

**AGREEMENT FOR PROFESSIONAL SERVICES
(Design Professional – Architects, Engineers & Landscape Designers)**

THIS AGREEMENT is made and entered into this 15TH day of JUNE, 2020, by and between the City of Merced, a California Charter Municipal Corporation, whose address of record is 678 West 18th Street, Merced, California 95340, (hereinafter referred to as “City”) and Stantec Consulting Services, Inc., a New York Corporation, whose address of record is 3875 Atherton Road, Rocklin, California 95765, (hereinafter referred to as “Consultant”).

WHEREAS, City is undertaking a project to design upgrades to its Wastewater Treatment Facility; and,

WHEREAS, Consultant represents that it possesses the professional skills to provide engineering design services in connection with said project.

NOW, THEREFORE, the parties hereto, in consideration of the mutual covenants hereinafter recited, hereby agree as follows:

1. **SCOPE OF SERVICES.** The Consultant shall furnish the following services: Consultant shall provide the engineering design services described in Exhibit “A” attached hereto.

No additional services shall be performed by Consultant unless approved in advance in writing by the City, stating the dollar value of the services, the method of payment, and any adjustment in contract time. All such services are to be coordinated with City and the results of the work shall be monitored by the Director of Public Works or designee. However, the means by which the work is accomplished shall be the sole responsibility of the Consultant.

2. **TIME OF PERFORMANCE.** All of the work outlined in the Scope of Services shall be completed in accordance with the Schedule outlined in Exhibit “B” attached hereto and incorporated herein by reference. By mutual agreement and written addendum to this Agreement, the City and the Consultant may change the requirements in said Schedule.

3. **TERM OF AGREEMENT.** The term of this Agreement shall commence upon the day first above written and end on June 15, 2022.

4. **COMPENSATION.** Payment by the City to the Consultant for actual services rendered under this Agreement shall be made upon presentation of an invoice detailing services performed under the Scope of Services, in accordance with the fee schedule set forth in Exhibit "C" attached hereto and incorporated herein by reference. The Consultant agrees to provide all services required under the Scope of Services in Exhibit "A" within the compensation amount set forth in Exhibit "C". For Consultant's services rendered under this Agreement, City shall pay Consultant the not to exceed sum of Four Hundred Fifty-One Thousand Nine Hundred Dollars (\$451,900.00).

5. **METHOD OF PAYMENT.** Compensation to Consultant shall be paid by the City after submission by Consultant of an invoice delineating the services performed.

6. **RECORDS.** It is understood and agreed that all plans, studies, specifications, data magnetically or otherwise recorded on computer or computer diskettes, records, files, reports, etc., in possession of the Consultant relating to the matters covered by this Agreement shall be the property of the City, and Consultant hereby agrees to deliver the same to the City upon termination of the Agreement. It is understood and agreed that the documents and other materials including but not limited to those set forth hereinabove, prepared pursuant to this Agreement are prepared specifically for the City and are not necessarily suitable for any future or other use.

7. **CONSULTANT'S BOOKS AND RECORDS.** Consultant shall maintain any and all ledgers, books of account, invoices, vouchers, canceled checks, and other records or documents evidencing or relating to charges for services or expenditures and disbursements charged to the City for a minimum of three (3) years, or for any longer period required by law, from the date of final payment to the Consultant to this Agreement. Any records or documents required to be maintained shall be made available for inspection, audit and/or copying at any time during regular business hours, upon oral or written request of the City.

8. **INDEPENDENT CONTRACTOR.** It is expressly understood that Consultant is an independent contractor and that its employees shall not be employees of or have any contractual relationship with the City. Consultant shall be responsible for the payment of all taxes, workers' compensation insurance and unemployment insurance. Should Consultant desire any insurance protection, the Consultant is to acquire same at its expense.

In the event Consultant or any employee, agent, or subcontractor of Consultant providing services under this Agreement is determined by a court of competent jurisdiction or the California Public Employees Retirement System (PERS) to be eligible for enrollment in PERS as an employee of the City, Consultant shall indemnify, protect, defend, and hold harmless the City for the payment of any employee and/or employer contributions for PERS benefits on behalf of Consultant or its employees, agents, or subcontractors, as well as for the payment of any penalties and interest on such contributions, which would otherwise be the responsibility of City.

9. INDEMNITY.

A. Indemnity for Professional Liability. When the law establishes a professional standard of care for Consultant's Services, to the fullest extent permitted by law, Consultant shall indemnify, protect, defend, and hold harmless City and any and all of its officials, employees and agents from and against any and all losses, liabilities, damages, costs, and expenses, including legal counsel's fees and costs but only to the extent the Consultant (and its Subconsultants), are responsible for such damages, liabilities and costs on a comparative basis of fault between the Consultant (and its Subconsultants) and the City in the performance of professional services under this agreement.

B. Indemnity for Other Than Professional Liability. Other than in the performance of professional services and to the full extent permitted by law, Consultant shall indemnify, defend, and hold harmless City, and any and all of its employees, officials and agents from and against any liability (including liability for claims, suits, actions, arbitration proceedings, administrative proceedings, regulatory proceedings, losses, expenses or costs of any kind, whether actual, alleged or threatened, including legal counsel's fees and costs, court costs, defense costs, and expert witness fees), where the same arise out of, are a consequence of, or are in any way attributable to, in whole or in part, the performance of this Agreement by Consultant or by any individual or City for which Consultant is legally liable, including, but not limited to officers, agents, employees, or subcontractors of Consultant.

10. INSURANCE. During the term of this Agreement, Consultant shall maintain in full force and effect at its own cost and expense, the following insurance coverage:

a. Workers' Compensation Insurance. Full workers' compensation insurance shall be provided with a limit of at least One Hundred Thousand Dollars (\$100,000) for any one person and as required by law, including Employer's Liability limits of \$1,000,000.00 per accident. The policy shall be endorsed to waive the insurer's subrogation rights against the City.

b. General Liability.

- (i) Consultant shall obtain and keep in full force and effect general liability coverage at least as broad as ISO commercial general liability coverage occurrence Form CG 0001.
- (ii) Consultant shall maintain limits of no less than One Million Dollars (\$1,000,000) per occurrence for bodily injury, personal injury and property damage.
- (iii) The City, its officers, employees, volunteers and agents are to be named as additional insureds under the policy, as respects liability arising out of work or operations performed by or on behalf of the Consultant.
- (iv) The policy shall stipulate that this insurance will operate as primary insurance for work performed by Consultant and its sub-contractors, and that any other insurance or self insurance maintained by City or other named insureds shall be excess and non-contributory.
- (v) Consultant shall maintain its commercial general liability coverage for three (3) years after completion of the work and shall add an additional insured endorsement form acceptable to the City naming the City of Merced, its officers, employees, agents and volunteers for each year thereafter for at least three (3) years after completion of the work. Copies of the annual renewal and additional insured endorsement form shall be sent to the City within thirty (30) days of the annual renewal.

c. Automobile Insurance.

- (i) Consultant shall obtain and keep in full force and effect an automobile policy of at least One Million Dollars (\$1,000,000) per accident for bodily injury and property damage.
- (ii) The City, its officers, employees, volunteers and agents are to be named as additional insureds under the policy, as respects automobiles owned, leased, hired or borrowed by the Consultant.
- (iii) The policy shall stipulate that this insurance will operate as primary insurance for work performed by Consultant and its sub-contractors, and that any other insurance or self insurance maintained by City or other named insureds shall be excess and non-contributory.

d. Professional Liability Insurance. Consultant shall carry professional liability insurance appropriate to Consultant's profession in the minimum amount of One Million Dollars (\$1,000,000). Architects and engineers' coverage is to be endorsed to include contractual liability.

e. Qualifications of Insurer. The insurance shall be provided by an acceptable insurance provider, as determined by City, which satisfies all of the following minimum requirements:

- (i) An insurance carrier admitted to do business in California and maintaining an agent for service of process within this State; and,
- (ii) An insurance carrier with a current A.M. Best Rating of A:VII or better (except for workers' compensation provided through the California State Compensation Fund).

f. Certificate of Insurance. Consultant shall complete and file with the City prior to engaging in any operation or activity set forth in this Agreement, certificates of insurance evidencing coverage as set forth above and which shall provide that no cancellation or expiration by the insurance company will be made during the term of this Agreement, without thirty (30) days written notice to City prior to the effective date of such cancellation—including cancellation for

nonpayment of premium. In addition to any other remedies City may have, City reserves the right to withhold payment if Consultant's insurance policies are not current.

11. ASSIGNABILITY OF AGREEMENT. It is understood and agreed that this Agreement contemplates personal performance by the Consultant and is based upon a determination of its unique personal competence and experience and upon its specialized personal knowledge. Assignments of any or all rights, duties or obligations of the Consultant under this Agreement will be permitted only with the express written consent of the City.

12. TERMINATION FOR CONVENIENCE OF CITY. The City may terminate this Agreement any time by mailing a notice in writing to Consultant that the Agreement is terminated. Said Agreement shall then be deemed terminated, and no further work shall be performed by Consultant. If the Agreement is so terminated, the Consultant shall be paid for that percentage of the phase of work actually completed, based on a pro rata portion of the compensation for said phase satisfactorily completed at the time the notice of termination is received.

13. CONFORMANCE TO APPLICABLE LAWS. Consultant shall comply with its standard of care regarding all applicable Federal, State, and municipal laws, rules and ordinances. No discrimination shall be made by Consultant in the employment of persons to work under this contract because of race, color, national origin, ancestry, disability, sex or religion of such person.

Consultant hereby promises and agrees to comply with all of the provisions of the Federal Immigration and Nationality Act (8 U.S.C.A. 1101 *et seq.*), as amended; and in connection therewith, shall not employ unauthorized aliens as defined therein. Should Consultant so employ such unauthorized aliens for the performance of work and/or services covered by this Agreement, and should any agency or instrumentality of the federal or state government, including the courts, impose sanctions against the City for such use of unauthorized aliens, Consultant hereby agrees to, and shall, reimburse City for the cost of all such sanctions imposed, together with any and all costs, including attorneys' fees, incurred by the City in connection therewith.

14. WAIVER. In the event that either City or Consultant shall at any time or times waive any breach of this Agreement by the other, such waiver shall not constitute a waiver of any other or succeeding breach of this Agreement, whether of the same or any other covenant, condition or obligation. Waiver shall not be deemed effective until and unless signed by the waiving party.

15. **INCONSISTENT OR CONFLICTING TERMS IN AGREEMENT AND EXHIBITS.** In the event of any contradiction or inconsistency between any attached document(s) or exhibit(s) incorporated by reference herein and the provisions of the Agreement itself, the terms of the Agreement shall control.

Any exhibit that is attached and incorporated by reference shall be limited to the purposes for which it is attached, as specified in this Agreement. Any contractual terms or conditions contained in such exhibit imposing additional obligations on the City are not binding upon the City unless specifically agreed to in writing, and initialed by the authorized City representative, as to each additional contractual term or condition.

16. **AMBIGUITIES.** This Agreement has been negotiated at arms' length between persons knowledgeable in the matters dealt with herein. Accordingly, any rule of law, including, but not limited to, Section 1654 of the Civil Code of California, or any other statutes, legal decisions, or common-law principles of similar effect, that would require interpretation of any ambiguities in this Agreement against the party that drafted this Agreement is of no application and is hereby expressly waived.

17. **VENUE.** This Agreement and all matters relating to it shall be governed by the laws of the State of California and any action brought relating to this agreement shall be held exclusively in a state court in the County of Merced.

18. **AMENDMENT.** This Agreement shall not be amended, modified, or otherwise changed unless in writing and signed by both parties hereto.

19. **INTEGRATION.** This Agreement constitutes the entire understanding and agreement of the parties and supersedes all previous and/or contemporaneous understanding or agreement between the parties with respect to all or any part of the subject matter hereof.

20. **AUTHORITY TO EXECUTE.** The person or persons executing this Agreement on behalf of the parties hereto warrants and represents that he/she/they has/have the authority to execute this Agreement on behalf of their entity and has/have the authority to bind their party to the performance of its obligations hereunder.

21. COUNTERPARTS. This Agreement may be executed in one or more counterparts with each counterpart being deemed an original. No counterpart shall be deemed to be an original or presumed delivered unless and until the counterparts executed by the other parties hereto are in the physical possession of the party or parties seeking enforcement thereof.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed on the date first above written.

CITY OF MERCED
A California Charter Municipal
Corporation

BY: [Signature]
City Manager

ATTEST:
STEVE CARRIGAN, CITY CLERK

BY: [Signature]
Assistant/Deputy City Clerk



APPROVED AS TO FORM:

BY: [Signature] 6-4-2020
City Attorney Date

301254 PO# 136377
ACCOUNT DATA:

BY: [Signature]
Verified by Finance Officer V-16324
Funds available. [Signature] 6/18/2020
553-1108-637-65-00 118015
\$451,900.00 FL 4/9/20

CONSULTANT
STANTEC CONSULTING SERVICES,
INC., A New York Corporation

BY: *Steven L. Beck*
(Signature)

Steven L. Beck
(Typed Name)

Its: Senior Principal
(Title)

BY: _____
(Signature)

(Typed Name)

Its: _____
(Title)

Taxpayer I.D. No. 11-2167170

ADDRESS: 3875 Atherton Road
Rocklin, CA 95765

TELEPHONE: (916) 826-3665

FAX: (916) 773-8448

E-MAIL: steven.beck@stantec.com



June 1, 2020

Attention: Ken Elwin
Public Works Director
City of Merced Public Works
1776 Grogan Avenue
Merced, CA 95341

Reference: Merced WWTF Phase VI Preliminary Engineering Scope of Services

Mr. Elwin,

As requested from our scoping meeting on May 28, 2020, please find enclosed the updated Exhibit "A" Scope of Services, Exhibit "B" Project Schedule with estimated July 15, 2020 Notice to Proceed, and Exhibit "C" Fee Estimate. Also included is our updated Team Organization Chart. Our scope and fee estimate for the preliminary design phase includes all the requirements from the RFP and additional tasks for SRF funding and plant optimization.

If you have any questions, please call me at (916) 826-3665. We look forward to working with the City on this very important project.

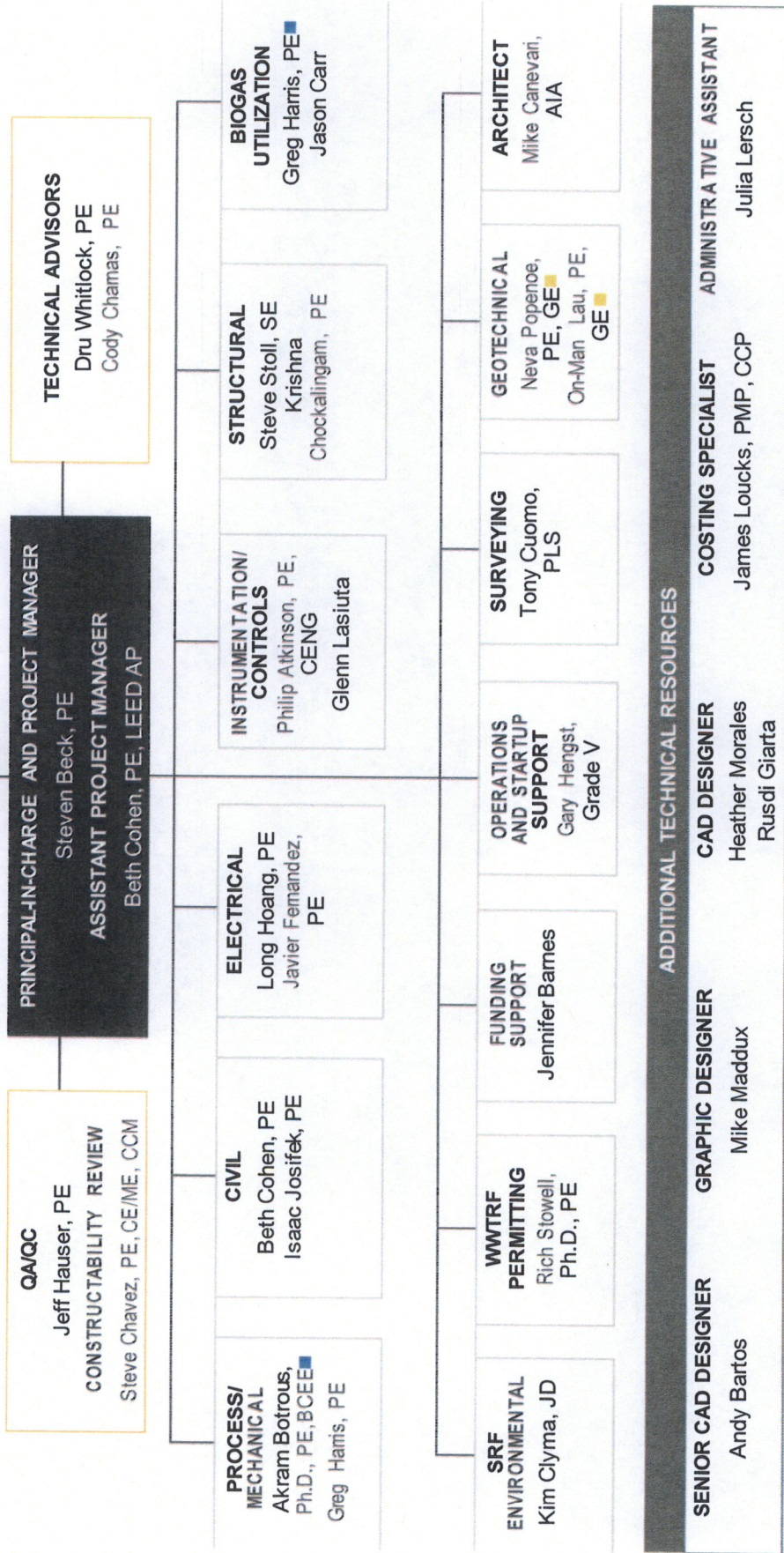
Sincerely,

A handwritten signature in blue ink that reads "Steven T. Beck".

Steven Beck, PE
Project Manager
3875 Atherton Road | Rocklin, CA 95765
Cell: (916) 826-3665
steven.beck@stantec.com

EXHIBIT A

TEAM ORGANIZATIONAL CHART



ADDITIONAL TECHNICAL RESOURCES

SENIOR CAD DESIGNER Andy Bartos	GRAPHIC DESIGNER Mike Maddux	CAD DESIGNER Heather Morales Rusdi Giarta	COSTING SPECIALIST James Loucks, PMP, CCP	ADMINISTRATIVE ASSISTANT Julia Lersch
---	--	--	---	---

LEGEND

- BSK Associates
- HERWIT Engineering

EXHIBIT A
City of Merced WWTF Phase VI Engineering Design, Project 118015
Preliminary Design Scope of Services

SCOPE OF SERVICES

Below is our understanding of the Merced WWTF Phase VI Expansion Project Scope of Services, including detailed description of each associated task.

TASK 200 | Preliminary Design: Stantec will provide a Preliminary Design Report to evaluate treatment technology and specific equipment best suited for the Merced WWTF. The preliminary design phase will allow us to differentiate ourselves by respectfully listening to the City's needs, including requests to analyze innovative solutions (with a history of successful installations at similar facilities) that improve operational flexibility and function within realistic budgetary constraints.

Subtask 200.100 - Project Management: Stantec will conduct a project kickoff meeting with City staff to review the scope of work and the initial alternative process considerations. This meeting will be a collaboration of ideas to solicit input and encourage a partnership between engineering, operations, and public works personnel on project related topics. Meeting minutes will be prepared and distributed to the meeting participants.

We will conduct a follow-up design workshop after the draft Preliminary Design Report has been developed and hold monthly project coordination/status meetings to collaborate as the report alternatives are being considered.

Stantec will provide quality assurance and quality control for the preliminary design work, which includes peer review of all project deliverables. Documents shall be reviewed for correctness, completeness, and coordination with other documents and between disciplines.

Stantec will prepare and submit monthly invoices. Progress Payments, upon invoice, will be made on actual hours worked applied to the agreed-upon hourly rates of compensation. Stantec's invoices shall identify hours worked by date for each named individual staff member, and include backup for non-labor charges.

Deliverable: Agenda and meeting minutes.

Subtask 200.200 – Preliminary Design Report: The following chapters will be provided in the Preliminary Design Report:

1. Executive Summary
2. Flows and Load
3. Influent Pump Station and Headworks
4. Primary Treatment
5. Secondary Treatment Processes
6. Tertiary Filtration and Chemical Conditioning Facilities
7. UV Disinfection
8. Effluent Disposal Facilities
9. Solids Handling, Sludge Thickening, Digesters, and Gas System
10. Solids Dewatering and Drying
11. Side Stream Treatment and Struvite Control
12. Miscellaneous Sitework, Site Layout, and Hydraulic Profile
13. Electrical/Power Supply and Distribution
14. Instrumentation
15. Biogas Utilization and Alternative Energy Evaluation
16. Permit Requirements and Regulation Compliance
17. Recommended project and Preliminary Construction Cost Estimate

Each chapter will investigate alternative options that will increase treatment capacity from 12 mgd to 16 or 20 mgd. The chapters will compare life-cycle costs for each alternative and compare a weighted criteria matrix to provide an engineering recommendation for process improvements. The engineering team will not dismiss City staff ideas simply because they don't match existing (erroneously categorizing appropriateness without quantitative consideration of applicability). Rather, we will analyze the alternatives based on effectiveness, life cycle costs (including accessibility to grants), operational ease, and compliance with anticipated regulations. Areas to be addressed within the report include:

- **Flows and loads:** This chapter will analyze historical flows and loads and use the results as a basis for projecting future design conditions; understanding historical wastewater characteristics are critical in projecting future capacity needs because they are used as the basis for sizing facilities (potentially saving millions of dollars from being unnecessarily spent on oversizing processes, or, conversely, limiting development potential with undersized facilities)

Stantec

Phase VI Engineering Design, Project 118015

Headworks upgrades needed to increase pumping capacity, improve screening reliability (perforated plate end of life analysis versus new flex rake screening), increase grit capture rates (hydraulic evaluation and retrofit baffling of vortex grit basins), and reduce corrosion (odor control facilities) will be evaluated in the preliminary design report.

Primary Treatment process upgrades needed to accommodate increased flow rates and effects of ferric chloride dosing (carryover from struvite control in solids handling facilities); this chapter will include the struvite control optimization strategies (such as side-stream treatment and water dilution system) discussed in the solids handling chapter and how those measures will improve clarifier performance (allowing sludge to naturally move downstream for secondary return without the need to pump settled sludge into the effluent trough); it will also include documentation of process impacts; using different ferric dosing strategies (quantity and location) to avoid carryover or replacement with citric acid; the chapter will also analyze primary sludge fermentation for creating readily biodegradable BOD/COD

Secondary Treatment improvements within the existing aeration basins (increased anoxic basin volumes, reduced short-circuiting caused by sloped sides, upgrading diffuser types) and expansion requirements (new aeration basin, blower building, clarifier and RAS pump station; further, the evaluation will include alternative blower technologies with various energy/fuel sources and multiple diffuser options); this chapter will discuss positive impacts of installing side-stream treatment (ammonia removal in centrate return) and primary sludge fermentation to enhance denitrification, including discontinuing costly glycerin supplementation; this chapter will also explore other options for biological treatment (such as MBRs and integrated fixed film activated sludge)

- The cost comparisons for biological treatment alternatives will not be used independently to assess the overall cost effectiveness because the selection of the biological treatment upgrades will impact other plant components; for example, the headworks and disinfection facilities (and future salinity reduction treatment trains, i.e. RO) will be different for the MBR alternative than it would be for the other alternatives; therefore, this section will include consideration of other aspects of the plant that would be impacted by the choice of biological treatment alternatives

Tertiary Treatment chapter will discuss enhancements to the flocculation basins (adjustable weirs to mitigate breaking the floc matt) and expansion of filter trains needed to process increased flows; this chapter will discuss the benefits of MBR, if selected in the secondary chapter, and its impacts on overall filtration capacity and future salinity reduction benefits

Disinfection System will analyze the historic transmittance data and determine whether the existing channels can be re-rated for higher capacity or if new banks need to be installed; the chapter will also discuss the need for re-coating the channels (to eliminate sponge growth and poor performance) and strategies for long-term application success (such as prequalified painting contractors and NACE certified inspectors)

Sludge Thickening (DAFT) is currently limited by the digester's ability to process high concentration of solids due to non-Newtonian properties of sludge above 4%; we will describe advantages of thickened sludge on downstream dewatering equipment and compare it to cost impacts associated with modifying the digesters (increased mixing ability using draft tube mixing, compressed gas diffusers, recuperative thickening blending, and/or providing a sludge blending system to mix WAS with TWAS)

The Digester chapter will explore alternative mixing options to accommodate various sludge thicknesses and quantify Digester Gas production rates with various digester upgrade alternatives (including impacts of installing a FOG receiving station) for consideration in the alternative energy chapter (see Energy Chapter description below); further, the Digester System needs upgrades to accommodate the increased flows and loads, while maintaining Class A/B biosolids production; the chapter will evaluate the following digester alternative options to find the most economical and reliable solution:

- Adding another mesophilic digester (operating between 95-102 °F) and associated boiler within a new digester control building, or
- Modifying the existing digesters for thermophilic anaerobic digestion (running at temperatures between 122-136 °F) with increased boiler capacity and structural integrity evaluation, or
- Adding thermal hydrolysis process (THP) upstream of the digesters to superheat the biosolids (lysing the cells and creating an easily mixed, low viscosity, concentrated solids) and generate 30% increased gas production for reuse and increase dewatering performance

The cost comparisons for digester upgrade alternatives will not be used independently to assess the overall cost effectiveness because the selection of the upgrades will impact other plant components; for example, the sludge thickening facilities will be different for the THP alternative than it would be for the other alternatives; therefore, this section will include consideration of other aspects of the plant that would be impacted by the choice of digester alternatives

Solids Dewatering centrifuges require a significant polymer use and process optimization strategy to generate cake with high solids concentrations; as such, we will evaluate the use of alternative dewatering technologies (such as PW Tech's volute press); further, this chapter will detail the existing cake conveyance system and need for parallel conveyors, to allow for increased operational flexibility

Struvite is formed in the solids handling process and currently crystallizes in the centrate pump station (and downstream processes) unless the City adds ferric chloride; the assessment of struvite control will include a site-specific water chemistry evaluation of centrate, non-potable water and reclaimed water to determine the efficacy of water dilution blending system (to change the pH and limit struvite forming reactant ions: phosphorous and ammonia); further, the study will include the benefits of intermittently dosing citric acid and/or sulfuric acid to limit initial building (inhibiting continuous buildup), as well as evaluate benefits of providing side-stream treatment processes upstream (and or downstream) of the centrate pump station to limit ammonia from crystallizing with the phosphate

Biosolids Drying is achieved using active solar dryers (ASD), which are limited in unpredictable (cloudy and humid) winter months; the report will determine the summer and winter capacity of the existing ASDs, based on historical values, and associated augmentation capacity needed to increase the annual process reliability; enhancing the solar dryers with parallel heat drying equipment (such as forced thermal exchange and pressure differential equipment, like Gryphon's advanced drying technology) will provide operational flexibility and year-round reliability; the report will consider the cost benefits, reliability, and adaptability of using mechanical augmented dryers (heat dryers) or biological dryers to increase the system's drying capacity

Centrate return is pumped into an equalization tank and constantly bled back to the WWTF at low flow rates. However, even at low flows, the centrate accounts for approximately 25% of the influent ammonia and quickly depletes the biological treatment process's carbon source, requiring addition of supplemental glucose; the report will develop alternative options for removing ammonia (**Side-Stream Treatment**) within the existing centrate equalization tank or upstream of the centrate pump station; the analysis will include the cost savings on chemicals (glycerin and ferric chloride) as well as secondary treatment process sizing impacts (basins and equipment)

Energy use at the WWTF is high, much like all similarly sized facilities, and there is an enormous opportunity to reduce reliance on MID supplied electricity, including installation of solar power in the emergency storage basins and reusing the excess biogas for as an alternative energy source; the evaluation of alternative energy and biogas reuse options will be considered in this report

Biogas Utilization: Currently, the City generates excess biogas (methane) that is being wasted to the gas flare totaling 20 million cubic feet per year (based on 2018 data); most of the gas is available in the summer, with winter demands using more gas for digester boiler heating; this biogas production can be treated and reused to operate equipment that would otherwise run on electricity (or natural gas), such as aeration blowers for the new secondary train (i.e. Neuros turbo blowers with or without heat recover system for further reuse), forced air heat drying (i.e. Gryphon Environmental), heat exchangers (to improve solar dryer performance or condition buildings), larger boilers (to create thermophilic digesters), and RNG injection into pipeline

Gas production will increase with the higher loading to the plant and potential process changes (installing a FOG receiving station, modifying the digesters, food waste import, installing THP, etc.) and availability will change seasonally

Site Layout needs to be considered to create an WWTF that effectively utilizes the available land area and existing infrastructure, maximizes operability of new facilities, and is compatible with future expansions; this chapter will incorporate the layout of all the

recommended processes from previous chapters, as well as evaluate *miscellaneous improvements* and their impacts on budget and associated processes, like a new FOG receiving station, modifications required to irrigate using secondary effluent, and installing a new Operations/Training building; it will further include suggested levee improvements to handle expansion plans and define the steps needed to secure FEMA re-classification of the flood hazard

- **Regulations** are constantly changing and need to be considered to help ensure the longevity of the facilities and successful operation of the WWTF; as such, anticipated regulations should be considered and will be incorporated into the report, including how the plant can accommodate such limits; this includes salinity and nutrient limits, disinfection byproducts, pharmaceuticals, phosphorous, FEMA flood hazards, greenhouse gases, and organic diversion (including from residential green-waste); the report will analyze the required acreage needed to dispose of biosolids onsite (within the land application area) for the 16- and 20-mgd projects; further the environmental team (familiar with the project site, environmental constraints, and Environmental Impact Report [EIR]) will provide parameters that must be incorporated into the final design, in order to comply with the existing EIR, which covered expansion activities up to 20-mgd
- **Budget and Financing** opportunities are an important part of WWTF expansion planning; the costs for the 16- and 20-mgd facilities will be developed for consideration of proposed facilities practicality; our team will help evaluate opportunities for renewable natural gas credits (RIN and LCFS), infrastructure grants (e.g. CDBG, WIFIA, EDA, SJVAPCD, and CEC) and low interest loans (SRF) to finance the project, based on recommended process improvements; the report will include a generated action item list to describe additional items needed to receive money from individual funding sources
- **Recommended Project** descriptions will be included in the report to summarize the recommended improvements for the Expansion Project; the chapter will include a suggested time-line and phasing plan for construction of the facilities

Deliverables: Five (5) copies of the draft

Preliminary Design Report and five copies of the final Preliminary Design Report (incorporating City staff comments).

TASK 300 | SRF Support Services –

Stantec will provide funding support services as follows.

Subtask 300.100 - SRF Funding Support Services: This Task provides scope for the pursuit of SRF funding.

The CWSRF program currently offers debt financing at interest rates that are one-half of the State's most recent General Obligation (GO) Bond rate (current CWSRF rate at approximately 1.7%) and a financing term of 30 years.

Within this task, Stantec will support the City with preparation of funding applications for requesting loan funding for the proposed project. These applications are to be submitted to the State Water Board Division of Financial Assistance (DFA), which administers the CWSRF program. The following sections outline the tasks necessary to apply for construction funding. (Note that it is also possible for this CWSRF to fund engineering and environmental costs. This can be discussed with the City prior to initiating the funding application process.)

Subtask 300.101 - General Application: The CWSRF preliminary funding application will be developed in coordination with City staff and submitted to the CWSRF DFA. Stantec will facilitate a kick-off meeting with City and DFA staff and address any comments or revisions required by DFA.

Deliverable: CWSRF Preliminary Funding Application draft and final.

Subtask 300.102 - Coordinate the CWSRF

Technical Package: The CWSRF Technical application will be developed in coordination City staff and submitted to the DFA. Stantec will provide the required Technical Report including alternative analysis (termed the Project Report) for this package.

To prioritize the project per CWSRF's expected funding capabilities Stantec will include "Green" project components to the extent feasible, with energy efficient improvements, identifying reclamation and biosolids reuse elements of the project and possibly bundling solar improvements and digester gas reuse with the funding application, as directed by the City.

An alternatives analysis will be conducted by Stantec to analyze the options available for improvements to the City's WWTF (as detailed in the Preliminary Design Report Task 200). The assessment will primarily be a focused analysis of the feasible alternative methods of treatment and solids management.

The alternatives analysis will be referenced and documented in accordance with CWSRF Guidelines in a project report. The project report will be prepared by Stantec and will include additional information required therein so that it can serve to support a Construction Funding application to be filed with DFA on behalf of the City. The project report will describe the apparent best project, including all aspects of wastewater treatment, solids handling, and alternative energy expansion. Preliminary layouts and site plans will be prepared and an engineering opinion of cost will be summarized and presented. The report will also capture the DFA requirements related to environment, growth, and public outreach.

Deliverable: Project report with alternatives analysis draft and final, as described in Task 200.

Subtask 300.103 - CWSRF Environmental

Package: Stantec will assist the City by preparing the environmental package contained in the CWSRF application for funding, which is the series of forms in which compliance with environmental requirements is documented for the California CEQA process to meet Federal funding requirements. This scope excludes the following new permit activities:

- U.S. Army Corps of Engineers (USACE) Aquatic Resources Delineation
- Clean Water Act (CWA) Section 404, Nationwide Permit (NWP) Pre-Construction Notification (PCN)
- Central Valley Regional Water Quality Control Board (CVRWQCB), CWA Section 401, Water Quality Certification (WQC)
- California Department of Fish and Wildlife (CDFW), CDFG Code 1602, Lake and Streambed Alteration (LSA) application
- Federal Endangered Species Act (FESA) Compliance, Migratory Bird Treaty Act (MBTA) through the USFWS
- National Historic Preservation Act (NHPA), Section 106 compliance.
- Clean Air Act, General Conformity Analysis Report
- Farmland Protection Policy Act Compliance and Williamson Act lands compliance
- Flood Plain Management, FEMA flood maps
- Safe Drinking Water Act: Sole Source Aquifer Protection Compliance
- Proof of Magnuson-Stevens Fishery Conservation and Management Act compliance with an Essential Fish Habitat Assessment (EFH Assessment) for the State Water Board's consultation with the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service
- Wild and Scenic Rivers Act compliance

Please note, this application has the longest lead time and DFA will require approval of this package before evaluating the following financial security package.

Deliverable: CWSRF environmental package draft and final packages.

Stantec

Phase VI Engineering Design, Project 118015

Subtask 300.104 - Coordinate the CWSRF Financial Security Component: Another critical component essential to CWSRF approving the loan is the Financial Security package. In preparing the financial security package, Stantec will look at the financial health of the City's enterprise fund. The information presented in the financial security package will be used by DFA to determine the borrowing capabilities of the City.

Therefore, helping ensure a favorable determination is imperative to the overall success of the financing and CWSRF application process.

The City will need to provide substantial information to DFA to facilitate their evaluation of the financial security package. Stantec will assemble and provide the information in a cohesive format that will demonstrate the City's ability to borrow and repay any loan funds.

We assume the City will participate and provide the underlying or supporting documentation needed for the financial security package.

Deliverable: CWSRF Financial Security package information to City.

Subtask 300.105 - Application Facilitation and Completion: Stantec will facilitate the application process for the City and help see the application through the Various CWSRF project approvals. This includes checking in with CWSRF staff via phone and email on a regular basis generally to confirm CWSRF staff has what they need to continue processing the City's application. Other than the project kick-off meeting, no additional face to face meetings with the City and DFA staff are included, nor are they anticipated to be needed.

TASK 400 | Plant Optimization

Subtask 400.100 – Grit Particle Distribution Analysis and Site-Specific Improvements: To further evaluate grit removal systems, this subtask provides services to prepare a grit particle distribution analysis (including seven samples) that characterize the size and settling properties and quantify of grit upstream and downstream of the vortex grit chambers. Based on the results of the grit characterization, we will prepare a technical

memorandum that summarizes the sampling results and analyzes alternative options for grit removal technologies that can be used to increase the capture efficiency specific to the plant. The analysis will include life cycle cost comparisons of up to three technologies and impacts on plant performance (including downstream grit accumulation and hydraulic profile impacts

Deliverables: To minimize costs, it is assumed that Stantec coordination and review with City staff will primarily be performed via phone and email.

Subtask 400.200 – Intensive Monitoring Study: Stantec will assist in coordination of an intensive monitoring effort consistent with the recommendations in "Methods for Wastewater Characterization in Activated Sludge Modeling" by the Water Environment Research Foundation, 2003. Intensive monitoring will include 14 consecutive days of daily flow proportional composite sampling of plant influent, primary effluent, and secondary effluent; twice per week monitoring of mixed liquor, septage influent, and recycle streams (including sludge dewatering return flows); for at least two 24-hour periods, hourly influent samples should be taken to quantify diurnal load patterns; and flow and temperature monitoring. Samples will be analyzed to quantify amounts of particulate, colloidal, and soluble, biodegradable, and unbiodegradable chemical oxygen demand (COD) and total Kjeldahl nitrogen (TKN).

This information is critical for modeling, simulation, and design of facilities for nitrification and denitrification. All sampling will be provided by others. The scope includes laboratory analyses and data tabulation in Excel (format to be specified by Stantec) up to \$25,000. Stantec will review and analyze all data to establish average wastewater characteristics, including parameters needed for process simulation in BioWin, and to determine the diurnal flow and load patterns needed to assess diurnal process performance and variations in oxygen demand. The results from this task will be summarized in a technical memorandum.

City of Merced WWTF
Phase VI Expansion Project Schedule

ID	Task Name	Duration	Start	Finish
1	Preliminary Design	113 days	Wed 7/15/20	Fri 12/18/20
2	Notice to Proceed	0 days	Wed 7/15/20	Wed 7/15/20
3	Project Kickoff Meeting	0 days	Thu 7/16/20	Thu 7/16/20
4	Prepare Draft Pre-design Report	90 days	Thu 7/16/20	Wed 11/18/20
5	Attend Progress Meeting No. 1	0 days	Mon 11/23/20	Mon 11/23/20
6	QA/QC Draft Pre-design Report	7 days	Tue 11/24/20	Wed 12/2/20
7	Attend Progress Meeting No. 2	0 days	Wed 12/2/20	Wed 12/2/20
8	Prepare Final Pre-design Report	12 days	Thu 12/3/20	Fri 12/18/20
9	Funding Support	250 days	Thu 11/26/20	Wed 11/10/21
10	Prepare CWSRF General Application	5 days	Thu 11/26/20	Wed 12/2/20
11	Submit CWSRF General Application	0 days	Wed 12/2/20	Wed 12/2/20
12	CWSRF Staff Kickoff Meeting	0 days	Wed 12/9/20	Wed 12/9/20
13	Prepare 90% Drawings & Specifications (Not in Contract)	10 mons	Wed 1/20/21	Tue 10/26/21
14	Prepare CWSRF Technical Package	11 days	Wed 10/27/21	Wed 11/10/21
15	Submit CWSRF Technical Package	0 days	Wed 11/10/21	Wed 11/10/21
16	Prepare CWSRF Environmental	6 mons	Thu 12/10/20	Wed 5/26/21
17	Submit CWSRF Environmental Package	0 days	Wed 5/26/21	Wed 5/26/21
18	CWSRF Review of Environmental Package	4 mons	Thu 5/27/21	Wed 9/15/21
19	Prepare CWSRF Financial Security Package	3 mons	Thu 8/12/21	Wed 11/3/21
20	City Submit CWSRF Financial Security Package	0 days	Wed 11/10/21	Wed 11/10/21
21	Plant Optimization	44 days	Thu 7/30/20	Tue 9/29/20
22	Wastewater Characterization Study	30 days	Thu 7/30/20	Wed 9/9/20
23	Grit Particle Distribution Analysis	40 days	Wed 8/5/20	Tue 9/29/20

