) programming necessary for the areas of the plant upgraded as part of this project under Task 300. New Electrical Improvement scope includes:
 - Influent Pump Station VFD Replacement
 - Blower Building PLC Upgrades/Replacement

- RAS/WAS Building PLC Upgrades/Replacement
 - RAS/WAS Building VFD Replacement
 - Switchgear Automatic Transfer Operation and PLC Coordination
 - Electrical Rehabilitation and Vulnerability Improvements
2. This task assumes that each of the areas identified currently have or will be upgraded to Modicon M580 PLCs. Additional areas not listed are included in Task 700 Allowance.
 3. This task does not include PLC and HMI programming for additional areas of the plant or those that are not upgraded as part of this Project. Additional PLC and configuration tasks are included under Task 700 if additional work is required as part of this Project.
 4. This task does not include configuration or programming for remote locations that can monitor or control the local plant. The CITY shall be responsible for configuration of monitoring and control at the Utility Control Center.
 5. This task includes updating the plant controls system trending, and ADEQ reporting, as required due to the improvements to the plant monitoring and reporting capabilities and requirements.
 6. All configuration services work will utilize the CITY's latest version of software packages for GE Intelligent Platform's HMI/SCADA - iFIX and Schneider Electric Modicon M580 Unity Pro.
 7. HMI and PLC programming will follow the "Control System Standards and Conventions Document," created for the City of Glendale Oasis Water Campus, and updated as part of the Arrowhead WRF UV Upgrade Project. The SCADA standards document will be reviewed and updated to incorporate additional project specific requirements as required.

Task 601.1 – SCADA Kick-Off Meeting

A Kick-Off meeting will be held with the CITY, ENGINEER, and CMAR to provide a clear statement of Task 600 goals and critical success factors. Consultant will conduct the meeting and provide meeting minutes. The following topics will be covered at the Task 600.1 Kick-Off meeting:

- Review Scope of Services
- Review and Finalize List of Owner-procured Equipment
- Review and Finalize List of Manufacturer and Model of Contractor Allowance Equipment
- Schedule and Deliverables
- Project Team Roles and Responsibilities
- Communication and Contact Information
- Review Periods
- Existing Documentation and Software Availability
- Change of Scope Procedures
- Review of Existing Configuration Standards
 - Standards and Conventions
 - Trends and Historical Data
 - Alarm Prioritizing and Area Assignments
 - Equipment Vendor Coordination
 - Integration with Existing Control System
- Review of ADEQ reporting requirements

DELIVERABLES: Submittal of the meeting minutes for the SCADA Kick-Off Meeting.

Task 601.2 – Develop Initial SCADA Programming

Initial programming will be developed based on the Control System Standards and Conventions Document, the equipment control descriptions, and the I/O list in the Contract Documents. After initial programming is developed, the ENGINEER will provide initial programming documents to the CITY for review. After CITY review, the ENGINEER will meet with the CITY to review the initial programming and obtain comments. Initial programming documents that will be reviewed by the CITY include the following:

- PLC programming code for major equipment items.
- Operator workstation overview graphic displays color printout.
- Example control graphic displays color printout.
- Example trending screen color printout.

DELIVERABLES: PLC Programming Code in PDF format, HMI Screen Shots as JPEG files.

Task 601.3 – Develop PLC Programs

After initial programming has been developed and reviewed by the CITY, the ENGINEER will develop the PLC tag listing and proceed with PLC program development. The PLCs shall be programmed to control the systems according to the control block descriptions listed in the Contract Documents within the assumptions noted previously. This task does not include development of temporary control strategies to allow full automatic control of the plant during all phases of construction. It is assumed that the CITY will control processes manually as required during construction. The ENGINEER will provide minor PLC modifications during start-up to assist the CITY in manual or semi-automatic control. If the CITY deems it necessary to implement temporary programs, that are not described in the control block descriptions to automate the process, the ENGINEER will provide these services as a supplemental service to the scope of work.

DELIVERABLES: Final PLC Programs in PDF format, PLC tag list in PDF format.

Task 601.4 – Develop HMI Graphic Displays and Database

Develop new operator control and monitoring displays for the HMI workstations. The HMI will be programmed to control the systems according to the control block descriptions listed in the Contract Documents. After the HMI graphic displays are developed, the ENGINEER will prepare documents for review by the CITY. After approximately a two-week review period, the ENGINEER will meet with the CITY to review the HMI graphics programming and obtain comments. After review of the HMI graphic displays with the CITY, the ENGINEER will incorporate the CITY's comments and develop the final HMI displays and PLC programming. Existing controls for processes not described in the control block descriptions, or herein, will not be modified or upgraded.

DELIVERABLES: HMI graphic displays in JPEG format and meeting minutes from HMI review meeting.

Task 601.5 – Configuration Quality Control

The ENGINEER will complete a quality control review of all programming documentation, PLC programming, and HMI development. The quality control review will include verification of operation as described in the control block descriptions and compliance with the Plant Control System Standards and Conventions.

Task 601.6 – Instrumentation & Control Coordination

I&C coordination activities will be performed to ensure the ENGINEER and equipment vendors are ready for start-up and commissioning. Tasks generally include

- Witness and verify control loop checks, verify instrument calibrations, instruments startup and assist the SCADA system programmer with startup of SCADA system equipment.
- Verify with the CMAR that equipment installation and manufacturer start-up services have been provided prior to testing and startup from the SCADA system.
- Attend up to 10 CMAR construction meetings and coordinate programming startup activities with the CMAR's schedule.

ENGINEER will verify control system equipment installation, networking, and communications status. The ENGINEER will prepare a statement of deficiency for the CMAR for any control system installation problems or communication errors. If the CMAR's work has significant deficiencies, the ENGINEER can provide services to re-verify control system installation as a supplemental service.

DELIVERABLES: Statement of Deficiency List.

Task 601.7 – Install and Commission PLC Programming

After the CMAR has completed loop checks and verified that all equipment operates in the local manual mode, the ENGINEER will install the PLC programming and commission the PLC program. PLC programming will be tested in manual and auto mode. If signals from field equipment or other PLCs are not available, the signals will be simulated as required to verify proper operation of the PLC algorithm.

PLC code for new equipment will be as specified in the control descriptions. PLC code for existing equipment will match existing PLC code or will be revised as necessary to accommodate PLC upgrades. The CMAR will complete loop checks and verify that all new and existing equipment operates in the local manual mode prior to the ENGINEER installing and commissioning any PLC program. If deficiencies in the CMAR's work are found during the PLC I/O verification or PLC program commissioning, the ENGINEER will provide a statement of deficiency to the CMAR.

The start-up of the PLC programs is dependent on the CMAR's completion of work and schedule. The Install and Commission PLC Programming task includes up to three 5-day site visits. The ENGINEER will notify the CITY of significant changes in the CMAR's schedule or completion of work that will impact PLC programming startup costs.

Task 601.8 – Install and Commission HMI Programming

After the PLC I/O and programming have been verified and commissioned, the ENGINEER will commission all new HMI graphic displays for control of the system. If deficiencies in the CMAR's work are found during the HMI commissioning, the ENGINEER will provide a statement of deficiency to the CMAR for resolution including, but not limited to items regarding the control system installation and communication. The ENGINEER will notify the CITY of significant changes in the CMAR's schedule or completion of work that will impact costs for the Commission HMI Programming task.

Task 601.9 – Install and Commission History System

The CITY uses multiple SQL databases to store historical data from the Water and Wastewater processes. ENGINEER will coordinate with the CITY's personnel on the transfer of data to CITY's historical servers. The CITY will provide all configuration for the existing historical SQL servers.

Task 601.10 – Final Documentation

After the system is operational and accepted by the CITY, the ENGINEER will deliver final documentation. Electronic copies will be provided on CD media and hard copies will be provided in three-ring binders. The documentation to be provided to the CITY is as follows:

1. PLC Programs
2. HMI Software
3. OIT Programs
4. Graphic Displays

DELIVERABLES: Final programming documentation.

Task 601.11 – Configuration Punch List

The CITY will monitor the control system during the Site Acceptance Test and will keep a log of any problems that occur during the test. The ENGINEER will meet with the CITY to review the log. Entries in the log will be categorized as items to be added or modified by the ENGINEER, items to be corrected by the CMAR or supplemental programming items not included in the scope of services. This task includes up to a five-day site visit to meet with the CITY and resolve the ENGINEER's configuration punch list items included in the scope of work. CITY acceptance of the completed punch list, for items included in the configuration scope of work, will indicate final acceptance of the Plant control system programming.

DELIVERABLES: SCADA Configuration Punch List.

Task 601.12 – SCADA System Training

The ENGINEER will provide eight hours (two-four hour sessions) of training for the CITY's operation staff and four hours (one session) of training for the CITY's SCADA maintenance staff. The training class will be conducted on the installed control system and will familiarize and demonstrate the operation and maintenance of new systems monitoring and control to the CITY's personnel. This task includes a training outline agenda and hands-on interaction with CITY staff. Customized, detailed training manuals are not included in this task, but may be provided as a supplemental service.

TASK 700 – MISCELLANEOUS SERVICES

The following section of the Scope of Services describes the services and costs associated with the Miscellaneous Services for the ARWRF Improvements project.

Task 701 – Reimbursables Allowance

Other Direct Cost (ODC) charges for additional printing, scanning, reproduction, postal services, courier, and local travel will be required as part of the ARWRF Improvements CA&I effort. A "not-to-exceed" allowance amount is established for reimbursable Other Direct Costs. The ENGINEER will bill Reimbursable expenses to the CITY on a monthly basis, as they are realized.

Task 702 – SCADA Programming and Configuration Services Allowance

SCADA and PLC Configuration services were developed under Task 600 – SCADA and PLC Configuration. If additional SCADA Programming and Configuration services are required, the level of effort and compensation will be established as an addition to the project, defined, and compensated under Task 702 as agreed by the CITY and ENGINEER. A "not-to-exceed" allowance amount is established in Exhibit D for additional SCADA Programming and Configuration services that were not apparent at the

time this Scope of Services was developed. The ENGINEER will not begin work in Task 702 without CITY approval.

Task 703 – Owner’s Contingency

A "not-to-exceed" allowance is established in Exhibit D for unforeseen project and/or construction related issues that were not apparent at the time this Scope of Services for the project was developed. The ENGINEER will not begin work in Task 703 without CITY approval.

EXHIBIT C
Professional Services Agreement

ARROWHEAD RANCH WATER RECLAMATION FACILITY (ARWRF) IMPROVEMENTS
CONSTRUCTION-PHASE AND POST-CONSTRUCTION SERVICES
Project No. 121337

SCHEDULE

Professional services defined in Exhibit B shall be provided in accordance with the schedule listed below. Tasks will run concurrently, as completion times are all shown in months after Notice-to-Proceed.

Tasks	Completion <i>(in months after Notice-to-Proceed)</i>
100. Project Management and Administration	26
200. <i>Not Used</i>	-
300. <i>Not Used</i>	-
400. Construction Administration and Inspection	26
500. Start-up and Warranty Support Services	26
600. SCADA Configuration and Integration	26
700. Miscellaneous Services (Allowances)	26

EXHIBIT D
Professional Services Agreement

ARROWHEAD RANCH WATER RECLAMATION FACILITY (ARWRF) IMPROVEMENTS
CONSTRUCTION-PHASE AND POST-CONSTRUCTION SERVICES
Project No. 121337

COMPENSATION

METHOD AND AMOUNT OF COMPENSATION

Compensation shall be hourly rates plus allowable reimbursable expenses as set forth in Section 4 of the Agreement.

NOT-TO-EXCEED AMOUNT

The total amount of compensation paid to the CONSULTANT, for full completion of all Work during the entire term of the Project must not exceed \$3,309,500.

DETAILED PROJECT COMPENSATION

Arrowhead Ranch Water Reclamation Facility (ARWRF) Improvements Construction-Phase and Post-Construction Services Fee Schedule	
TASK	AMOUNT
100. Project Management and Administration	\$ 81,560
200. <i>Not Used</i>	--
300. <i>Not Used</i>	--
400. Construction Administration and Inspection	\$ 2,192,960
500. Start-up and Warranty Support Services	\$ 184,400
600. SCADA Configuration and Integration	\$ 265,580
Subtotal Tasks 100 through 600	\$ 2,724,500
700. Miscellaneous Services (Allowances)	
701. Reimbursables Allowance	\$ 40,000
702. SCADA Programming and Configuration Services Allowance	\$ 45,000
703. Owner's Contingency Allowance (per PSA Paragraph 4.3)	\$ 450,000
Subtotal Task 700 (Allowances)	\$ 535,000
TOTAL PROJECT COST:	\$ 3,259,500