

AGREEMENT TO PERFORM PROFESSIONAL SERVICES

This agreement for the preparation of a City-wide water system master plan ("Agreement") is made and entered in this 1st day of September, 2020 ("Effective Date"), by and between the City of Redlands, a municipal corporation ("City") and Michael Baker International, Inc. ("Consultant"). City and Consultant are sometimes individually referred to herein as a "Party" and, together, as the "Parties." In consideration of the mutual promises contained herein, City and Consultant agree as follows:

ARTICLE 1 – ENGAGEMENT OF CONSULTANT

- 1.1 City hereby engages Consultant to prepare a City-wide water system master plan for City (the "Services").
- 1.2 The Services shall be performed by Consultant in a professional manner, and Consultant represents that it has the skill and the professional expertise necessary to provide the Services to City at a level of competency presently maintained by other practicing professional consultants in the industry providing like and similar types of Services.

ARTICLE 2 – SERVICES OF CONSULTANT

- 2.1 The Services that Consultant shall perform are more particularly described in Exhibit "A," titled "Scope of Services," which is attached hereto and incorporated herein by reference.
- 2.2 Consultant shall comply with applicable federal, state and local laws and regulations in the performance of this Agreement including, but not limited to, State prevailing wage laws.

ARTICLE 3 – RESPONSIBILITIES OF CITY

- 3.1 City shall make available to Consultant information in its possession that may assist Consultant in performing the Services.
- 3.2 City designates Rudolph S. Chow, P.E., Municipal Utilities and Engineering Department Director, as City's representative with respect to performance of the Services, and such person shall have the authority to transmit instructions, receive information, interpret and define City's policies and decisions with respect to performance of the Services.

ARTICLE 4 – PERFORMANCE OF SERVICES

- 4.1 Consultant shall perform and complete the Services in a prompt and diligent manner in accordance with the schedule set forth in Exhibit "B," titled "Project Schedule," which is attached hereto and incorporated herein by reference.

- 4.2 Consultant shall complete the Services by December 31, 2021, unless the Services are terminated earlier as provided for herein.
- 4.3 If Consultant's Services include deliverable electronic visual presentation materials, such materials shall be delivered in a form, and made available to the City, consistent with City Council adopted policy for the same. It shall be the obligation of Consultant to obtain a copy of such policy from City staff.

ARTICLE 5 – PAYMENTS TO CONSULTANT

- 5.1 Total compensation for Consultant's performance of the Services shall not exceed the amount of One Hundred Ninety Nine Thousand Eight Hundred Eighty Dollars (\$199,880). City shall pay Consultant on a time and materials basis upon the hourly rates set forth in Exhibit "C," titled "Cost Proposal," which is attached hereto and incorporated herein by reference.
- 5.2 Consultant shall submit monthly invoices to City describing the Services performed during the preceding month. Consultant's invoices shall include a brief description of the Services performed, the dates the Services were performed, the number of hours spent and by whom, and a description of reimbursable expenses related to the Services. City shall pay Consultant no later than thirty (30) days after receipt and approval by City of Consultant's invoice.
- 5.3 Any notice or other communication required, or which may be given, pursuant to this Agreement, shall be in writing. Any such notice shall be deemed delivered (i) on the date of delivery in person; (ii) five (5) days after deposit in first class registered mail, with return receipt requested; (iii) on the actual delivery date if deposited with an overnight courier; or (iv) on the date sent by facsimile, if confirmed with a copy sent contemporaneously by first class, certified, registered or express mail; in each case properly posted and fully prepaid to the appropriate address set forth below, or such other address as a Party may provide notice in accordance with this section:

City

City Clerk
City of Redlands
35 Cajon Street
P.O. Box 3005 (mailing)
Redlands, CA 92373
jdonaldson@cityofredlands.org
(909) 798-7531

Consultant

John Nagle, P.E., Vice President
Michael Baker International, Inc.
3536 Concourse, Suite 100
Ontario, CA 91764
JNagle@mbakerintl.com
(909) 974-4974

ARTICLE 6 – INSURANCE AND INDEMNIFICATION

- 6.1 The following insurance coverage required by this Agreement shall be maintained by Consultant for the duration of its performance of the Services. Consultant shall not perform any Services unless and until the required insurance listed below is obtained by

Consultant. Consultant shall provide City with certificates of insurance and endorsements evidencing such insurance prior to commencement of the Services. Insurance policies shall include a provision prohibiting cancellation or modification of the policy except upon thirty (30) days prior written notice to City.

- A. Workers' Compensation and Employer's Liability insurance in the amount that meets statutory requirements with an insurance carrier acceptable to City, or certification to City that Consultant is self-insured or exempt from the workers' compensation laws of the State of California. Consultant shall execute and provide City with Exhibit "D," titled "Workers' Compensation Insurance Certification," which is attached hereto and incorporated herein by this reference, prior to performance of the Services.
 - B. Comprehensive General Liability insurance with carriers acceptable to City in the minimum amount of One Million Dollars (\$1,000,000) per occurrence and Two Million Dollars (\$2,000,000) aggregate, for public liability, property damage and personal injury is required. City shall be named as an additional insured and such insurance shall be primary and non-contributing to any insurance or self-insurance maintained by City.
 - C. Business Auto Liability coverage, with minimum limits of One Million Dollars (\$1,000,000) per occurrence, combined single limit bodily injury liability and property damage liability. This coverage shall include all Consultant owned vehicles used in connection with Consultant's provision of the Services, hired and non-owned vehicles, and employee non-ownership vehicles. City shall be named as an additional insured and such insurance shall be primary and non-contributing to any insurance or self-insurance maintained by City.
 - D. Consultant is expressly prohibited from assigning or subcontracting any of the Services without the prior written consent of City. In the event of mutual agreement by the Parties to assign or subcontract a portion of the Services, Consultant shall add such assignee or subcontractor as an additional insured to the insurance policies required hereby and provide City with the insurance endorsements prior to any Services being performed by the assignee or subcontractor.
- 6.2 Consultant shall defend, indemnify and hold harmless City and its elected officials, employees and agents from and against any and all claims, losses or liability, including attorneys' fees, arising from injury or death to persons or damage to property occasioned by any negligent act or omission by, or the willful misconduct of, Consultant, or its officers, employees and agents in performing the Services.

ARTICLE 7 – CONFLICTS OF INTEREST

- 7.1 Consultant covenants and represents that it does not have any investment or interest in any real property that may be the subject of this Agreement or any other source of income, interest in real property or investment that would be affected in any manner or degree by the performance of Consultant's Services. Consultant further covenants and

represents that in the performance of its duties hereunder, no person having any such interest shall perform any Services under this Agreement.

7.2 Consultant agrees it is not a designated employee within the meaning of the Political Reform Act because Consultant:

A. Does not make a governmental decision whether to:

- (i) approve a rate, rule or regulation, or adopt or enforce a City law;
- (ii) issue, deny, suspend or revoke any City permit, license, application, certification, approval, order or similar authorization or entitlement;
- (iii) authorize City to enter into, modify or renew a contract;
- (iv) grant City approval to a contract that requires City approval and to which City is a party, or to the specifications for such a contract;
- (v) grant City approval to a plan, design, report, study or similar item;
- (vi) adopt, or grant City approval of, policies, standards or guidelines for City or for any subdivision thereof.

B. Does not serve in a staff capacity with City and in that capacity, participate in making a governmental decision or otherwise perform the same or substantially the same duties for City that would otherwise be performed by an individual holding a position specified in City's Conflict of Interest Code under Government Code section 87302.

7.3 In the event City determines that Consultant must disclose its financial interests, Consultant shall complete and file a Fair Political Practices Commission Form 700, Statement of Economic Interests, with the City Clerk's office pursuant to the written instructions provided by the City Clerk.

ARTICLE 8 – GENERAL CONSIDERATIONS

8.1 In the event any action is commenced to enforce or interpret any of the terms or conditions of this Agreement the prevailing Party shall, in addition to any costs and other relief, be entitled to the recovery of its reasonable attorneys' fees, including fees for the use of in-house counsel by a Party.

8.2 Consultant shall not assign any of the Services, except with the prior written approval of City and in strict compliance with the terms and conditions of this Agreement. Any assignment or attempted assignment without such prior written consent may, in the sole discretion of City, result in City's immediate termination of this Agreement.

8.3 Consultant is for all purposes under this Agreement an independent contractor and shall perform the Services as an independent contractor. Neither City nor any its agents shall have control over the conduct of Consultant or Consultant's employees, except as herein set forth. Consultant shall supply all necessary tools and instrumentalities required to perform the Services. Assigned personnel employed by Consultant are for its account

only, and in no event shall Consultant or personnel retained by it be deemed to have been employed by City or engaged by City for the account of, or on behalf of City. Consultant shall have no authority, express or implied, to act on behalf of City in any capacity whatsoever as an agent, nor shall Consultant have any authority, express or implied, to bind City to any obligation.

- 8.4 This Agreement may be terminated by City, in its sole discretion, by providing not less than five (5) days prior written notice to Consultant of City's intent to terminate. If this Agreement is terminated by City, an adjustment to Consultant's compensation shall be made, but (1) no amount shall be allowed for anticipated profit or unperformed Services, and (2) any payment due Consultant at the time of termination may be adjusted to the extent of any additional costs to City occasioned by any default by Consultant. Upon receipt of a termination notice, Consultant shall immediately discontinue its provision of the Services and, within five (5) days of the date of the termination notice, deliver or otherwise make available to City, copies (in both hard copy and electronic form, where applicable) of project related data, design calculations, drawings, specifications, reports, estimates, summaries and such other information and materials as may have been accumulated by Consultant in performing the Services. Consultant shall be compensated on a pro-rata basis for Services completed up to the date of termination.
- 8.5 Consultant shall maintain books, ledgers, invoices, accounts and other records and documents evidencing costs and expenses related to the Services for a period of three (3) years, or for any longer period required by law, from the date of final payment to Consultant pursuant to this Agreement. Such books shall be available at reasonable times for examination by City at the office of Consultant.
- 8.6 This Agreement, including the Exhibits incorporated herein by reference, represents the entire agreement and understanding between the Parties as to the matters contained herein, and any prior negotiations, written proposals or verbal agreements relating to such matters are superseded by this Agreement. Except as otherwise provided for herein, any amendment to this Agreement shall be in writing, approved by City and signed by City and Consultant.
- 8.7 This Agreement shall be governed by and construed in accordance with the laws of the State of California.
- 8.8 If one or more of the sentences, clauses, paragraphs or sections contained in this Agreement is declared invalid, void or unenforceable by a court of competent jurisdiction, the same shall be deemed severable from the remainder of this Agreement and shall not affect, impair or invalidate the remaining sentences, clauses, paragraphs or sections contained herein, unless to do so would deprive a Party of a material benefit of its bargain under this Agreement.

IN WITNESS WHEREOF, duly authorized representatives of City and Consultant have signed in confirmation of this Agreement.

CITY OF REDLANDS

MICHAEL BAKER INTERNATIONAL, INC.

By: 
Paul W. Foster, Mayor

By: 
John Nagle, P.E., Vice President

ATTEST:


Jeanne Donaldson, City Clerk

EXHIBIT "A"

SCOPE OF SERVICES

The following Scope of Work details the tasks that the Consultant shall complete with respect to preparing and completing the City-wide water system master plan.

This scope of work shall be completed within the schedule period listed in Exhibit "B."

Task 1 – Project Management

The Consultant shall oversee the progress of the project and shall be responsive to City communication in a timely manner. The Consultant shall attend all formal meetings and be available for informal face-to-face meetings with the City as needed to oversee data collection, validate the Consultant's approach as it evolves to fit current conditions, discuss findings and conduct continuous review of content generated for the master plan.

The Consultant shall be responsible for assuring the quality of the work product. The Consultant shall exercise a quality control process for regular review of project status, resource allocation and peer review of all deliverables.

The Consultant shall conduct a kick-off meeting, three workshops, four facilitation meetings with operations and maintenance staff (see Task 7.1 and Task 10), and two master plan adoption meetings (see Task 15). The kick-off meeting shall be used to discuss the goals and expectation of the Water Master Plan, channels of communication, availability of data and personnel, project schedule and reporting, systems and facilities where greater capacity is desired, and areas where the City suggests the Consultant should focus its efforts. Agendas and meeting materials shall be provided at least three days in advance of the meetings and meeting minutes shall be issued to all attendees within five days following the meeting.

The Consultant shall submit monthly invoices detailing work completed at the sub-task level. The invoice shall include a description of work completed to date, progress on each task and milestones for the following month.

Task 2 – Resource Documents and Data Review

The Consultant shall research, gather and review previous master plans, planning documents, GIS-based hydraulic modeling data and system, supply sources information, water use records, reservoir and pump station data, and other available pertinent data and information.

The Consultant shall issue a comprehensive Request-for-Information listing historical data and documentation required to prepare the master plan. Each requested item shall include a title, reference to the scope of work, description, extent of duration, preferred format, and responsible party. The Consultant shall work with the City to assure that data security is properly maintained. The Consultant shall work with the City to collect these data as much as available and organize them into a manageable and usable database.

The Request-for-Information shall be updated regularly and distributed on a weekly basis until all information is collected for the project. The Consultant shall include in the final report all references used in the preparation of this water master plan.

Task 3 – Facilities Inventory – Existing System Description

The Consultant shall prepare a detailed and comprehensive description of current conditions. The Consultant shall work with the City to verify naming conventions and apply those conventions throughout the water master plan.

Task 3.1 – Administrative and Regulatory

The Consultant shall prepare a historical account of the water system and its authority. The Consultant shall identify relationships and affiliations between the City and other agencies and jurisdictions relevant to the water system.

The Consultant shall prepare maps of relevant political and physical boundaries including the City limits, the water service area, adjacent water systems, proximity area to aquifers, proximity to surface water and imported water sources, and continuous boundaries of concern (e.g. waterways, flood control channels, freeways, ridgelines, railroads, large parcels, earthquake faults, regional utility corridors, etc.). The Consultant shall prepare maps showing water quality sampling locations.

Task 3.2 – Inventory

The Consultant shall present the inventory by system component type (i.e. sources of supply, pumps, tanks, controls valves, pipes, appurtenances, meters), capacity (i.e. size, general design specifications) and performance (i.e. installation year, maintenance history, efficiency). An inventory in tabular form shall be prepared of the listed system components.

Task 3.3 – Facilities

The Consultant shall present the facilities as groups of system and ancillary components that function as a unit. The Consultant shall prepare a map and schematic of each facility.

Task 3.4 – Pressure Zones

The Consultant shall prepare an individual hydraulic profile of each pressure zone including design parameters of all components and system requirements in terms of demand, demand variation and service elevations. Each hydraulic profile shall be accompanied by a map of the associated pressure zone for a three-dimensional view.

The Consultant shall prepare a schematic of the entire water system showing the sources of supply and the connections between the pressure zones.

Task 3.5 – Future Conditions

Following preparation of the Capital Improvement Program, the Consultant shall update the facility and pressure zone maps, schematics and profiles to indicate planned improvements.

Task 4 – City Water Projects and Development Activity

Task 4.1 – Validate Current Capital Improvement Program

Following hydraulic analysis (Tasks 6, 7, 9 and 12), the Consultant shall validate the current Capital Improvement Program (CIP). Any CIP projects still in the planning or design phases shall be compared

to projects recommended to mitigate deficiencies found during hydraulic analysis. The Consultant shall recommend adjustments to the current CIP projects to bring them into alignment with the most up to date analysis. The Consultant shall identify projects in the current CIP not supported by hydraulic analysis and work with the City to justify them, defer them or remove them from the CIP.

Task 4.2 – Review Water Programs and Development Activity

The Consultant shall review the City’s water programs and development activity to improve their understanding of work related to the water system. The Consultant shall document the purpose, description, progress, mapping, implementation schedule, and historical and projected budgets of up to seven programs and activities.

Task 5 – Update Population and Water Demand Estimates and Forecast

The Consultant shall analyze population and land and incorporate them into our demand analysis.

Task 5.1 – Conduct Population Analysis

The Consultant shall use appropriate models for population growth based on data acquired from the US Census specific to the City. The Consultant shall work with the City to verify the historical population served and project population growth at five-year intervals through 2070.

Task 5.2 – Conduct Land Use Analysis

The Consultant shall prepare maps showing existing land use, current occupancy, and known development projects.

To make land use more useful for analysis at the parcel level, the Consultant shall identify occupancy in addition to land use designation, area and location. The Consultant shall align vacant parcels with known development, account for redevelopment and densification, and identify potential infill projects.

Task 5.3 – Prepare Demand Analysis

Based on pressure zone delineation from Task 3.4, the Consultant shall prepare a demand analysis for each pressure zone. Through spatial analysis and system theory, the Consultant shall analyze historical billing data and SCADA data to determine the average demand, sales and losses in each pressure zone.

Task 5.4 – Develop Demand Variation

The Consultant shall use the SCADA analysis described in Task 5.3 to identify the maximum day and the peak hour in each pressure zone. The Consultant shall calculate pressure zone specific peaking factors. The Consultant shall work with the City to optimized system capacity by managing these constraints.

Task 5.5 – Prepare Demand Projection

The Consultant shall prepare demand projection at five-year intervals through 2070 by combining the existing demand with the population growth projection and accounting for water use reduction resulting from water conservation. The Consultant shall work with the City to determine the impacts of water conservation, development, irrigation conversion to recycled water and other factors that influence demand. Through sensitivity analysis, the Consultant shall develop low growth, moderate growth and high growth demand scenarios.

Task 5.6 – Develop Demand Factors

Based on water use and land use data, the Consultant shall develop an area of demand factors and unit demand factors for representative land use categories. For other water uses, the Consultant shall develop area demand factors and unit demand factors unique to each purpose.

Task 6 – Water Supply Analysis

The Consultant shall evaluate the sources of supply including groundwater, surface water, imported water, recycled water and emergency interties with adjacent agencies, in terms of availability, reliability and sustainability. Availability, reliability and sustainability shall form the basis of a water supply portfolio management plan, which shall give the City confidence it is optimizing its resources and capital investments, as discussed in Task 10.1.

The Consultant shall develop an existing (2020) and future (2030, 2045 and 2070) water supply requirements through application of appropriate design criteria developed in Task 8.

Task 7 – Evaluation of Groundwater Source for Emergency Use

Task 7.1 – Identify Emergency Requirements

The Consultant shall use the San Bernardino County Multi-Jurisdictional 2015 Hazard Mitigation Plan Update and the City of Redlands 2015 Hazard Mitigation Plan as a basis to determine regional and local emergencies and response plans that would include a water supply requirement. After the City has completed the Risk and Resilience Assessment (RRA) per the America's Water Infrastructure Act of 2018 (AWIA), the Consultant shall also incorporate those observations.

The Consultant shall facilitate one meeting with representatives responsible for the management of disaster relief within the City's Sphere of Influence. Based on information gathered from these sources, the Consultant shall quantify the associated water supply needs for up to three local disaster relief facilities in terms of water demand and duration of a disaster relief event.

Task 7.2 – Assess Available Supply

Based on analysis from Task 6, the Consultant shall identify existing groundwater sources in proximity to the disaster relief facilities. The Consultant shall assess this subset of wells in terms of availability and reliability.

Task 7.3 – Determine Sufficiency of Disaster Relief Supply

The Consultant shall compare the capacity of wells identified in Task 7.2 to the supply requirements identified in Task 7.1 to determine sufficiency. In the event supply requirements exceed capacity, the Consultant shall recommend methods to increase capacity and will identify additional sources of supply if available. The Consultant shall project costs concerning reliability for a 25-year horizon.

Task 8 – System Planning and Analysis Criteria

The Consultant shall delineate current capacity and performance criteria in use at the City. Through a facilitated visioning process, the Consultant shall work with the City to determine goals for level of service, preferences, initiatives and other guidance related to capacity and performance. The Consultant

shall update the evaluation criteria based on the City's vision, and work with the City to formalize adoption of the evaluation criteria to be used for this Water Master Plan.

Task 9 – Water Storage Volume and Operational Requirements

The Consultant shall analyze volume and location of storage facilities in terms of adequacy, redundancy, energy efficiency and turnover. The City may choose to include energy conservation in its operational storage calculation. The Consultant shall analyze existing (2020) and future (2030, 2045 and 2070) storage requirements and identify opportunities for storage sharing.

Task 10 – Operations and Maintenance

The Consultant shall utilize AWWA Manual M5 (Water Utility Management) to assure a consistent and vetted approach that emphasizes a comprehensive review of best practices.

Task 10.1 – Conduct Operations Assessment

The Consultant shall assess water system operations in terms of distribution, supply portfolio management and SCADA to gain an understanding of current conditions. The Consultant shall prepare meetings and workshops for this task.

Distribution

The Consultant shall assess water quality management at the pressure zone level in terms of disinfection decay, stagnation, flushing and storage turnover. The Consultant shall review goals for distribution system water quality and methods to achieve those goals.

The Consultant shall assess emergency response infrastructure such as distribution of fire hydrants, emergency power generation, availability of emergency storage, redundancy that assures continuous service, methods for isolating failures and resiliency at overcoming failures and returning to normal operations.

Supply Portfolio Management

The Consultant shall evaluate each source of supply in the City's water supply portfolio in terms of location, availability and reliability. Supply portfolio management defines the level of service the customers shall receive in terms of continuous uninterrupted service and affordability.

The Consultant shall acquire or compute the unit cost for each source of supply as a parameter for optimization. The Consultant shall review historical SCADA data and production records to develop an understanding of the use of each source. The Consultant shall develop a concept for optimization of the water supply portfolio that balances availability, reliability and cost of operations.

Treatment

The Consultant shall evaluate each of the treatment systems in terms of capacity and inputs.

The Consultant shall document current treatment facility operations and trends. The Consultant shall work with the City to identify system components that pose operational constraints and the methods operators have developed to overcome those constraints. The Consultant shall describe options for optimization of facility operations.

SCADA

The Consultant shall review the SCADA system specific to the water system in terms of efficiency, coverage and integration into the City's operations philosophy. The Consultant shall analyze SCADA in three parts: system evaluation, gap analysis, and data sharing among the City departments.

Task 10.2 – Evaluate Work Order Process

To gain an understanding of current conditions, the Consultant shall map the various work order and work request processes and review the efficiency of each in terms of consistency of application, time to complete, cost to complete, reporting methodology, channels of communication and responsibility, tracking and other parameters specific to the City.

Task 10.3 – Conduct Maintenance Assessment

The Consultant shall review water system maintenance from the perspective of balancing preventative, predictive, and corrective maintenance. The Consultant shall prepare a matrix showing which approach(es) to maintenance is currently being applied to each type of equipment, demonstrate the effectiveness of the current approach, and recommend adjustments that would result in more efficient use of limited resources, a higher level of customer service and greater long-term economic benefit.

Preventative Maintenance

The Consultant shall acquire and review planned work orders, planned work schedules and evaluation processes for water system equipment that define each preventive maintenance plan. The Consultant shall assess the comprehensiveness of the preventative maintenance plan for each type of equipment.

Predictive Maintenance

The Consultant shall review inspection reports related to the water system in terms of comprehensiveness, frequency, consistency, access and file management. The Consultant shall review the City's water system remote data collection and monitoring capabilities. The Consultant shall review the extent to which information and data analysis are used for predictive maintenance and their efficiency.

Corrective Maintenance

The Consultant shall work with the City to compile and review the following information. The Consultant shall prepare a list of water system failures. The Consultant shall review the capabilities and limitations of the City to verify which and what quantity of failures are within their capacity to correct. The Consultant shall verify access and availability of third parties to respond to failures beyond the capabilities and limitations of the City.

The Consultant shall review contingencies for each type of failure in terms of procedures, manpower and required materials and describe methods for scaling the response, as needed. Methods shall also be reviewed for evaluating and reporting actions taken to correct a failure and examine opportunities to build lessons learned into improving the contingencies.

Task 10.4 – Assess Personnel

The Consultant shall conduct a water system operations and maintenance personnel assessment in terms of current staffing levels, regulatory requirements, organizational alignment, hiring and advancement, growth and training, retention, succession planning, and support from the City.

Task 10.5 – Gap Analysis

The Consultant shall work with the City to develop a vision for customer service from the perspective of operations and maintenance. The Consultant shall compare the City's vision for operations and maintenance to the AWWA Manual for Utility Benchmarking and the current practices at up to three comparable utilities in the vicinity. If necessary, the Consultant shall work with the City to adjust the vision to align more closely with these sources. The Consultant shall compare current conditions in operations and maintenance to the City's vision of operations and maintenance and note any divergence.

Task 10.6 – Needs Assessment

The Consultant shall quantify the results of the gap analysis in terms of changes in personnel, equipment, training, procedures and their associated costs. The Consultant shall prepare a cost estimate for changes needed to achieve the vision. The Consultant shall compare the cost estimate to the operations and maintenance budgets for the previous three years to gain an understanding of the incremental change in funding requirements. The Consultant shall compare the proposed operations and maintenance budget to those of similar utilities as documented in 2019 AWWA Utility Benchmarking. The Consultant shall compare the proposed operations and maintenance program costs to those of up to three water purveyors with similar programs.

Task 11 – Model Software Evaluation and Calibration of Hydraulic Model

The Consultant shall work with the City to choose an appropriate hydraulic model platform and discuss the benefits to the City in purchasing a hydraulic modeling license for in-house use of its water model.

The Consultant shall review the 1998 water model and the City's current GIS layers of the water system for completeness and compatibility. The Consultant shall determine whether updating the existing model or developing a new model from GIS is to the City's advantage, present the case for the Consultant's determination, and proceed according to the City's preference.

The Consultant shall program a water model with the most up-to-date data available in the City's GIS including all pipes four inches in diameter or larger and all active sources, wells, pumps, tanks, controls valves and zone valves.

The Consultant shall work with City staff to identify locations in the water system that will produce the best hydrant flow test results while minimizing water loss and disruption to the City.

Data for this project shall be created using California State Plane coordinate, Zone V, U.S. Survey feet. In the rare instances of insufficient or conflicting information, a Request-for-Information shall be created to document the issue and shall be forwarded to the City for action.

The friction coefficient model shall be applied to all pipes in the water model based on age and material as an initial iteration for static calibration. The Consultant shall work with the City to identify locations in the water system that will produce the best flow test results while minimizing water loss and disruption to

the City. The Consultant shall program future scenarios into the model to reflect pipe friction coefficient decay as a function of time.

The Consultant shall conduct up to 40 hydrant flow tests for static calibration. The Consultant shall coordinate with the City to conduct the flow test and provide oversight of the test and conduct dynamic calibration from historical SCADA data.

The Consultant shall allocate demand to the model spatially on a pressure zone basis using the results from Task 5. The following demand allocations will be program demand allocations for average day demand, peak hour demand, and maximum day demand with diurnal variation under existing (2020), short-term (2030), intermediate (2045) and long-term (2070) conditions.

The Consultant shall pre-program modeling scenarios to assess the water system against design criteria. The Consultant shall work with the City to specify operating controls for each facility and program them accordingly for dynamic simulations.

Task 12 – Supply and Distribution System Analysis

Analysis of the various systems, equipment and facilities shall be conducted according to evaluation criteria developed during Task 8. Based on the understanding of the existing system per Task 3, the Consultant shall determine the capacity and compare the requirement to the capacity. If the capacity exceeds the requirement, the Consultant shall calculate the available surplus and make a determination that the criterion has been satisfied. If the requirement exceeds the capacity, the Consultant shall calculate the additional capacity needed to satisfy the criterion and recommend appropriate improvements.

Task 12.1 – Pipeline Analysis

The Consultant shall analyze raw water, transmission and distribution pipelines in terms of pipe size, connectivity, system pressure, residual pressure, pipe velocity, and other parameters in accordance with evaluation criteria. Scenarios shall be programmed to evaluate pipeline performance under existing and future normal operating conditions as needed to apply design criteria.

Task 12.2 – Pressure Zone Analysis

The Consultant shall evaluate the sufficiency of net supply to each pressure zone and sufficiency of operational storage (see Task 9) to equalize supply and demand in each pressure zone.

Task 12.3 – System Renewal and Replacement Analysis

Using the water model, the Consultant shall evaluate the impact of proposed system renewal and replacement projects on hydraulics.

Task 12.4 – Analysis of SCADA Sufficiency

Building upon the Consultant's review of operations in Task 10.1, the Consultant shall analyze the sufficiency of the SCADA system.

Task 12.5 – Emergency Backup Power and Seismic Valve Analysis

Using the water model, the Consultant shall identify facilities critical to maintaining customer service. The Consultant shall evaluate these facilities in terms of capacity and distribution of emergency backup

power generation to keep facilities in operation and availability of seismic valves to protect critical facility components and prevent losses. The Consultant shall include an AMI meter change-out cost benefit analysis as one of the projects.

Task 13 – Capital Improvements Plan (CIP) Update

Task 13.1 – Develop Cost Estimating Assumptions

The Consultant shall develop planning level unit construction costs for pipelines, wells, pumps, storage, control valves, electrical, instrumentation and SCADA. The Consultant shall estimate costs for project administration, planning, design, construction management and contingencies based on project type, extent and construction costs. The Consultant shall develop concepts for project phasing and the level of procurement for each phase.

Task 13.2 – Develop Project Prioritization Methodology

The Consultant shall develop a methodology for prioritizing projects that considers perceived urgency, importance, consequence of failure, age and condition, the Pavement Accelerated Repair Implementation Strategy, and integration with other City planning efforts.

Task 13.3 – Develop Projects

The Consultant shall prepare groups of projects in tabular form for various categories. Projects shall be presented in a clear and comprehensive manner each on a separate sheet including a title, description, justification, cost estimate, map showing project extent, and a discussion of contingencies and other critical elements.

Task 13.4 – Prepare Implementation Schedule

Based on the preceding subtasks, the Consultant shall prepare a comprehensive implementation schedule for existing (2020) and future (2030, 2045 and 2070) planning periods.

Task 14 – Prepare Water Master Plan Report

The Consultant shall prepare and issue a Draft Master Plan summarizing the findings. The City shall review and comment of the Draft Master Plan, for the Consultant to address them. For each comment or group of related comments, the Consultant shall prepare a summarized comment, identify impacted sections of the Water Master Plan, respond to the comment, and prepare an appropriate action for approval by the City. The Consultant shall incorporate approved actions into the Final Water Master Plan and issue to the City.

The Consultant shall prepare and issue, for City review, a stand-alone Executive Summary written for a general audience including the goals, findings and implications of the Final Water Master Plan. The Consultant shall incorporate comments into the final Executive Summary and issue to the City.

Task 15 – Policy Maker Presentations & Plan Adoption

Task 15.1 – Work Session Presentation

The Consultant shall present the Water Master Plan at a work session of the Municipal Utilities and Public Works Commission. The goals, findings and implications of the Water Master Plan shall be

presented. The Consultant shall discuss integration of the Water Master Plan into other City functions and actions including public acceptance, funding and financing, environmental assessment, partnerships and affiliations, related studies and future studies. The Consultant shall solicit and respond to questions from the attendees in a facilitated process. The Consultant shall prepare and issue meeting minutes to the City to document the attendees, agenda and discussion.

Task 15.2 – City Council Presentation

The Consultant shall prepare and submit, for City review, a presentation of the Water Master Plan for inclusion in the City Council’s agenda. The Consultant shall present the Water Master Plan at a regular City Council meeting and recommend adoption. The Consultant shall respond to comments and inquiries from the City Council.

Task 16 – Water System Performance Evaluation for Potential Industrial Customers

The Consultant shall prepare a matrix for determining industrial demand requirements including domestic demand, irrigation demand, process demand and fire flow demand. The Consultant shall work with the City and conduct independent research to populate the industrial demand matrix. The Consultant shall work with the City to develop three demand scenarios for industries chosen by the City. The Consultant shall use the water model to simulate the three scenarios under Maximum Day Demand plus Fire Flow conditions to identify hydraulic constraints. The Consultant shall identify infrastructure improvements needed to satisfy design requirements for each scenario.

Additional Tasks

Task A – Coordination with Sewer Master Planner

The Consultant shall work closely with the City’s sewer master planning consultant to assure a seamless transition between potable water model demand allocation and sewer model wastewater generation allocation.

Task B – Update Water Design and Construction Standards

The Consultant shall evaluate and recommend changes in the design and construction standards and standard drawings. The Consultant shall complete the following as part of the evaluation:

- Compile a list of current City of Redlands standards and standard drawings for the water systems.
- Work with the City to prioritize the list of current standards and standard drawings in terms of importance, urgency, omissions and other criteria identified by the City.
- Compile copies of standards and standards drawings from surrounding agencies with similar infrastructure.
- Starting with the highest priorities, prepare a summary of differences between the other agencies’ standards and standard drawings and the City of Redlands standards and standard drawings including identifying outdated language, drawings, equipment and materials.
- Attend a Workshop meeting with the City to go over the summary prepared for standards, and to address potential changes to standards already known to those departments.
- Prepare a list of proposed changed to the standards.
- Repeat items 5 and 6 for standard drawings.
- Attend one final workshop to finalize all recommendations for changes to both standards and standards drawings.

Task C – Water Conservation Plan Review and Optimization

The Consultant shall review historical progress in water use reduction, assessing water conservation programs from an economic point of view and optimizing the approach to water conservation from the perspective of net cost to volume of water saved.

C.1 – Review Historical Water Use Reduction

The Consultant shall track historical water use and identify the impact of water conservation program implementation on water production. The Consultant shall prepare a demand model that correlates actual production records to historical population, precipitation and temperature variation in the city as well as the influence of macroeconomic trends. The Consultant shall identify and quantify water use reduction in the historical record and attribute it to contemporary water conservation efforts.

C.2 – Assess Current Conservation Programs

The Consultant shall review the current water conservation program in terms of water use reduction targets, methods, participation, water saved and cost of implementation. For up to ten programs or projects, the Consultant shall prepare an economic curve that considers the opportunity to save water, unit water savings, degree of market saturation, market penetration of the current program or project, fixed costs, variable costs and impact on revenue.

For each program or project, the Consultant shall define unit water savings in terms of gallons saved per year per unit (e.g. 2,000 gallons per year per high-efficiency toilet).

C.3 – Optimize Water Use Reduction

The Consultant shall recommend optimized solutions for up to three water use reduction targets based on the economic curve developed in Task C.2.

EXHIBIT "C"

COST PROPOSAL

Michael Baker
INTERNATIONAL

CITY OF REDLANDS
Water System Master Plan
Updated Fee Proposal - July 9, 2020

Task No.	Description	Labor by Classification (hours)									Total Labor	Fees		
		Principal-In-Charge	Project Manager	QC Mgr./Sr. Tech Mgr.	Project Engineer	Associate Engineer	Funding Specialist	Office Support/Clerical	Electrical Engineer	Associate Electrical Engineer		Total Labor Fee	Other Direct Costs	Total Cost
	Billing Rate	\$260	\$220	\$240	\$170	\$135	\$110	\$75	\$180	\$135				
A	Water Master Plan Preparation:													
1	Project Management	4	36		36			24			100	\$ 16,800	\$ 400	\$ 17,200
2	Resource Documents and Data Review		6		15	18		18			57	\$ 7,650	\$ 150	\$ 7,800
3	Facilities Inventory - Existing System Description		8		18	40			20		86	\$ 13,820	\$ -	\$ 13,820
4	City Water Projects and Development Activity		2	1	8	6					17	\$ 2,850	\$ -	\$ 2,850
5	Update Population and Water Demand Estimates and Forecast	1	6	1	8	20					36	\$ 5,880	\$ -	\$ 5,880
6	Water Supply Analysis	1	8	1	12	24					46	\$ 7,540	\$ -	\$ 7,540
7	Evaluation of Groundwater Source for Emergency Use		4	1	8	12					25	\$ 4,100	\$ -	\$ 4,100
8	System Planning and Analysis Criteria	1	6	1	12	30					50	\$ 7,040	\$ -	\$ 7,910
9	Water Storage Volume and Operational Requirements		8	1	16	32					57	\$ 9,040	\$ -	\$ 9,040
10	Operations and Maintenance		6	2	8	24	16		8	16	80	\$ 12,800	\$ -	\$ 12,800
11	Model Software Evaluation and Calibration of Hydraulic Model		6		24	60					90	\$ 13,500	\$ 500	\$ 14,000
12	Supply and Distribution System Analysis		2	2	16	40					60	\$ 9,040	\$ -	\$ 9,040
13	Capital Improvements Plan (CIP) Update	2	8	4	24	80	24				142	\$ 22,440	\$ -	\$ 22,440
14.1	Draft Water Master Plan Report	1	8	8	24	60		40			141	\$ 19,120	\$ 500	\$ 19,620
14.2	Final Prepare Water Master Plan Report	1	4	4	24	40		24			97	\$ 13,380	\$ 500	\$ 13,880
15	Policy Maker Presentations & Plan Adoption	1	2		4			8			15	\$ 1,980	\$ -	\$ 1,980
16	Water System Performance Evaluation for Potential Industrial Customers		2		4	24					30	\$ 4,380	\$ -	\$ 4,360
Subtotal Task A		12	122	28	261	610	40	114	28	16	1,129	\$ 172,370	\$ 2,650	\$ 174,420
OPTIONAL TASKS:														
A	Coordination with Sewer and Recycled Water Master Planners		2		2	4					8	\$ 1,320	\$ -	\$ 1,320
B	Update Water Design and Construction Standards		16	6	40	40		20			122	\$ 16,860	\$ 300	\$ 18,960
C	Water Conservation Plan Review and Optimization		2		12	20					34	\$ 5,180	\$ -	\$ 5,180
Subtotal Optional Tasks		0	20	6	54	64	0	20	0	0	164	\$ 25,160	\$ 300	\$ 25,460

Total Cost With Optional Services: \$ 199,880

EXHIBIT "D"
WORKERS' COMPENSATION INSURANCE CERTIFICATION

Every employer, except the State, shall secure the payment of compensation in one or more of the following ways:

- (a) By being insured against liability to pay compensation by one or more insurers duly authorized to write compensation insurance in this State.
- (b) By securing from the Director of Industrial Relations, a certificate of consent to self-insure, either as an individual employer, or as one employer in a group of employers, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to his or her employees.

CHECK ONE

X I am aware of the provisions of Section 3700 of the Labor Code which requires every employer to be insured against liability for Workers' Compensation or to undertake self-insurance in accordance with the provisions of that Code, and I will comply with such provisions before commencing the performance of the work and activities required or permitted under this Agreement. (Labor Code §1861).

_____ I affirm that at all times, in performing the work and activities required or permitted under this Agreement, I shall not employ any person in any manner such that I become subject to the workers' compensation laws of California. However, at any time, if I employ any person such that I become subject to the workers' compensation laws of California, immediately I shall provide the City with a certificate of consent to self-insure, or a certification of workers' compensation insurance.

I certify under penalty of perjury under the laws of the State of California that the information and representations made in this certificate are true and correct.

MICHAEL BAKER INTERNATIONAL, INC.

By: 
John Nagle, P.E., Vice President

Date: 8/20/2020