PROFESSIONAL DESIGN SERVICES AGREEMENT

This PROFESSIONAL DESIGN SERVICES AGREEMENT, (hereinafter referred to as "Agreement"), is made and entered into to be effective the 15th day of December, 2022 by and between the ORANGE COUNTY SANITATION DISTRICT, (hereinafter referred to as "OC SAN"), and HDR ENGINEERING, INC., (hereinafter referred to as "CONSULTANT").

WITNESSETH:

WHEREAS, OC SAN desires to engage CONSULTANT for Activated Sludge-1 and Secondary Clarifier Rehabilitation, Project No. P1-140; and to provide professional design services for the Activated Sludge Facility No. 1 (AS-1) at Plant No. 1, (Services) and

WHEREAS, CONSULTANT is qualified to provide the necessary services in connection with these requirements and has agreed to provide the necessary professional services; and

WHEREAS, OC SAN has adopted procedures for the selection of professional design services and has proceeded in accordance with said procedures to select CONSULTANT to perform the Services; and

WHEREAS, at its regular meeting on December 15, 2022 the Board of Directors, by Minute Order, accepted the recommendation of the Operations Committee pursuant to OC SAN's Ordinance No. OC SAN-56 to approve this Agreement.

NOW, THEREFORE, in consideration of the promises and mutual benefits, which will result to the parties in carrying out the terms of this Agreement, it is mutually agreed as follows:

1. SCOPE OF WORK

CONSULTANT agrees to furnish necessary professional and technical services to accomplish those project elements outlined in the Scope of Work attached hereto as Attachment "A", and by this reference made a part of this Agreement.

A. The CONSULTANT shall be responsible for the professional quality, technical accuracy, completeness, and coordination of all design, drawings, specifications, and other services furnished by the CONSULTANT under this Agreement, including the work performed by its subconsultants (Subconsultants). Where approval by OC SAN is indicated, it is understood to be conceptual approval only and does not relieve the CONSULTANT of responsibility for complying with all laws, codes, industry standards, and liability for damages caused by errors, omissions, noncompliance with industry standards, and/or negligence on the part of the CONSULTANT or its Subconsultants.

B. CONSULTANT is responsible for the quality of work prepared under this Agreement and shall ensure that all work is performed to the industry standards of engineering practice for clarity, uniformity, and completeness. CONSULTANT shall respond to all of OC SAN's questions, comments, suggestions, corrections, and recommendations (i.e., DS1, DS2, DS3, and FDS). All comments shall be incorporated into the design prior to the next submittal deadline or addressed, in

writing, as to why the comment has not been incorporated. CONSULTANT shall ensure that each submittal complies with industry standards and the requirements of this Agreement.

C. In the event that work does not conform to the requirements of this Agreement or any applicable industry standards, the CONSULTANT shall, without additional compensation, promptly correct or revise any errors or deficiencies in its designs, drawings, specifications, or other services within the timeframe specified by the Project Engineer/Project Manager. OC SAN may charge to CONSULTANT all costs, expenses and damages associated with any such corrections or revisions.

D. All CAD drawings, figures, and other work shall be produced by CONSULTANTS and Subconsultants using OC SAN CAD Manual. Conversion of CAD work from any other non-standard CAD format to OC SAN format shall not be acceptable in lieu of this requirement.

Electronic files shall conform to OC SAN specifications. Any changes to these specifications by the CONSULTANT are subject to review and approval of OC SAN.

Electronic files shall be subject to an acceptance period of thirty (30) calendar days during which OC SAN shall perform appropriate reviews and including CAD Manual compliance. CONSULTANT shall correct any discrepancies or errors detected and reported within the acceptance period at no additional cost to OC SAN.

E. The CONSULTANT shall ensure that all plans and specifications prepared~~,~~ or recommended under this Agreement allow for competitive bidding. The CONSULTANT shall design such plans or specifications so that procurement of services, labor or materials are not available from only one source, and shall not design plans and specifications around a single or specific product, piece of major equipment or machinery, a specific patented design or a proprietary process, unless required by principles of sound engineering practice and supported by a written justification that has been approved in writing by OC SAN. The CONSULTANT shall submit this written justification to OC SAN prior to beginning work on such plans and specifications. Whenever the CONSULTANT recommends a specific product or equipment for competitive procurement, such recommendation shall include at least two brand names of products that are capable of meeting the functional requirements applicable to the project.

F. All professional services performed by the CONSULTANT, including but not limited to all drafts, data, correspondence, proposals, reports, and estimates compiled or composed by the CONSULTANT, pursuant to this Agreement, are for the sole use of OC SAN, its agents and employees. Neither the documents nor their contents shall be released to any third party without the prior written consent of OC SAN. This provision does not apply to information that (a) was publicly known, or otherwise known to the CONSULTANT, at the time that it was disclosed to the CONSULTANT by OC SAN, (b) subsequently becomes publicly known to the CONSULTANT other than through disclosure by OC SAN.

G. OC SAN shall furnish the CONSULTANT available studies, reports and other data pertinent to the CONSULTANT's service; obtain or authorize the CONSULTANT to obtain or provide additional reports and data as required; furnish to the CONSULTANT services of others required for the performance of the CONSULTANT's services hereunder, and the CONSULTANT shall be entitled to use and rely upon all such information and services provided by OC SAN or others in performing the CONSULTANT's services under this Agreement.

H. CONSULTANT shall not be responsible for delays caused by circumstances beyond its reasonable control, including, but not limited to (1) strikes, lockouts, work slowdowns or stoppages or accidents, and (2) acts of God. While CONSULTANT has made reasonable efforts to incorporate into its plan for the Project any known current project impacts of the COVID-19 pandemic, CONSULTANT has not accounted for, and is not responsible for, unknown future changes due to the COVID-19 pandemic, including, without limitation, additional restrictions by government agencies or others (such as the availability of the site for access or client or consultant staff or others) to the extent they delay or otherwise impact the Project. In that event, CONSULTANT will notify OC SAN and work in good faith to equitably address any unexpected impacts therefrom.

2. COMPENSATION

Total compensation shall be paid to CONSULTANT for the Services in accordance with the following provisions:

A. Total Compensation

Total compensation shall be in an amount not to exceed Eighteen Million Four Hundred Sixty-Two Thousand Four Hundred Forty-Three Dollars ($18,462,443). Total compensation to CONSULTANT including burdened labor (salaries plus benefits), overhead, profit, direct costs, and Subconsultant(s) fees and costs shall not exceed the sum set forth in Attachment "E" - Fee Proposal.

B. Labor

As a portion of the total compensation to be paid to CONSULTANT, OC SAN shall pay to CONSULTANT a sum equal to the burdened salaries (salaries plus benefits) actually paid by CONSULTANT charged on an hourly-rate basis to this project and paid to the personnel of CONSULTANT. Upon request of OC SAN, CONSULTANT shall provide OC SAN with certified payroll records of all employees' work that is charged to this project.

C. Overhead

As a portion of the total compensation to be paid to CONSULTANT, OC SAN shall compensate CONSULTANT and Subconsultants for overhead at the rate equal to the percentage of burdened labor as specified in Attachment "E" - Fee Proposal.

D. Profit

Profit for CONSULTANT and Subconsultants shall be a percentage of consulting services fees (Burdened Labor and Overhead). When the consulting or subconsulting services amount is $250,000 or less, the maximum Profit shall be 10%. Between $250,000 and $2,500,000, the maximum Profit shall be limited by a straight declining percentage between 10% and 5%. For consulting or subconsulting services fees with a value greater than $2,500,000, the maximum Profit shall be 5%. Addenda shall be governed by the same maximum Profit percentage after adding consulting services fees.

As a portion of the total compensation to be paid to CONSULTANT and Subconsultants, OC SAN shall pay profit for all services rendered by CONSULTANT and Subconsultants for this project according to Attachment “E” - Fee Proposal.

E. Subconsultants

For any Subconsultant whose fees for services are greater than or equal to $100,000 (excluding out-of-pocket costs), CONSULTANT shall pay to Subconsultant total compensation in accordance with the Subconsultant amount specified in Attachment “E” - Fee Proposal.

For any Subconsultant whose fees for services are less than $100,000, CONSULTANT may pay to Subconsultant total compensation on an hourly-rate basis per the attached hourly rate Schedule and as specified in the Scope of Work. OC SAN shall pay to CONSULTANT the actual costs of Subconsultant fees and charges in an amount not to exceed the sum set forth in Attachment “E” - Fee Proposal.

F. Direct Costs

OC SAN shall pay to CONSULTANT and Subconsultants the actual costs of permits and associated fees, travel and licenses for an amount not to exceed the sum set forth in Attachment “E” - Fee Proposal. OC SAN shall also pay to CONSULTANT actual costs for equipment rentals, leases or purchases with prior approval of OC SAN. Upon request, CONSULTANT shall provide to OC SAN receipts and other documentary records to support CONSULTANT’s request for reimbursement of these amounts, see Attachment “D” - Allowable Direct Costs. All incidental expenses shall be included in overhead pursuant to Section 2 - COMPENSATION above.

G. Other Direct Costs

Other Direct Costs incurred by CONSULTANT and its Contractor due to modifications to the Scope of Work resulting from field investigations and field work required by the Agreement. These items may include special equipment, test equipment and tooling and other materials and services not previously identified. Refer to attachment “D” Allowable Direct Costs for payment information.

H. Reimbursable Direct Costs

OC SAN will reimburse the CONSULTANT for reasonable travel and business expenses as described in this section and further described in Attachment "D" - Allowable Direct Costs to this Agreement. The reimbursement of the above-mentioned expenses will be based on an "accountable plan" as considered by Internal Revenue Service (IRS). The plan includes a combination of reimbursements based upon receipts and a "per diem" component approved by IRS. The most recent schedule of the per diem rates utilized by OC SAN can be found on the U.S. General Service Administration website at http://www.gsa.gov/portal/category/104711#.

The CONSULTANT shall be responsible for the most economical and practical means of management of reimbursable costs inclusive but not limited to travel, lodging and meals arrangements. OC SAN shall apply the most economic and practical method of reimbursement which may include reimbursements based upon receipts and/or "per diem" as deemed the most practical.

CONSULTANT shall be responsible for returning to OC SAN any excess reimbursements after the reimbursement has been paid by OC SAN.

Travel and travel arrangements – Any travel involving airfare, overnight stays or multiple day attendance must be approved by OC SAN in advance.

Local Travel is considered travel by the CONSULTANT within OC SAN general geographical area which includes Orange, Los Angeles, Ventura, San Bernardino, Riverside, San Diego, Imperial, and Kern Counties. Automobile mileage is reimbursable if CONSULTANT is required to utilize personal vehicle for local travel.

Lodging – Overnight stays will not be approved by OC SAN for local travel. However, under certain circumstances overnight stay may be allowed at the discretion of OC SAN based on reasonableness of meeting schedules and the amount of time required for travel by the CONSULTANT. Such determination will be made on a case-by-case basis and at the discretion of OC SAN.

Travel Meals – Per-diem rates as approved by IRS shall be utilized for travel meals reimbursements. Per diem rates shall be applied to meals that are appropriate for travel times. Receipts are not required for the approved meals.

Additional details related to the reimbursement of the allowable direct costs are provided in the Attachment "D" - Allowable Direct Costs of this Agreement.

I. Limitation of Costs

If, at any time, CONSULTANT estimates the cost of performing the services described in CONSULTANT's Proposal will exceed seventy-five percent (75%) of the not-to-exceed amount of the Agreement, including approved additional compensation, CONSULTANT shall notify OC SAN immediately, and in writing. This written notice shall indicate the additional amount necessary to complete the

services. Any cost incurred in excess of the approved not-to-exceed amount, without the express written consent of OC SAN's authorized representative shall be at CONSULTANT's own risk. This written notice shall be provided separately from, and in addition to any notification requirements contained in the CONSULTANT's invoice and monthly progress report. Failure to notify OC SAN that the services cannot be completed within the authorized not-to-exceed amount is a material breach of this Agreement.

3. REALLOCATION OF TOTAL COMPENSATION

OC SAN, by its Director of Engineering, shall have the right to approve a reallocation of the incremental amounts constituting the total compensation, provided that the total compensation is not increased.

4. PAYMENT

A. Monthly Invoice: CONSULTANT shall include in its monthly invoice, a detailed breakdown of costs associated with the performance of any corrections or revisions of the work for that invoicing period. CONSULTANT shall allocate costs in the same manner as it would for payment requests as described in this Section of the Agreement. CONSULTANT shall warrant and certify the accuracy of these costs and understand that submitted costs are subject to Section 11 - AUDIT PROVISIONS.

B. CONSULTANT may submit monthly or periodic statements requesting payment for those items included in Section 2 - COMPENSATION hereof in the format as required by OC SAN. Such requests shall be based upon the amount and value of the work and services performed by CONSULTANT under this Agreement and shall be prepared by CONSULTANT and accompanied by such supporting data, including a detailed breakdown of all costs incurred and work performed during the period covered by the statement, as may be required by OC SAN.

Upon approval of such payment request by OC SAN, payment shall be made to CONSULTANT as soon as practicable of one hundred percent (100%) of the invoiced amount on a per task basis.

If OC SAN determines that the work under this Agreement, or any specified task hereunder, is incomplete and that the amount of payment is in excess of:

i. The amount considered by OC SAN's Director of Engineering to be adequate for the protection of OC SAN; or

ii. The percentage of the work accomplished for each task.

OC SAN may, at the discretion of the Director of Engineering, retain an amount equal to that which ensures that the total amount paid to that date does not exceed the percentage of the completed work for each task or the project in its entirety.

C. CONSULTANT may submit periodic payment requests for each 30-day period of this Agreement for the profit as set forth in Section 2 - COMPENSATION above. Said profit payment request shall be proportionate to the work actually accomplished to date on a per task basis. In the event OC SAN's Director of Engineering determines that no satisfactory progress has been made since the prior payment, or in the event of a delay in the work progress for any reason, OC SAN shall have the right to withhold any scheduled proportionate profit payment.

D. Upon satisfactory completion by CONSULTANT of the work called for under the terms of this Agreement, and upon acceptance of such work by OC SAN, CONSULTANT will be paid the unpaid balance of any money due for such work, including any retained percentages relating to this portion of the work.

E. Upon satisfactory completion of the work performed hereunder and prior to final payment under this Agreement for such work, or prior settlement upon termination of this Agreement, and as a condition precedent thereto, CONSULTANT shall execute and deliver to OC SAN a release of all claims against OC SAN arising under or by virtue of this Agreement other than such claims, if any, as may be specifically exempted by CONSULTANT from the operation of the release in stated amounts to be set forth therein.

F. Pursuant to the California False Claims Act (Government Code Sections 12650-12655), any CONSULTANT that knowingly submits a false claim to OC SAN for compensation under the terms of this Agreement may be held liable for treble damages and up to a ten thousand dollars ($10,000) civil penalty for each false claim submitted. This Section shall also be binding on all Subconsultants.

A CONSULTANT or Subconsultant shall be deemed to have submitted a false claim when the CONSULTANT or Subconsultant: a) knowingly presents or causes to be presented to an officer or employee of OC SAN a false claim or request for payment or approval; b) knowingly makes, uses, or causes to be made or used a false record or statement to get a false claim paid or approved by OC SAN; c) conspires to defraud OC SAN by getting a false claim allowed or paid by OC SAN; d) knowingly makes, uses, or causes to be made or used a false record or statement to conceal, avoid, or decrease an obligation to OC SAN; or e) is a beneficiary of an inadvertent submission of a false claim to OC SAN, and fails to disclose the false claim to OC SAN within a reasonable time after discovery of the false claim.

5. CALIFORNIA DEPARTMENT OF INDUSTRIAL RELATIONS (DIR) REGISTRATION AND RECORD OF WAGES

A. To the extent CONSULTANT’s employees and/or Subconsultants who will perform work during the design and preconstruction phases of a construction contract for which Prevailing Wage Determinations have been issued by the DIR and as more specifically defined under Labor Code Section 1720 et seq, CONSULTANT and Subconsultants shall comply with the registration requirements of Labor Code Section 1725.5. Pursuant to Labor Code Section 1771.4, the work is subject to compliance monitoring and enforcement by the DIR.

B. The CONSULTANT and Subconsultants shall maintain accurate payroll records and shall comply with all the provisions of Labor Code Section 1776, and shall submit payroll records to the Labor Commissioner pursuant to Labor Code Section 1771.4(a)(3). Penalties for non-compliance with the requirements of Section 1776 may be deducted from progress payments per Section 1776.

C. Pursuant to Labor Code Section 1776, the CONSULTANT and Subconsultants shall furnish a copy of all certified payroll records to OC SAN and/or general public upon request, provided the public request is made through OC SAN, the Division of Apprenticeship Standards or the Division of Labor Enforcement of the Department of Industrial Relations.

D. The CONSULTANT and Subconsultants shall comply with the job site notices posting requirements established by the Labor Commissioner per Title 8, California Code of Regulation Section 16461(e).

6. DOCUMENT OWNERSHIP – SUBSEQUENT CHANGES TO PLANS AND SPECIFICATIONS

A. Ownership of Documents for the Services performed.

All documents, including but not limited to, original plans, studies, sketches, drawings, computer printouts and disk files, and specifications prepared in connection with or related to the Scope of Work or Services, shall be the property of OC SAN. OC SAN's ownership of these documents includes use of, reproduction or reuse of and all incidental rights, whether or not the work for which they were prepared has been performed. OC SAN ownership entitlement arises upon payment or any partial payment for work performed and includes ownership of any and all work product completed prior to that payment. This Section shall apply whether the CONSULTANT's Services are terminated: a) by the completion of the Agreement, or b) in accordance with other provisions of this Agreement. Notwithstanding any other provision of this paragraph or Agreement, the CONSULTANT shall have the right to make copies of all such plans, studies, sketches, drawings, computer printouts and disk files, and specifications.

B. CONSULTANT shall not be responsible for damage caused by subsequent changes to or uses of the plans or specifications, where the subsequent changes or uses are not authorized or approved by CONSULTANT, provided that the service rendered by CONSULTANT was not a proximate cause of the damage.

7. INSURANCE

A. General

i. Insurance shall be issued and underwritten by insurance companies acceptable to OC SAN.

ii. Insurers must have an "A-" Policyholder's Rating, or better, and Financial Rating of at least Class VIII, or better, in accordance with the most current A.M. Best's Guide Rating. However, OC SAN will accept State Compensation Insurance Fund, for the required policy of Workers'

Compensation Insurance subject to OC SAN's option to require a change in insurer in the event the State Fund financial rating is decreased below "B". Further, OC SAN will require CONSULTANT to substitute any insurer whose rating drops below the levels herein specified. Said substitution shall occur within twenty (20) days of written notice to CONSULTANT, by OC SAN or its agent.

iii. Coverage shall be in effect prior to the commencement of any work under this Agreement.

B. General Liability

The CONSULTANT shall maintain during the life of this Agreement, including the period of warranty, commercial general liability insurance written on an occurrence basis providing the following minimum limits of liability coverage: Five Million Dollars ($5,000,000) per occurrence with Five Million Dollars ($5,000,000) aggregate. If aggregate limits apply separately to this contract (as evidenced by submission of ISO form CG 25 03 or 25 04 or equivalent), then the aggregate limit may be equivalent to the per occurrence limit. Said insurance shall include coverage for the following hazards: premises-operations, , products liability/completed operations (including any product manufactured or assembled), broad form property damage, contractual liability, independent contractors liability, personal and advertising injury, mobile equipment, and cross liability and severability of interest clauses. A statement on an insurance certificate will not be accepted in lieu of the actual additional insured endorsement(s). If requested by OC SAN and applicable, XCU coverage (Explosion, Collapse and Underground) must be included in the general liability policy and coverage must be reflected on the submitted certificate of insurance. Where permitted by law, CONSULTANT hereby waives all rights of recovery by subrogation because of deductible clauses, inadequacy of limits of any insurance policy, limitations or exclusions of coverage, or any other reason against OC SAN, its or their officers, agents, or employees,. In all its insurance coverages related to the work (except Errors and Ommissions/Professional Liability), CONSULTANT shall include clauses providing that each insurer shall waive all of its rights of recovery by subrogation against OC SAN, its or their officers, agents, or employees,. Where permitted by law, CONSULTANT shall require similar written express waivers and insurance clauses from each of its Subconsultants of every tier. A waiver of subrogation shall be effective as to any individual or entity, even if such individual or entity (a) would otherwise have a duty of indemnification, contractual or otherwise, (b) did not pay the insurance premium, directly or indirectly, and (c) whether or not such individual or entity has an insurable interest in the property damaged.

C. Umbrella Excess Liability

The minimum limits of general liability and automobile liability insurance required, as set forth herein, shall be provided for through either a single policy of primary insurance or a combination of policies of primary and umbrella excess coverage. Umbrella excess liability coverage shall be issued with limits of liability which, when combined with the primary insurance, will equal the minimum limits for general liability and automobile liability.

D. Automobile/Vehicle Liability Insurance

The CONSULTANT shall maintain a policy of automobile liability insurance on a comprehensive form covering all owned, non-owned, and hired automobiles, trucks, and other vehicles providing the following minimum limit of liability coverage: combined single limit of One Million Dollars ($1,000,000). A statement on an insurance certificate will not be accepted in lieu of the actual additional insured endorsement.

E. Drone Liability Insurance

If a drone will be used, drone liability insurance must be maintained by CONSULTANT in the amount of one million dollars ($1,000,000) in form acceptable to OC SAN.

F. Workers' Compensation Insurance

The CONSULTANT shall provide such workers' compensation insurance as required by the Labor Code of the State of California in the amount of the statutory limit, including employer's liability insurance with a minimum limit of One Million Dollars ($1,000,000) per occurrence. Such workers' compensation insurance shall be endorsed to provide for a waiver of subrogation in favor of OC SAN. A statement on an insurance certificate will not be accepted in lieu of the actual endorsements unless the insurance carrier is State of California Insurance Fund and the identifier "SCIF" and endorsement numbers 2570 and 2065 are referenced on the certificate of insurance. If an exposure to Jones Act liability may exist, the insurance required herein shall include coverage for Jones Act claims.

G. Errors and Omissions/Professional Liability

CONSULTANT shall maintain in full force and effect, throughout the term of this Agreement, standard industry form professional negligence errors and omissions insurance coverage in an amount of not less than Five Million Dollars ($5,000,000) with limits in accordance with the provisions of this paragraph. If the policy of insurance is written on a "claims made" basis, said policy shall be continued in full force and effect at all times during the term of this Agreement, and for a period of five (5) years from the date of the completion of the services hereunder.

In the event of termination of said policy during this period, CONSULTANT shall obtain continuing insurance coverage for the prior acts or omissions of CONSULTANT during the course of performing services under the term of this Agreement. Said coverage shall be evidenced by either a new policy evidencing no gap in coverage or by separate extended "tail" coverage with the present or new carrier.

In the event the present policy of insurance is written on an "occurrence" basis, said policy shall be continued in full force and effect during the term of this Agreement or until completion of the services provided for in this Agreement,

whichever is later. In the event of termination of said policy during this period, new coverage shall be obtained for the required period to insure for the prior acts of CONSULTANT during the course of performing services under the term of this Agreement.

CONSULTANT shall provide to OC SAN a certificate of insurance in a form acceptable to OC SAN indicating the deductible or self-retention amounts and the expiration date of said policy and shall provide renewal certificates not less than ten (10) days prior to the expiration of each policy term.

H. Proof of Coverage

The CONSULTANT shall furnish OC SAN with original certificates and amendatory endorsements effecting coverage. Said certificates and endorsements shall conform to the requirements herein stated. All certificates and endorsements are to be received and approved by OC SAN before work commences. CONSULTANT shall provide OC SAN with copies of its insurance certificates and amendatory endorsements affecting coverage. Confidential information may be redacted from said policies, provided that verification of coverage, name of carriers and agent/broker may not be redacted. Said policies and endorsements shall conform to the requirements herein stated. OC SAN reserves the right to require, at any time, complete, certified copies of all required insurance policies, including endorsements, effecting the coverage required.

The following are approved forms that must be submitted as proof of coverage:

• Certificate of Insurance	ACORD Form 25 or other equivalent certificate of insurance form
• Additional Insurance (General Liability)	The combination of (ISO Forms) CG 20 10 and CG 20 37 All other additional insured endorsements must be submitted for approval by OC SAN, and OC SAN may reject alternatives that provide different or less coverage to OC SAN.
• Additional Insured (Automobile Liability)	Submit endorsement provided by carrier for OC SAN approval.
• Waiver of Subrogation	Submit workers' compensation waiver of subrogation endorsement provided by carrier for OC SAN approval.
• Cancellation Notice	No endorsement is required. However, CONSULTANT is responsible for notifying OC SAN of any pending or actual insurance policy cancellation, as described in Article I. Cancellation and Policy Change Notice, below.

I. Cancellation and Policy Change Notice

The CONSULTANT is required to notify OC SAN in writing of any insurance cancellation notice it receives or other knowledge of pending or actual insurance policy cancellation within two (2) working days of receipt of such notice or acquisition of such knowledge. Additionally, the CONSULTANT is required to notify OC SAN in writing of any material change in the terms of insurance, including reduction in coverage or increase in deductible/SIR, within two (2) working days of receipt of such notice or knowledge of same.

Said notices shall be mailed to OC SAN at:

ORANGE COUNTY SANITATION DISTRICT
10844 Ellis Avenue
Fountain Valley, CA 92708
Attention: Contracts, Purchasing & Materials Management Division

J. Primary Insurance

The general and automobile liability policies shall contain a Primary and "Non Contributory" clause. Any other insurance maintained by OC SAN shall be excess and not contributing with the insurance provided by CONSULTANT.

K. Separation of Insured

The general and automobile liability policies shall contain a "Separation of Insureds" clause.

L. Non-Limiting (if applicable)

Nothing in this document shall be construed as limiting in any way, nor shall it limit the indemnification provision contained in this Agreement, or the extent to which CONSULTANT may be held responsible for payment of damages to persons or property.

M. Deductibles and Self-Insured Retentions

Any deductible and/or self-insured retention must be declared to OC SAN on the certificate of insurance. All deductibles and/or self-insured retentions require approval by OC SAN.

N. Defense Costs

The general and automobile liability policies shall have a provision that defense costs for all insureds and additional insureds are paid in addition to and do not deplete any policy limits.

O. Subconsultants

The CONSULTANT shall be responsible to establish insurance requirements for any Subconsultant hired by the CONSULTANT. The insurance shall be in amounts and types reasonably sufficient to deal with the risk of loss involving the Subconsultant's operations and work.

P. Limits Are Minimums

If the CONSULTANT maintains higher limits than any minimums shown above, then OC SAN requires and shall be entitled to coverage for the higher limits maintained by CONSULTANT.

Nothing in this section, however, requires CONSULTANT in the absence of litigation to reveal its Errors and Omissions/Professional Liability limits beyond that required above in Section 7.

8. SCOPE CHANGES

In the event of a change in the Scope of Work or other terms in the Agreement, as requested by OC SAN, the parties hereto shall execute an Amendment to this Agreement setting forth with particularity all terms of the new Agreement, including, but not limited to, any additional CONSULTANT's fees. CONSULTANT hereby agrees to use any and all procedures, programs, and systems required by OC SAN to process and execute such Amendment(s), including, but not limited to, computer programs and systems.

9. PROJECT TEAM AND SUBCONSULTANTS

CONSULTANT shall provide to OC SAN, prior to execution of this Agreement, the names and full description of all Subconsultants and CONSULTANT's project team members anticipated to be used on this project by CONSULTANT. CONSULTANT shall include a description of the scope of work to be done by each Subconsultant and each CONSULTANT's project team member. CONSULTANT shall include the respective compensation amounts for CONSULTANT and each Subconsultant on a per task basis, broken down as indicated in Section 2 - COMPENSATION.

There shall be no substitution of the listed Subconsultants and CONSULTANT's project team members without prior written approval by OC SAN.

10. ENGINEERING REGISTRATION

The CONSULTANT's personnel are comprised of registered engineers and a staff of specialists and draftsmen in each department. The firm itself is not a registered engineer but represents and agrees that wherever in the performance of this Agreement requires the services of a registered engineer, such services hereunder will be performed under the direct supervision of registered engineers.

11. AUDIT PROVISIONS

A. OC SAN retains the reasonable right to access, review, examine, and audit, any and all books, records, documents, and any other evidence of procedures and practices that OC SAN determines are necessary to discover and verify that the CONSULTANT is in compliance with all requirements under this Agreement. The CONSULTANT shall include OC SAN's right as described above, in any and all of their subcontracts, and shall ensure that these rights are binding upon all Subconsultants.

B. OC SAN retains the right to examine CONSULTANT's books, records, documents and any other evidence of procedures and practices that OC SAN determines are necessary to discover and verify all direct and indirect costs, of whatever nature, which are claimed to have been incurred, or anticipated to be incurred or to ensure CONSULTANT's compliance with all requirements under this Agreement during the term of this Agreement and for a period of three (3) years after its termination.

C. CONSULTANT shall maintain complete and accurate records in accordance with Generally Accepted Accounting Principles (GAAP). The CONSULTANT shall make available to OC SAN for review and audit, all project related accounting records and documents, and any other financial data within 15 days after receipt of notice from OC SAN. Upon OC SAN's request, the CONSULTANT shall submit exact duplicates of originals of all requested records to OC SAN. If an audit is performed, CONSULTANT shall ensure that a qualified employee of the CONSULTANT will be available to assist OC SAN's auditor in obtaining all project related accounting records and documents, and any other financial data.

12. LEGAL RELATIONSHIP BETWEEN PARTIES

The legal relationship between the parties hereto is that of an independent contractor and nothing herein shall be deemed to make CONSULTANT an employee of OC SAN.

13. NOTICES

All notices hereunder and communications regarding the interpretation of the terms of this Agreement, or changes thereto, shall be effected by delivery of said notices in person or by depositing said notices in the U.S. mail, registered or certified mail, return receipt requested, postage prepaid.

Notices shall be mailed to OC SAN at:

ORANGE COUNTY SANITATION DISTRICT
10844 Ellis Avenue
Fountain Valley, CA 92708-7018
Attention: Wai Chan, Contracts Administrator
Copy: Cindy Murra, Project Manager

Notices shall be mailed to CONSULTANT at:

HDR ENGINEERING, INC.
3230 El Camino Real, Suite 200
Irvine, CA 92606
Attention: Gregorio Estrada

All communication regarding the Scope of Work, will be addressed to the Project Manager. Direction from other OC SAN's staff must be approved in writing by OC SAN's Project Manager prior to action from the CONSULTANT.

14. TERMINATION

OC SAN may terminate this Agreement at any time, without cause, upon giving thirty (30) days written notice to CONSULTANT. In the event of such termination, CONSULTANT shall be entitled to compensation for work performed on a prorated basis through and including the effective date of termination. OC SAN may also terminate this Agreement for cause but only after providing CONSULTANT written notice of the breach and a period of ten (10) days to cure.

CONSULTANT shall be permitted to terminate this Agreement upon thirty (30) days written notice only if CONSULTANT is not compensated for billed amounts in accordance with the provisions of this Agreement, when the same are due.

Notice of termination shall be mailed to OC SAN and/or CONSULTANT in accordance with Section 13 - NOTICES.

15. DOCUMENTS AND STUDY MATERIALS

The documents and study materials for this project shall become the property of OC SAN upon the termination or completion of the work. CONSULTANT agrees to furnish to OC SAN copies of all memoranda, correspondence, computation and study materials in its files pertaining to the work described in this Agreement, which is requested in writing by OC SAN.

16. COMPLIANCE

A. Labor

CONSULTANT certifies by the execution of this Agreement that it pays employees not less than the minimum wage as defined by law, and that it does not discriminate in its employment with regard to race, color, religion, sex or national origin; that it is in compliance with all federal, state and local directives and executive orders regarding non-discrimination in employment; and that it agrees to demonstrate positively and aggressively the principle of equal opportunity in employment.

B. Air Pollution

CONSULTANT and its subconsultants and subcontractors shall comply with all applicable federal, state and local air pollution control laws and regulations.

C. Iran Contracting Act

CONSULTANT and its subconsultants and subcontractors shall comply with the Iran Contracting Act of 2010 (Public Contract Code sections 2200-2208).

17. AGREEMENT EXECUTION AUTHORIZATION

Both OC SAN and CONSULTANT do covenant that each individual executing this document by and on behalf of each party is a person duly authorized to execute agreements for that party.

18. DISPUTE RESOLUTION

In the event of a dispute arising between the parties regarding performance or interpretation of this Agreement, the dispute shall be resolved by binding arbitration under the auspices of the Judicial Arbitration and Mediation Service ("JAMS"), or similar organization or entity conducting alternate dispute resolution services.

19. ATTORNEY'S FEES, COSTS AND NECESSARY DISBURSEMENTS

If any action at law or in equity or if any proceeding in the form of an Alternative Dispute Resolution (ADR) is necessary to enforce or interpret the terms of this Agreement, the prevailing party shall be entitled to reasonable attorney's fees, costs and necessary disbursements in addition to any other relief to which it may be entitled.

20. PROGRESS REPORTS

Monthly progress reports shall be submitted for review by the tenth day of the following month and must include as a minimum: 1) current activities, 2) future activities, 3) potential items that are not included in the Scope of Work, 4) concerns and possible delays, 5) percentage of completion, and 6) budget status.

21. WARRANTY

CONSULTANT shall perform its services in accordance with generally accepted industry and professional standards. If, within the 12-month period following completion of its services, any part of the services fails to meet those standards, CONSULTANT shall, within the time prescribed by OC SAN, take all such actions as are necessary to correct or complete the noted deficiency(ies).

22. INDEMNIFICATION

To the fullest extent permitted by law, CONSULTANT shall indemnify, defend (at CONSULTANT's sole cost and expense and with legal counsel approved by OC SAN, which approval shall not be unreasonably withheld), protect and hold harmless OC SAN and all of OC SAN's officers, directors, employees, consultants, and agents (collectively the "Indemnified Parties"), from and against any and all claims, damages, liabilities, causes of action, suits, arbitration awards, losses, judgments, fines, penalties, costs and expenses (including, without limitation, attorneys' fees, disbursements and court costs, and all other professional, expert or CONSULTANT's fees and costs and OC SAN's

general and administrative expenses; individually, a “Claim”; collectively, “Claims”) which may arise from or are in any manner related, directly or indirectly, to any work performed, or any operations, activities, or services provided by CONSULTANT in carrying out its obligations under this Agreement to the extent of the negligent, recklessness and/or willful misconduct of CONSULTANT, its principals, officers, agents, employees, CONSULTANT’s suppliers, CONSULTANT, Subconsultants, subcontractors, and/or anyone employed directly or indirectly by any of them, regardless of any contributing negligence or strict liability of an Indemnified Party. Notwithstanding the foregoing, nothing herein shall be construed to require CONSULTANT to indemnify the Indemnified Parties from any Claim arising solely from:

(A) the active negligence or willful misconduct of the Indemnified Parties; or

(B) a natural disaster or other act of God, such as an earthquake; or

(C) the independent action of a third party who is neither one of the Indemnified Parties nor the CONSULTANT, nor its principal, officer, agent, employee, nor CONSULTANT’s supplier, CONSULTANT, Subconsultant, subcontractor, nor anyone employed directly or indirectly by any of them.

Exceptions (A) through (B) above shall not apply, and CONSULTANT shall, to the fullest extent permitted by law, indemnify the Indemnified Parties, from Claims arising from more than one cause if any such cause taken alone would otherwise result in the obligation to indemnify hereunder.

CONSULTANT’s liability for indemnification hereunder is in addition to any liability CONSULTANT may have to OC SAN for a breach by CONSULTANT of any of the provisions of this Agreement. Under no circumstances shall the insurance requirements and limits set forth in this Agreement be construed to limit CONSULTANT’s indemnification obligation or other liability hereunder. The terms of this Agreement are contractual and the result of negotiation between the parties hereto. Accordingly, any rule of construction of contracts (including, without limitation, California Civil Code Section 1654) that ambiguities are to be construed against the drafting party, shall not be employed in the interpretation of this Agreement.

23. DUTY TO DEFEND

The duty to defend hereunder is wholly independent of and separate from the duty to indemnify and such duty to defend shall exist regardless of any ultimate liability of CONSULTANT and shall be consistent with Civil Code Section 2782.8. Such defense obligation shall arise immediately upon presentation of a Claim by any person if, without regard to the merit of the Claim, such Claim could potentially result in an obligation to indemnify one or more Indemnified Parties, and upon written notice of such Claim being provided to CONSULTANT. Payment to CONSULTANT by any Indemnified Party or the payment or advance of defense costs by any Indemnified Party shall not be a condition precedent to enforcing such Indemnified Party’s rights to indemnification hereunder. In the event a final judgment, arbitration, award, order, settlement, or other final resolution expressly determines that the claim did not arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the CONSULTANT, to any extent, then OC SAN will reimburse CONSULTANT for the reasonable costs of defending the Indemnified Parties against such claims. Additionally, in no event shall the cost to defend charged to CONSULTANT exceed CONSULTANT’s proportionate percentage of fault.

CONSULTANT's indemnification obligation hereunder shall survive the expiration or earlier termination of this Agreement until such time as action against the Indemnified Parties for such matter indemnified hereunder is fully and finally barred by the applicable statute of limitations.

24. CONSULTANT PERFORMANCE

The CONSULTANT's performance shall be evaluated by OC SAN. A copy of the evaluation shall be sent to the CONSULTANT for comment. The evaluation, together with the comments, shall be retained by OC SAN and may be considered in future CONSULTANT selection processes.

25. COMPLIANCE WITH OC SAN POLICIES AND PROCEDURES

CONSULTANT shall comply with all OC SAN policies and procedures including the Contractor Safety Standards, as applicable, all of which may be amended from time to time.

26. CLOSEOUT

When OC SAN determines that all work authorized under the Agreement is fully complete and that OC SAN requires no further work from CONSULTANT, or the Agreement is otherwise terminated or expires in accordance with the terms of the Agreement, OC SAN shall give the Consultant written notice that the Agreement will be closed out. CONSULTANT shall submit all outstanding billings, work submittals, deliverables, reports or similarly related documents as required under the Agreement within thirty (30) days of receipt of notice of Agreement closeout.

Upon receipt of CONSULTANT's submittals, OC SAN shall commence a closeout audit of the Agreement and will either:

i. Give the CONSULTANT a final Agreement Acceptance: or

ii. Advise the CONSULTANT in writing of any outstanding item or items which must be furnished, completed, or corrected at the CONSULTANT's cost.

CONSULTANT shall be required to provide adequate resources to fully support any administrative closeout efforts identified in this Agreement. Such support must be provided within the timeframe requested by OC SAN.

Notwithstanding the final Agreement Acceptance the CONSULTANT will not be relieved of its obligations hereunder, nor will the CONSULTANT be relieved of its obligations to complete any portions of the work, the non-completion of which were not disclosed to OC SAN (regardless of whether such nondisclosures were fraudulent, negligent, or otherwise); and the CONSULTANT shall remain obligated under all those provisions of the Agreement which expressly or by their nature extend beyond and survive final Agreement Acceptance.

Any failure by OC SAN to reject the work or to reject the CONSULTANT's request for final Agreement Acceptance as set forth above shall not be deemed to be acceptance of

the work by OC SAN for any purpose nor imply acceptance of, or agreement with, the CONSULTANT's request for final Agreement Acceptance.

27. CONSULTANT'S OPINION OF COSTS

OC SAN acknowledges that construction estimates, financial analyses and feasibility projections are subject to many influences including, but not limited to, price of labor and materials, unknown or latent conditions of existing equipment or structures, and time or quality of performance by third parties. OC SAN acknowledges that such influences may not be precisely forecasted and are beyond the control of CONSULTANT and that actual costs incurred may vary substantially from the estimates prepared by CONSULTANT. CONSULTANT does not warrant or guarantee the accuracy of construction or development cost estimates.

28. ENTIRE AGREEMENT

This Agreement constitutes the entire understanding and agreement between the Parties and supersedes all previous negotiations between them pertaining to the subject matter thereof.

IN WITNESS WHEREOF, this Agreement has been executed in the name of OC SAN and CONSULTANT by their respective duly authorized officers as of the day and year first written above.

CONSULTANT: HDR ENGINEERING, INC.

By _____ _____
Date

_____
Printed Name & Title

ORANGE COUNTY SANITATION DISTRICT

By _____ _____
Chad P. Wanke Date
Board Chairman

By _____ _____
Kelly A. Lore Date
Clerk of the Board

By _____ _____
Ruth Zintzun Date
Purchasing & Contracts Manager

Attachments: Attachment “A” – Scope of Work
Attachment “B” – Labor Hour Matrix
Attachment “C” – Not Attached
Attachment “D” – Allowable Direct Costs
Attachment “E” – Fee Proposal
Attachment “F” – Not Used
Attachment “G” – Not Attached
Attachment “H” – Not Used
Attachment “I” – Cost Matrix and Summary
Attachment “J” – Not Attached
Attachment “K” – Minor Subconsultant Hourly Rate Schedule
Attachment “L” – Contractor Safety Standards
Attachment “M” – Iran Contracting Act Verification

WC:yp

ATTACHMENT “A”

SCOPE OF WORK

ATTACHMENT "A"

SCOPE OF WORK

Activated Sludge-1 and Secondary Clarifier Rehabilitation Project No. P1-140

TABLE OF CONTENTS

1. PROJECT REQUIREMENTS

1.0 SUMMARY

1.0.1 PROFESSIONAL DESIGN ENGINEERING SERVICES

A. Provide professional design engineering services for the project described herein including the following:

1. Preliminary Design Report
2. Permitting assistance
3. Preparation of bid documents

1.0.2 PROFESSIONAL LICENSING REQUIREMENTS

A. All plans and specifications shall be prepared by a professional engineer licensed in the State of California of the associated discipline.

1.1 BACKGROUND

Orange County Sanitation District (OC SAN) owns and operates two wastewater treatment plants, Plant No. 1 in the City of Fountain Valley and Plant No. 2 in the City of Huntington Beach. Currently, OC SAN needs to extend the useful life of the existing Activated Sludge Facility No. 1 (AS-1) at Plant No. 1. AS-1 was originally constructed under Project P1-16 in 1973 and included a blower building, ten (10) aeration basins, and Secondary Clarifiers 1-14. In 1999, Project P1-36-2 increased the capacity of AS-1 from 46 MGD to 80 MGD by changing the diffusers in the aeration basins and adding Secondary Clarifiers 15-24. A major rehabilitation, Project P1-82 was completed in 2005 that converted AS-1 from BOD treatment to a nitrification / partial de-nitrification treatment, which comprised of changing diffusers, adding blowers, adding anoxic zones with mixers, baffles, and adding Secondary Clarifiers 25-26.

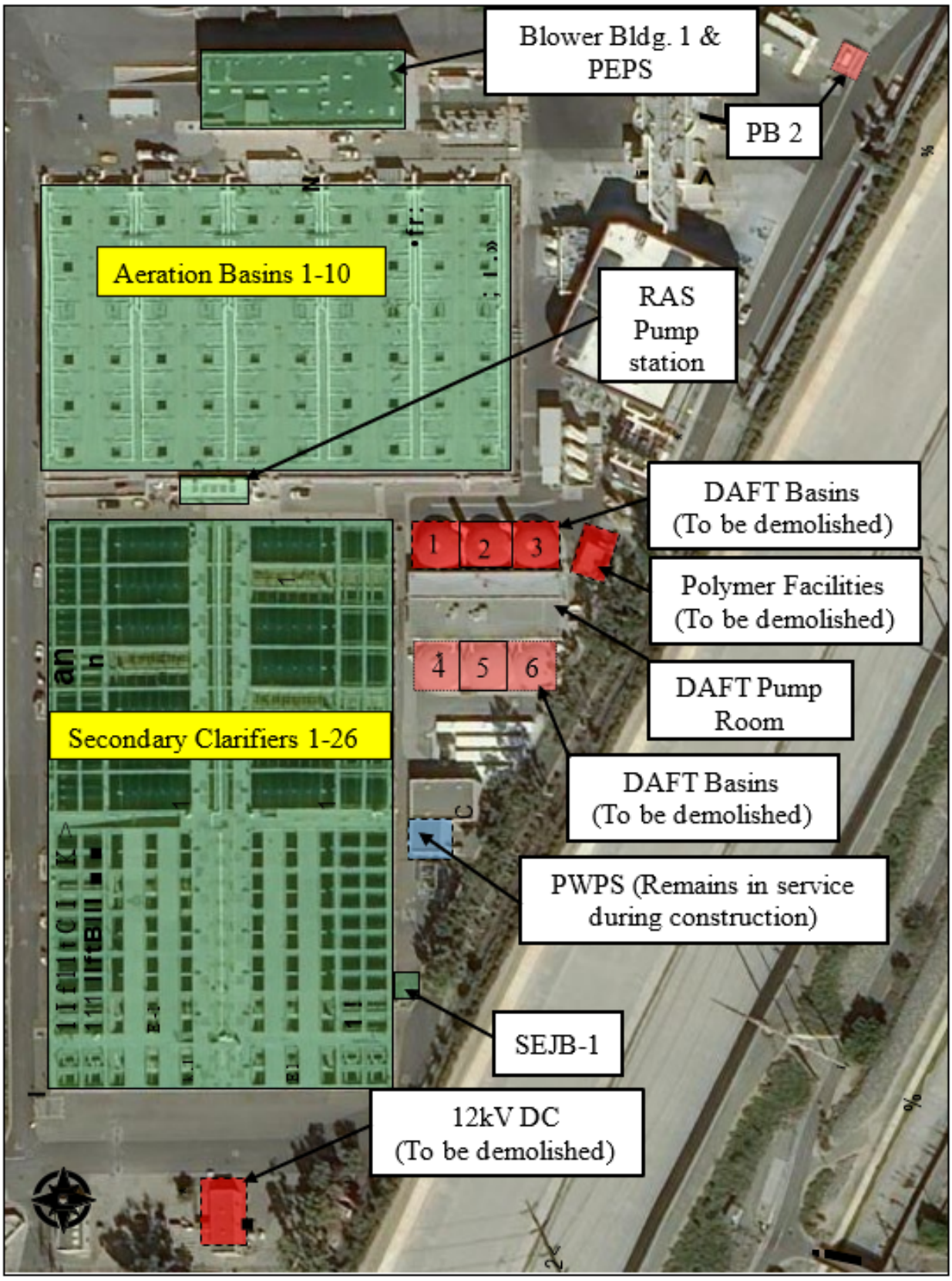
Multiple components of AS-1 are nearing end of useful life and require replacement or rehabilitation. Major mechanical equipment in the blower building, aeration basins and secondary clarifiers are also nearing end of useful life and requiring replacement; and all associated utilities are found to be in poor condition. Major mechanical and electrical equipment in the RAS Pump Station have reached the end of life and require replacement. Project P1-129 and FE 20-05 recently replaced RAS piping and plant water piping, and the Exhibit 19 will provide reference information for corresponding projects.

1.2 GENERAL PROJECT DESCRIPTION

This project entails demolition of multiple facilities, replacement of several major equipment items that are near the end of their useful lives, rehabilitation of large influent and effluent piping, replacement of air piping to the aeration basins, repair of the splitter boxes, and secondary clarifiers. This project intends to maintain the overall plant capacity. Figure 1 Project Site Layout below illustrates the general boundary and scope of this project.

During construction, the project will also require a temporary bypass system of secondary effluent to keep the Plant Water Pump Station in service, when AS-1 needs to be completely taken out of service to repair the splitter box. In addition, this project may require temporary bypass pumping and temporary electrical power supply to ensure minimum interruptions to the treatment processes. The construction period for this project is also expected to coincide with Project P1-126, Primary Sedimentation Basins No. 3-5 Replacement at Plant No. 1, and therefore, effective project coordination and communications between the two projects are critical.

Figure 1. Project Site Layout



1.3 PROJECT EXECUTION PHASES

All OC SAN projects are divided into six phases. CONSULTANT shall provide engineering services for all Project Elements listed in this Scope of Work for the following Phases:

Phase 1 – Project Development (Not in this Scope of Work)

Phase 2 – Preliminary Design

Phase 3 – Design

Phase 4 – Construction (Not in this Scope of Work)

Phase 5 – Commissioning (Not in this Scope of Work)

Phase 6 – Close Out (Not in this Scope of Work)

1.4 DESCRIPTION OF PROJECT ELEMENTS

1.4.1 PROJECT ELEMENT 1 – SEISMIC RETROFIT FOR THE PRIMARY EFFLUENT PUMP STATION (PEPS)/BLOWER BUILDING 1, RAS PUMP STATION, AND DAFT PUMP ROOM

Seismic retrofits to the buildings described in this project element are required. Project No. PS15-06, Seismic Evaluation of Structures at Plant No. 1 and Plant No. 2, provided structural analyses and evaluations of Primary Effluent Pump Station (PEPS), Blower Building, and Dissolved Air Floatation Thickeners (DAFT) pump room structures and this project will execute the retrofit activities.

The basis for the structural and geotechnical analysis performed as part of PS15-06 study was a planning-level assessment following the guidelines of ASCE41-13. A detailed analysis was not performed on each individual structure; instead, exemplar structures were identified that represented similar design and performance criteria that represented multiple structures. An analysis was performed on the exemplar structure and the results were judiciously applied to other representative structures to evaluate their performance during a seismic event. This element requires a detailed structural evaluation of the referenced building structures to validate structural deficiencies and appropriate retrofits and mitigation measures identified in PS15-06.

A. Blower Building 1/PEPS, which are connected to each other, shall be retrofitted. PS 15-06 will form the basis of seismic retrofit analysis.

B. Roofs for PEPS and Blower Building, DAFT pump room building shall be replaced, including metal decking and roof frames.

C. Return Activated Sludge (RAS) pump station shall be retrofitted per structural/seismic assessment performed by this project. PS 15-06 did not study this building in detail. This will need detailed seismic evaluation.

Assumptions for Level of Effort

For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding this project element:

A. Coordinate with P1-126 schedule for demolition of primary effluent pumps and their associated equipment prior to sequencing the retrofit design for PEPS building.

B. This project will not include measures to mitigate lateral spread.

1.4.2 PROJECT ELEMENT 2 – EQUIPMENT REHABILITATION IN BLOWER BUILDING 1/PEPS

The Blower Building 1/PEPS structure includes a Blower Room, a Blower Control Room, an electrical room with two (2) 800kW standby turbine generators, PEPS, and PEPS Electrical Room. The PEPS equipment and piping will be demolished by another project. The PEPS Electrical Room may be used for electrical equipment to support the phasing of the electrical equipment replacement. The Blower Building 1/PEPS equipment rehabilitation shall include the following:

A. Replace the existing 1,500 hp blowers (5 BACT aeration blowers), motor starter (soft starters or VFDs), 2-stage inlet filters, associated valves and appurtenances (vibration isolations, blow off silencer, discharge silencer, flow, pressure, temperature), and cabling. The blower motor starters shall be located in Blower Building 1 Electrical Room or the new PEPS room.

B. Rehabilitate existing equipment access hatches in the Blower Building. The following openings/hatches in the blower building will be replaced:.

   1. 1 opening in the blower room floor to the basement
   2. 6 openings in the PEPS motor room
   3. 2 openings on the blower building roof

C. Install air conditioning system in the existing and new electrical rooms.

D. Install air conditioning system for PEPS Room and PEPS Electrical Room to accommodate new regional UPS distribution system. Will verify adequate room for separate control room. If a separate control room new office LAN, Process LAN, and telephone will be required.

E. Replace the building air handling systems, including supply and exhaust fans and ducts system for entire building Roof vents will be replaced.

F. Relocate and replace the tunnels supply/exhaust system located in the PEPs building. In Tunnel 18, existing ductwork supplying the tunnels will remain unchanged and be reconnected.

G. Replace the electrical distribution equipment including the 12.47kV load interrupter switches, step-down transformers, transformer secondary protection, doubled-ended 4.16kV switchgear and 480V switchgear with automatic transfer schemes and 125VDC control power, Blower motor starters, and MCCs. Replace the 12kV feeder cables from Central Generation (Cen Gen). OCSAN prefers to have separate rooms for A and B side switchgears if space is available. However, preliminary review of the space does not seem possible. Scope assumed common space for switchgears. Will further investigate and coordinate with OCSAN during PDR.

H. Mitigate existing electrical and structural cable tray deficiencies in Blower Building 1/PEPS area identified under Project No. 5 and 6 in Project No. J-47, Cable Tray Improvements at Plant No. 1 Study. The deficiencies include non-compliant single conductors, grounding conductors, and structural supports. Further review of J-47, Project No.5 and 6 revealed extensive network of cable trays in the Blower Bldg 1/PEPS. Provide separate drawings for Tunnels Cable Tray and Power Plans and Tunnels Lighting Plans.

I. Mitigate existing electrical and structural cable tray deficiencies in Tunnels 16 and 17, located adjacent to the Truck Loading Facility and Power Building No. 2, identified under Project No. 4 in Project No. J-47, Cable Tray Improvements at Plant No. 1 Study. The deficiencies include non-compliant single conductors and structural supports. P1-101 has already addressed the inadequate tray covers and grounding conductors. There are

several small non-compliant single conductors that are routed through these tunnels from Tunnel 18 (located on the east side of the aeration basin) and Power Building 2 that need to be traced and replaced. Provide separate drawings for Tunnels Cable Tray and Power Plans and Tunnels Lighting Plans.

J. Replace the standby power system (turbine generators – to be demolished with this project) with a standby power distribution feed from the Headworks Standby Power Facility (Project P1- 105), which consists of four 2.5 megawatt (MW), 12kV generators. The standby power distribution system shall include a 12.47kV feeder from a spare breaker in the Headworks Standby Power Facility, a 12kV duct bank, a 12.47kV-480V step-down transformer, 480V standby power switchgear, and 480V power distribution from the Blower Building 1 to the Thickening and Dewatering (T&D) Building (MCC-SHG), the Plant Water Pump Station Building, Bleach Station, and Headworks Standby Power Building, Blower Bldg 2, and Power Bldg 6. Assumed 12kV switchgears and generators at Headworks Standby Power Facility have sufficient capacity to feed Blower Building 1. Load studies performed under P1-105.

K. Power existing 480V MCC-SHH located in the Truck Loading Facility from the T&D Building instead of Power Building 2, to allow for the demolition of Power Building 2. This feed shall be powered from a normal and standby power source via an automatic transfer switch (ATS) located at T&D Building.

L. Install new regional, three-phase, 480V industrial uninterruptable power supply (UPS) system in the Blower Building 1 (PEPS Room and PEPS Electrical Room) with a 480V main power distribution panel, new power distribution units (PDU) located throughout the project area. The UPS will be sized for 80% demand factor of connected UPS loads located in the Blower Building 1 and all adjacent facilities with 25 percent spare capacity for future loads. Coordinate with OC SAN to install 30-day power monitoring units at each of the facility to monitor existing UPS operating load requirements. Localized PDU will consist of an integral 480-208Y/120V, 3- phase panelboard with a surge protective device (SPD), and automatic transfer switch (ATS). Batteries associated with the switchgear and the UPS shall be in a separate battery room within the building. PDU will be provided in the following locations:

    1. One for RAS Pump Station
    2. One for Plant Water Pump Station
    3. One for Blower Building 2
    4. One for DAFT Building
    5. One for AS2 Secondary Clarifier Electrical Room
    6. One for Power Building 9

M. Integration of new electrical distribution system into existing Load Shedding System and Substation LAN, and into existing Standby Power configuration and restart sequencing. Existing Blower Load Shedding I/O will be replaced with I/O from the new Blowers. A new Substation LAN RIO will monitor the new electrical I/O. The existing Substation LAN will be used to monitor the new electrical points.

N. Replace existing control system with an ABB control system using OC SAN supplied standard drawings and specifications. Replace the PLC/RIO cabinets. The existing SAT database will determine all I/O points to be replaced. A new SAT database will be used for the ABB control system. The PLC/RIO cabinets shall be in the Blower Building 1 Control Room new Control Room or the electrical room.. Redundant ABB controllers will be used to control and monitor the Blower process area.

O. Replace existing interior lighting and emergency lighting systems. Some of the lights in the Blower Room and the Blower Building Electrical/Turbine Generator Room were recently replaced with high bay LED lights. Provide additional exterior pole-mounted

lighting by out electrical equipment (transformers). The wall-mounted exterior lighting was recently replaced with LED lights. Provide additional lighting (interior and exterior) as required to comply with Engineering Design Guidelines. Assess and replace lighting in tunnel 18, 19, and 25. Tunnel lighting not included in original assumptions.

P. Replace public address system and fire alarm system per PS21-02, Public Announcement and Fire System at Plant 1 and 2 (PS21-02 is expected to be completed by November 2023). It is assumed PS21-02 will specify system, Project P1-140 incorporate recommendations from PS21-02 into design. Newer LED lights were installed in some areas by internal OC SAN maintenance staff. Design to review and rehab/replace as required. Assumed technical requirements/specification(s) of PA and Fire Alarm System will be provided by OC SAN/PS21-02. P1-140 will shows location/wiring of PA and Fire Alarm System on plans.

Q. Replace Blower Building 1 soundproofing as needed. Noise study and model will be performed in DS1 including recommendations to improve noise control in the Blower Room and the new repurposed electrical areas.

R. Replace Blower Building 1 and PEPS building doors as needed. During PDR will identify which doors to replace.

S. Replace Blower Building and PEPS signage as needed.

T. The Blower control system will use PLCs designed and programmed to OC San design standards. The Blower supplier will generate the SAT database.

U. Bentley Nevada Vibration equipment will be used to monitor the Blowers. These signals will be tied to an overall plant vibration monitoring system.

V. Existing baseline P&IDs will be used to produce the Demo P&ID drawings. New equipment will be shown on new P&IDS using ABB DCS control system programming blocks except for the Blowers which will use PLC programing blocks. A network diagram is required to show how the PLC connected to the ABB which will also be used as SCADA. The connection may be via a Gateway. Important alarms in the PLC will be reporting on the ABB

W. To prevent duplicate tag numbers in the SCADA system new tag number blocks will be supplied for all new equipment.

X. Specialty Safety Systems and CCTV will not be added in the Blower area (Post meeting note deleted from scope 10/6)

Y. Plant water piping within the blower room will be replaced as needed to service the new blowers. We will not replace the existing 4 and 6-inch PW main to the blower room .

Z. Plant water pipe in Tunnel 25 will be replaced from theinteresection of Tunnesl 25 and 18 to the end of Tunnel 25. Plant water piping extending outside of Tunnel 25 will not be replaced.

AA. Drain pipes in the blower room and the new repurposed areas will be looked at. Existing drain pipe main, buried will not be redesigned .

BB. Utilities serving the new blowers; e.g hot water, potable water will be redesigned. The main supply lines inside the blower room and blower building basementwill not be redesigned.

CC. LOE for the air header replacement is based on replacement in kind option, replacement in the basement and buried.

DD. No change to instrument air piping and air compressor in blower building basement

EE. The blower building basement sump pumps will be replaced. Extent of change will be identified during the PDR.

Assumptions for Level of Effort

For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding this project element:

A. High pressure air compressor and associated piping in the Blower Building 1 basement is not part of this scope.

B. Two blowers shall remain in service during construction as long as the AS-1 Plant is in service.

C. Incorporate recommendations from PS 21-04 (Energy and Digester Gas Master Plan) in the electrical distribution system once the Master Plan is completed. PS21-04 will develop new load shedding, standby power configuration, and standby power restart sequencing recommendations.

D. New switchgears and MCCs shall be arc-rated with the required arc blast exhaust ducting. Arc-blast ductwork from arc-resistant low voltage switchgear and MCCs will exhaust inside the room as permitted by manufacturer's space requirements. Arc-blast ductwork from arc-resistant medium voltage switchgear shall be routed out of the building and/or electrical rooms to locations that are deemed safe for personnel and avoid hazardous conditions. The substation type transformers shall be located outside of the building. ARC resistant MCCs with retractable tabs to pull out the bucket by O&M will be included.

E. If appropriate, new air piping layout(s) to supply air to the diffusers may be considered.

F. Maintain power and control to existing equipment needed for treatment process, including temporary wiring as needed.

1.4.3 PROJECT ELEMENT 3 – AERATION BASINS REPAIR AND REPLACEMENT

The aeration basins process modifications and rehabilitation shall include the following:

A. Repair concrete spalling and critical cracks. Results will be extrapolated to the other basins.

B. Replace exhaust air fans (4) and air ducts that are extracting the aeration basin surface air.

C. Replace all covers and equipment hatches.

D. Repair PVC liner on the splitter box (52 ft long x 17 ft wide x 12 ft deep).

E. Rehabilitate influent channel (460 ft) and effluent channel (460 ft), and step feed channels (5 channels x 200 ft).

F. Rehabilitate two (2) RAS splitter boxes (25ft x 25ft x 5ft).

G. Replace wooden baffles. Includes evaluation with baffle material alternatives and may relocate.

H. Replace all air piping between the blowers and air diffusers, including the common air plenum/header.

I. Replace all plant water and step feed piping within the Aeration Basins.

J. Replace 2 sets of coarse bubble diffusers (total 100) in aeration basin zone 1A and 1B.

K. Replace all diffusers, including 16/64-inch LP type fine bubble diffusers (total of 864 in each zone) in aeration basin zones 2A-10B. Includes evaluation.

L. Replace air flow meters and butterfly valves.

M. Replace effluent channel air piping.

N. Replace the exhaust fans for the aeration basins surface foul air. Assume passive stack design, if necessary.

O. Replace all sodium hypochlorite pipes that are serving east and west aeration basins , RAS and secondary clarifiers to the associated chemical pumps. Sodium hypochlorite piping serving SEJB7 and SEJB6 will be replaced within Tunnel 28 with isolation valve and flange.

P. Replace anoxic zone mixers as appropriate for the larger and/or new anoxic zones.

Q. Provide and install MLR pumps and associated valves and piping.

R. Replace all gates associated with RAS splitter box, influent splitter box, inter-basin equalization, basins and effluent gates. There are approximately ten (10) gates at the splitter boxes that require height adjustments based on the upstream hydraulic grade line.

S. Replace all drain valves and stems.

T. Replace general lighting and emergency lighting. Lighting design will be required to confirm if existing location/lighting design is sufficient. Title 24 forms are not required, typical for all lighting design.

U. Replace existing PLC control system with an ABB control system using OC San supplied standard drawings and specifications. The existing SAT database will determine all I/O points to be replaced. A new SAT database will be used for the ABB control system.

V. Replace dissolved oxygen instruments/panels using standard OC San DO installation drawings standard drawings and specifications.

W. Provide and install new ammonia and nitrate instruments.

X. Replace existing wiring for new or replacement equipment. Existing raceway will be used. Condition assessment of existing raceway will not be provided. However, if we document visual damage to the existing exposed and accessible raceways, replacement will be provided.

Y. Mitigate existing electrical and structural cable tray deficiencies in Aeration Basins area identified under Project No. 5 and 6 in Project No. J-47, Cable Tray Improvements at Plant No. 1 Study. The deficiencies include non-compliant single conductors, grounding conductors, and structural supports.

Z. Existing baseline P&IDs will be used to produce the Demo P&ID drawings. New equipment will be shown on new P&IDS using ABB control system programming blocks.

AA. To prevent duplicate tag numbers in the SCADA system new tag number blocks will be supplied for all new equipment.

BB. Specialty Safety Systems and closed circuit television (CCTV) will not be added in the Aeration Basin area. (Post meeting note deleted from scope 10/6)

CC. Replace public address system and fire alarm system per PS21-02, Public Announcement and Fire System at Plant 1 and 2 (PS21-02 is expected to be completed by November 2023) OCSAN to provide additional direction on scope of PS21-02 will provide. Use standard specs for the equipment.

Assumptions for Level of Effort

For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding this project element:

A. Maintain power and control to existing equipment needed for treatment process, including temporary wiring as needed.

B. Some RAS pumps shall remain in service during construction, and temporary power will be required.

C. Preliminary assumptions for MLR pumps quantity, capacity, and pipe sizes will be based on the PS21-03 modeling results and recommended alternatives to be incorporated as part of this project.

D. Provide required aeration basins modifications, along with installation of new air diffusers, to accommodate the mixed liquor return to improve denitrification process. The baffle materials, redwood vs FRP vs concrete, will be evaluated during the preliminary design phase.

E. Assume10% of the concrete surface area is required to be repaired for spalls and cracks for all aeration basins (each basin is 300 ft long x 44 ft wide x 20 ft deep). Concrete condition assessment will be required for the aeration basins. A minimum of two aeration basins shall be assessed. Assume four (4) core samples from each basin shall be taken.

1.4.4 PROJECT ELEMENT 4 – SECONDARY CLARIFIER REHABILITATION

The secondary clarifiers rehabilitation shall include thefollowing:

A. Repair damaged and corroded concrete

B. Install a platform with guardrails and a swing gate at each clarifier for safe access and exit using a ladder from the clarifier.

C. Replace guardrails as needed, including protections for water intrusion at post hole. During PDR will identify which guardrails to replace.

D. Replace in kind collector systems including motors, gearboxes, non-metallic chains and FRP flights for all 26 clarifiers. Replace in kind the cross collector.

E. Replace in kind vertical (5 ft deep) inlet baffles at each clarifier. During PDR baffle material selection evaluation will be conducted. No condition assessment of the baffles is included. Design efflorts includes in-kind replacement of the inlet baffles. Rehabilitate launders and weirs. Each clarifier has four (4) launders. Will assess the polymer concrete launders. Will replace the weirs. Transverse launders are only installed in 1, 3, 5, 7, 9, 11, 13, 25, 26. These clarifiers have four transverse launders and two longitudinal effluent. Longitudinal launders are in clarifiers 2, 4, 6, 8, 10, 12, 14-24

F. Replace in kind plant water spray system and associated devices.

G. Replace in kind all exposed plant water piping. Main PW trunks in Tunnels 21, 22, 23 (6-inch loop) will not be replaced.

H. Replace scum system. Scum removal system consists of a scum trough with an effluent channel, sludge collector flights, flight guides, transverse collector system with a sludge hopper, influent channel, RAS channel, scum baffle walls, scum piping, scum valves, and valve controls. Scum weir and gate will be replaced in kind.

I. Replace in kind bubbler system(s) located in the inlet and discharge channels. Update instruments to latest available.

J. Replace four (4) Waste Activated Sludge (WAS) pumps and VFDs.

K. Replace in kind 12-inch suction pipe (100LF) from RAS wet well to WAS pump. Replace WAS discharge pping complete with valves, appurtunences and flow meter. Replace general, tunnel, and emergency lighting.

L. Replace existing wiring for new or replacement equipment.

M. Mitigate existing electrical and structural cable tray deficiencies in Secondary Clarifier and DAFT area identified under Project No. 5 and 6 in Project No. J-47, Cable Tray Improvements at Plant No. 1 Study. The deficiencies include but not limited to non-compliant single conductors, grounding conductors, and structural supports.

N. Replace public address system and fire alarm system both in DAFTs facility and secondary clarifiers area. Per PS21-02, Public Announcement and Fire System at Plant 1 and 2. (PS21-02 is expected to be completed by November 2023). OCSAN to provide additional direction on scope of PS21-02 will provide. Use standard specs for the equipment.

O. The electrical system for the secondary clarifiers and the DAFTs are located in the DAFT Electrical Room. Replace the existing 12kV load interrupter switches, substation transformers, 480V switchgear and motor control centers.

P. Replace existing PLC control system with an ABB control system using OC San supplied standard drawings and specifications. The existing SAT database will determine all I/O points to be replaced. A new SAT database will be used for the ABB control system.

Assumptions for Level of Effort

For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding this project element:

A. 26 clarifiers require 10% of the concrete surface area to be repaired for spalls and cracks. Each clarifier is 150 ft long x 40 ft wide x 10 ft deep. Concrete condition assessment is required for the secondary clarifiers. A minimum of six secondary clarifiers shall be assessed. Assume four (4) core samples from each basin shall be taken.

B. 15% of existing guardrails require replacement. CONSULTANT shall assess condition of all guardrails.

C. Maintain power and control to existing equipment needed for treatment process, including temporary wiring as needed.

D. New switchgears and MCCs shall be arc-rated with the required arc blast exhaust ducting. Arc-blast ductwork from arc-resistant low voltage switchgear and MCCs will exhaust inside the room as permitted by manufacturer's space requirements.

E. Provided new seal water station

F. Replace 12-inch BFV and 16-inch knife gate on the RAS line to each clarifier. Piping to be protected in place.

1.4.5 PROJECT ELEMENT 5 – RETURN ACTIVATED SLUDGE (RAS) PUMP STATION

The RAS Pump Station rehabilitation shall include the following:

A. Repair concrete for spalling and cracks including RAS wetwell.

B. Replace in-kind (same size) five (5) equipment hatches on the PS roof.

C. Replace guardrails within the pump station.

D. Replace five (5) variable speed RAS pumps, 200 HP each. The existing VFDs and motor feeder cables were recently replaced under FE15-07 and P1-129 respectively (to protect in place). Reuse existing vibration monitoring equipment.

E. Replace three (3) drain pumps, 10 HP each suction and discharge piping, valves and appurtenances need to be replaced. Newseal water station will be provided.

F. Replace 24-inch flanged butterfly valves (4 per pump). Site visit on 10/19/2022 confirmed a single 24-inch BFV per RAS pump. The 24-inch discharge valve will be replaced (1 per pump).

G. Replace 24-inch check valves (1 per pump).

H. Install two (2) new 7500 CFM and one (1) new 1100 CFM roof exhaust ventilators. Replace 4-inch magnetic flowmeters (1 per RAS pump).

I. Replace 42-inch FM from the RAS/WAS box to the RAS Wetwell including valves.

J. Replace existing MCCs and automatic transfer switch. These items are located in the RAS motor room. During PDR, evaluate relocation of the MCCs and ATS to the DAFT electrical room.

K. Install new VFD's for each drain pump.

L. Replace public address system and fire alarm system Per PS21-02, Public Announcement and Fire System at Plant 1 and 2 (PS21-02 is expected to be completed by November 2023). OCSAN to provide additional direction on scope of PS21-02 will provide. Use standard specs for the equipment.

M. Replace general and emergency lighting.

N. Replace existing control system with an ABB control system using OC San supplied standard drawings and specifications. The existing SAT database will determine all I/O points to be replaced. A new SAT database will be used for the ABB control system.

O. Replace in kind bubblers at east and west wet wells. Update instruments to latest available.

P. Replace 20-inch RAS piping from RAS splitter box to Aeration Basins 1-10 and all the RAS pump suction piping with associated BFVs.

Q. Replace all RAS Pump Station doors and signage as needed.

R. Replace existing wiring for new or replacement equipment

S. Mitigate existing electrical and structural cable tray deficiencies in the RAS Pump Station area identified under Project No. 5 and 6 in Project No. J-47, Cable Tray Improvements at Plant No. 1 Study. The deficiencies include non-compliant single conductors, grounding conductors, and structural supports.

T. Determine relocation of electrical equipment in the RAS pump station to the DAFT electrical room.

Assumptions for Level of Effort

For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding this project element:

A. 10% of surface area requires concrete repair for spalls and cracks. Concrete condition assessment is required for the RAS Pump Station. Assume four (4) core samples from the RAS pump station shall be taken.

B. The discharge piping and valves were replaced under Project P1-129.

C. New MCCs will be arc-rated with the required arc blast exhaust ducting. Arc-blast ductwork from arc-resistant MCCs will exhaust inside the room as permitted by manufacturer's space requirements.

1.4.6 PROJECT ELEMENT 6 – YARD PIPING

Yard piping work shall include the following:

A. Connect new primary effluent conveyance piping to the east side of the aeration basin influent splitter box. See **Exhibit 19 – Reference Materials** for the project delineation for the connection installation. Coordinate scope with P1-126.

B. Repair 90-inch RCP and 72-inch RCP that convey primary effluent from Primary Effluent Junction Box 2 (PEDB 2) to the west side of the influent splitter box. Replace flowmeter and decide in PDR need to provide stair access for calibration.

C. Replace 72-inch butterfly valve and influent meter on the west side of the splitter box. Replace 48-inch and 72-inch from butterfly isolation valves to the east side of the influent splitter box.

D. Replace 72-inch butterfly valves and 90-inch influent meter on the east side of the splitter box. Provide new sump pump complete with valves and drain piping. Routing of the drain pipe will be evaluated during PDR with the options of discharging to the PEDB2 or AS1 Influent splitter box. Power for the new sump pump will be provided from either Blower Building 1 or PEDB2. Sump pump controls will be integrated into the DCS system.

E. Rehabilitate 84-inch Secondary Effluent piping from SEJB 1 to SEJB.

Assumptions for Level of Effort

For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding this project element:

A. Another project will install the primary effluent conveyance piping. Coordination effort is required for connection of the primary effluent piping to the influent splitter box.

B. Another project will demolish trickling filter effluent piping to PEPS, and coordination effort is required by this project.Based on the as built drawings, a 42-inch diameter and 4-feet deep sump exists in the 90-inch PE metering vault.

1.4.7 PROJECT ELEMENT 7 – DEMOLITION

In general, this project will demolish all equipment that has been replaced, as well as equipment and utilities that have been abandoned or decommissioned within the project scope. The following equipment/facilities are some of the major demolitions in this project.

A. Two (2) turbine engine generators including underground fuel storage tank, and associated cabling and power distribution equipment in the Blower Building 1. OCSan confirmed tank to be removed from ground. We have accounted for groundwater pumping tests. However, if UFST is to be removed we have presented optional task of two soil bores up to 30 feet depth to profile the soil surrounding the UFST. Soil sample will be screened for VOCs and Hydrocarbons. Groundwater samples will be collected from the boreholes and tested for VOCs and total petroleum hydrocarbons. Alternatively, OCSAN can provide environmental test reports that HDR can use to develop specs for handling hazardous waste materials and procedures f or contractor to remove tank from ground. Optional geotechnical and environmental assessment will be included in the scope.

B. Six (6) DAFT structures and their associated equipment. The DAFT structures are proposed to be demolished to six feet below grade.

C. DAFT foul air scrubbers and associated foundation. Verify abandoning/demolishing the duct banks. Demolish all equipment, structure including containment wall- 3 feet below grade, regrading and repaving including drainage.

D. Existing DAFT electrical equipment in the electrical room, control room, and basement that are no longer needed. OCSAN to provide assistance to identify equipment that are no longer needed.

E. Abandoned DAFT equipment within the DAFT basement.

F. Polymer facilities and their associated equipment. Demolish all equipment, structure including containment wall 3 feet below grade, regrading and repaving including drainage.

G. 12kV Power Distribution Center (southeast corner of Plant No. 1 at Garfield Ave) that has been decommissioned. Demolish all equipment, structure - 3 feet below grade, regrading and repaving including drainage.

H. Power Building 2 and associated equipment including:

    1. All electrical equipment (medium- and low-voltage switchgears, low voltage MCC, transformers, PLC cabinets, fiber), conduit, and cabling. Refeed any existing loads, such as loads in tunnels, from another source. Reroute fiber as required.
    2. Diesel standby generator, fuel storage tank(s), and associated appurtenances.
    3. Existing 12kV ductbanks and pull boxes north and east of PB2 shall be protected in place.

I. Abandoned 480V MCC located in Tunnel 25 (east-end). Also demolish associated exposed circuits.

J. PB2 is feeding MCC SL. This will be fed from TD building. This is the only active item- everything else is de-energized.

Assumptions for Level of Effort

For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding this project element:

A. 10-inch Thickened Waste Activated Sludge Piping from DAFT Facility to Digester 15-16 Pump Room (Includes Tunnels 16, 17,18, 20, and 21)

B. 12-inch Waste Activated Sludge Piping in Tunnel 21 to DAFT Facility

C. Demolition activities may not happen at the same time and shall be properly sequenced.

D. All active utilities shall remain in service and be protected-in-place.

E. The entire polymer facility, Power Building 2, and 12kV Power Distribution Center (at Garfield Ave) will be demolished.

F. CONSULTANT shall be required to take inventory of equipment to be demolished within the DAFT pump room, which has a basement.

G. CONSULTANT shall be required to take inventory of all utilities that support facilities being demolished.

H. OC SAN will provide a hazardous materials evaluation during preliminary design. OC SAN has previously identified asbestos and lead in these structures.

1.4.8 PROJECT ELEMENT 8 – SITE GRADING AND DRAINAGE IMPROVEMENT

Provide grading and storm drainage improvement for all demolished facilities, such as DAFTs, polymer facility, Power Building 2, and 12 kV Distribution Center per this SOW. Provide site and perimeter lighting for the improved areas. See Figure 1 for the facilities to be demolished.

1.4.9 TEMPORARY FACILITIES DURING CONSTRUCTION

In certain cases, construction sequencing constraints may require the contractor to construct a temporary facility to be used during a certain portion of the construction period. CONSULTANT shall identify in what instances such facilities are required or reasonably warranted and present those instances with designs, implementation plans and construction sequencing constraints to OC SAN for consideration. When such facilities are found to be either required or reasonably warranted, CONSULTANT shall provide sufficiently detailed drawings and specifications to be included in the Bid Documents that bidders understand what is required to provide and potentially operate the temporary facilities, and that the reliability and performance of the facilities will meet OC SAN's needs and reasonably mitigate construction risks. Some of the major temporary systems and/or facilities include:

A. A temporary bypass system to supply secondary effluent to the existing Plant Water Pump Station from a different source, which shall remain in service during construction.

B. Temporary standby power to accommodate the transfer of electrical loads from existing electrical equipment to new electrical equipment, and the phasing of the electrical system from the existing standby power electrical distribution equipment and synchronizing controls to the new synchronizing switchgear.

C. Bypass pumping system to rehabilitate process structures such as splitter boxes, and piping repairs.

D. Temporary air piping and electrical conduits to phase the replacement of the utilities in the tunnels.

E. Temporary power and controls for all equipment that needs to be operational during construction.

F. Temporary power to Compressed Natural Gas (CNG) Station located adjacent to PEPS-1 Building. CNG Station is powered from MCC-NGV located in Blower Building 1.

G. Temporary bypass pumping up to 10 mgd to 4 aeration basins to facilitate manned entry assessment of the 90-inch PE pipeline and the AS-1 influent splitter box.

1.4.10 COORDINATION WITH OTHER PROJECTS

The following projects may impact or require coordination with this project. The CONSULTANT shall coordinate with each project and incorporate work restrictions and requirements in the design documents.

A. **FE 20-05, Plant Water Piping Replacement at Secondary Clarifiers 1-26 at Plant 1.** This project will remove and replace the existing buried 6-inch plant water pipe around the Secondary Clarifiers Nos. 1-26 at Plant 1. The replacement will be completed by 2024.

B. **P1-105, Headworks Rehabilitation at Plant No. 1.** This project will rehabilitate and upgrade Plant 1 Headworks. Major facilities to be rehabilitated include the Metering and Diversion Structure, the Bar Screen Building, the Bin Loading Building, the Main Sewage Pump Station, the Grit Basins, the Primary Influent channels, the Headworks Odor Control Scrubbers, and electrical power distribution and control systems. New structures to be constructed include Grit Pump Station, Grit Handling Building, Headworks Odor Control Facility, Electrical Buildings, and other support systems.

C. **P1-126, Primary Sedimentation Basins No. 3-5 Replacement at Plant No. 1.** This project will replace Primary Sedimentation Basins (PSB) 3-5 and all associated facilities including distribution boxes, junction boxes, primary influent and effluent lines, structural, mechanical, and electrical systems. PSBs 3-5 will be raised to allow gravity flow to secondary treatment. The project will demolish PSBs 1 and 2, PEPS equipment, and the old control center building.

D. **PS21-04, Energy and Digester Gas Master Plan.** This project will conduct an engineering study to determine a long-term roadmap for OC San's biogas usage, electrical power and infrastructure needs, standby power supply and policy for NPDES permit compliance, and the energy resiliency and independence strategy.

E. **PS21-02, Public Announcement and Fire System at Plant 1 and 2.** This study will provide alternatives and make a recommendation to update the Fire Alarm (FA) system, Public Announcement (PA) systems, and a Tsunami notification siren system.

1.5 DESIGN CONSIDERATIONS

The following design considerations shall be carried from Preliminary Design through Final Design.

1.5.1 TECHNOLOGY AND CONFIGURATION CHOICES

The project elements in this facility shall be achieved using proven technologies. Alternative means of accomplishing the project elements must be reviewed and accepted by OC SAN prior to detailed evaluation. All alternative technologies proposed should be currently operating in other wastewater treatment facilities of similar capacity.

1.5.2 DESIGN DECISIONS

Design decisions shall be agreed upon by OC SAN prior to any work being performed by the CONSULTANT in preliminary and detailed design. All design decisions shall be documented.

1.5.3 DESIGN SELECTION CRITERIA

A. Design selection shall consider construction, lifecycle, operation, and maintenance costs as well as process benefits and overall quality. When design recommendations are presented to OC SAN, the design selection criteria shall be clearly identified with the recommendation.

B. The cost estimate shall consist of a life cycle cost analysis for the options proposed, including costs for engineering, construction, start-up, and operational and maintenance, and future rehabilitation and replacement.

C. The construction cost estimate shall be as described in Engineering Design Guidelines Section 01.4.6 included as **Exhibit 17 – OCSD Engineering Design Guidelines and Standards – Available online at https://www.ocsd.com/about-us/transparency/document- central/-folder-917.**

1.5.4 PROJECT ELEMENT DESCRIPTION REVISIONS

CONSULTANT shall review and revise the Project Element Descriptions using track changes at the end of Preliminary Design and at each design submittal. Changes shall be submitted to OC SAN for review.

1.5.5 COST MODEL

A. CONSULTANT shall prepare the cost model to be used to demonstrate the true cost of major project decisions. With each major project decision, the CONSULTANT shall review and update the cost model. The cost model shall be a living document between the CONSULTANT and OC SAN to ensure that all changes are being acknowledged in the overall project cost.

B. The cost model shall show the implications of the decisions on the life cycle costs and shall be used in the decision-making process. After decisions are made, the updated construction costs, and life cycle costs, shall be submitted for project records.

C. The cost model shall be used to track project changes through final design.

The construction cost estimate shall be as described in Engineering Design Guidelines Section 01.4.6 included as **Exhibit 17 – OCSD Engineering Design Guidelines and Standards– Available online at https://www.ocsd.com/about-us/transparency/document-central/- folder-917.**

1.6 PROJECT SCHEDULE

1.6.1 GENERAL

A. The table below lists the time frames associated with each major project deliverable and with OC SAN′s review and approval of those deliverables. CONSULTANT shall comply with the deadlines indicated in that table.

B. The OC SAN′s Project Manager will issue an Administrative Notice to Proceed (NTP) that will authorize CONSULTANT to begin preparation of the Project Management Plan (PMP). The Administrative NTP does not authorize costs to be incurred for execution of the technical portion of the Work, except where specifically noted in the Administrative NTP.

C. Following OC SAN′s acceptance of the PMP, OC SAN′s Project Manager will issue a Preliminary Design NTP. OC SAN′s Project Manager will also issue a Final Design NTP upon OC SAN′s acceptance of the final Preliminary Design Report.

D. The time frames specified below are used to estimate the actual milestone dates based on the assumed NTP date, as shown in **Exhibit 8 – Project Schedule Calculation.**

E. OC SAN will consider an alternative CONSULTANT-proposed schedule provided it is consistent with OC SAN resources and schedule constraints and adds value to OC SAN.

PROJECT MILESTONE AND DEADLINES	
MILESTONE	**DEADLINE**
Submit Project Management Plan (PMP)	10 workdays from Administrative NTP.
OC SAN Review of PMP	5 working days from receipt of PMP. If the PMP is sufficient, the OC SAN PM will set the date for the Kickoff Meeting. In any case, CONSULTANT shall issue a revised PMP within 5 working days of receipt of OC SAN's comments for OC SAN approval.
Kickoff Meeting	The kickoff meeting will be scheduled to coincide with the Preliminary Design NTP.
Preliminary Design NTP	
Submit draft Preliminary Design Report (PDR)	260 workdays from the Preliminary Design NTP. CONSULTANT shall establish a schedule with the OC SAN PM for separately submitting working drafts of each Design Memo for OC SAN review prior to completing the draft PDR. This schedule shall factor in the logical sequence for completing the memos as well as both CONSULTANT
OC SAN Review of draft PDR	20 workdays from receipt of Draft PDR.
Submit final Preliminary Design Report	60 workdays from receipt of OC SAN comments on Draft PDR.
Final Design NTP	CONSULTANT's schedule shall allow 20 working days from submittal of the final PDR to receipt of the Design Phase NTP.
Submit Design Submittal 1 (DS1)	100 workdays from Design Phase NTP.
OC SAN Review of DS1	20 workdays from receipt of DS1.
Submit Design Submittal 2 (DS2)	120 workdays from receipt of OC SAN comments on DS1.
OC SAN Review of DS2	20 workdays from receipt of DS2.
Submit Design Submittal 3 (DS3)	140 workdays from receipt of OC SAN comments on DS2.
OC SAN Review of DS3	25 workdays from receipt of DS3.
Submit Final Design Submittal (FDS)	60 workdays from receipt of OC SAN comments on DS3. CONSULTANT shall stop work upon submission of DS3, except as required to participate in OC SAN meetings, until receipt of OC SAN comments on DS3.
OC SAN Review of FDS	20 workdays from receipt of FDS
Final Technical Specifications and Plans	20 workdays from receipt of OC SAN comments on FDS.

2. PHASE 2 – PRELIMINARY DESIGN

The preliminary design phase will define the project. The final deliverable of this phase will be a Preliminary Design Report (PDR) with the basis of design for all elements of the project.

2.0 PRELIMINARY DESIGN EXECUTION

2.0.1 MAJOR DECISIONS

A. The CONSULTANT shall plan the resolution of major decisions through the following process:
    1. Identify major decisions early and the timing required to prevent impacts to the project schedule.
    2. Identity the decision-making method that will be used to gain OC SAN concurrence and provide appropriate opportunities for OC SAN provide input.
    3. Identify and schedule at the start of the project the workshops, technical design meetings and focused meetings where major decisions will be made and include a list of required attendees.

B. These decisions should be tracked on the Decision Log and flagged as a major decision.

2.1 PRELIMINARY DESIGN PRODUCTION

2.1.1 GENERAL

Preliminary Design Report (PDR) production involves the preparation of design memos, drawings, calculations, and other supporting material resulting in the PDR.

2.1.2 DESIGN MEMOS

A. The CONSULTANT shall produce Design Memos as indicated below in accordance with **Exhibit 1 - Preliminary Design Report Requirements.** The CONSULTANT shall discuss the combining of design memos with OC SAN and develop a design memo submittal list.

☒**Process Design Configuration**

☒Design Configuration

☒Redundancy

☐Monitoring and Sampling

☒Process Flow Diagrams

☒Operating Philosophies

☒Site and Facility Layouts

☒Preliminary Load Criticality Ranking Table

☒**Hydraulic Analysis**

☒Hydraulic Analysis

☒Hydraulic Profile

☒**Demolition**

☒Describe Demolition Requirements

☒Demolition List

☒Demolition Plans

☒Demo EID

☒**Rehabilitation Requirements**

☒**Geotechnical Data Report**

☒Review of Existing Data - Preliminary Geotechnical Report

☐Geotechnical Data Report And Recommendations

☒**Civil Design Parameters**

☒General Civil

☒Drainage Requirements

☒Corrosion Protection Requirements

☒**Utility Requirements**

☒**Structural Design Parameters**

☐**Architectural Design Parameters**

Note: Develop up to [three] alternative concepts for review and acceptance

☒ Process Mechanical Design Parameters

- Air flow modeling is required to confirm air flow distribution to the diffusers, sizing of common plenum and other air piping prior to replacement.

☒**Building Mechanical Design Parameters**

☒**Fire Protection**

☐Fire Protection Requirements

☐Fire Water Flow Analysis

☒Fire Protection Requirements for Existing Facilities

☒**Electrical**

☒Codes/standards. Brief description of electrical system. Electrical drawings.

☒Identify Electrical System Impacts

☐Report – Data Collection and Verification

☒Preliminary Load List

☒Preliminary Standby Power Requirements

☒ETAP – Preliminary Short Circuit Analysis and Load Flow/Voltage Drop Studies

☐ETAP – Provide Data. OC SAN will perform ETAP studies.

☒Preliminary Analysis for cable-pull calcs, ductbank cable derating, cable tray fill calcs.

☒Hazardous Area Classification Requirements

☒**Instrumentation and Control**

☒Instrumentation and Control System

☒Specialty Safety Systems

☒Preliminary SAT

☒PLC and RIO Panel Location Map

☒CCTV Coverage Map

☐**Landscaping**

☐Landscaping Requirements

☐Develop up to [three] alternative concepts for review and acceptance

☐**Plant Utility Investigation Findings**

☒Vibration Analysis

(See revised Engineering Design Guidelines Chapter 06, MECHANICAL DESIGN, Section 06.7 “Vibration Analysis for Rotating Electrical Equipment” located at the end of the scope of work).

☒**Design Safety Requirements**

☒ Identify all potential project specific safety issues

☒ Identify all potential Cal OSHA and OC SAN safety issues

☒ Identify construction safety hazards

☒ Use Sample Full Project Safety Review Plan to verify safety elements

☒ Risk Management Check List to verify safety elements

☐HAZOP

☐**Public Impacts**

☒ **Environmental and Regulatory Requirements**

☐CEQA Part of Programmatic EIR

☒CEQA work consists of a Notice of Exemption (NOE). The NOE will be filled by OC SAN.

☐Determine project environmental and regulatory requirements

☐Matrix of CEQA and Permit Requirements

☐Mitigation, Monitoring and Reporting List

☒ **Permit Requirements**

☒List of Permits Required (Underground Storage Tank Removal Requires Permit from Orange County Health Care Agency)

☐Oil Well Abandonment

☒ **Stormwater Requirements**

☒ **Hazardous Material Survey, Mitigation and Control**

☒ **Maintainability**

☒Define Maintainability Requirements

☒Maintainability Requirements Plan Drawings

☒Define Maintainability Rules

☒Define Maintainability Information for Project Specific Equipment

☐**Facility Operation and Maintenance**

☒Facility O&M Requirements

☒Operating Philosophies

☒Preliminary Assessment of O&M Staffing Requirements

☒**Implementation Plan**

☒Identification of Adjacent Projects

☒Preliminary Commissioning Checklist

☒Preliminary Construction Sequencing Plan

☒Review of Constructability Issues

☒Temporary Handling of Flow (plant water flow, primary effluent flow, air flow)

- CONSULTANT shall provide, at a minimum, two alternatives and recommend one alternative to keep the Plant Water Pump Station operational throughout the construction of this project. CONSULTANT shall provide required designs for the temporary bypass system, and address the work sequence, schedules, space requirement, commissioning, decommissioning, and demolition of the recommended facilities.
- CONSULTANT shall identify other temporary bypasses that may be required for air pipes and wastewater pipes to perform condition assessment/repair/replacement for the facilities stated in this scope of work. If temporary bypass is required, CONSULTANT shall provide, at a minimum, two alternatives for each bypass system and recommend one alternative for each bypass and provide above mention services for the temporary facilities.

☐**Construction Odor Monitoring and Mitigation**

☒**Preliminary Technical Specification List**

The above requirements will be discussed and presented in eleven (11) Design Memorandums:

PRELIMINARY DESIGN MEMORANDUMS
DM1 Cost Model
DM2 Process Design Configuration/Validation
DM3 Design Requirements
DM4 Condition Assessment
DM5 Geotechnical Data Report

PRELIMINARY DESIGN MEMORANDUMS
DM6 Blower Selection
DM7 RAS/WAS Pump Stations
DM8 Aeration Basins and Secondary Clarifiers
DM9 Electrical
DM10 Instrumentation and Control
DM11 Implementation Plan

2.1.3 PROJECT SPECIFIC DESIGN MEMOS

The following design memorandums shall also be included in the PDR. Preparation of these memos is required as part of preliminary design activities. The contents of these Design Memos are further described under the corresponding Preliminary Design Activities tasks.

A. Hydraulic Model Analysis

B. Denitrification Improvement - Aeration Basin Modification Assessment

   1. MLR pumps, mixers, aeration zones sizing

C. Condition Assessment

   1. Yard piping, splitter boxes, aeration basins, secondary clarifiers, and RAS pump station

D. Aeration basins surface air exhaust system

2.1.4 PRELIMINARY DESIGN DRAWINGS

A. The CONSULTANT shall produce the following Preliminary Design Report drawings in accordance with **Exhibit 1 – Preliminary Design Report Requirements.**

☒ General

☒ Demolition

☒ Civil

☐Landscape Structural

☐Architectural

☒ Mechanical

☒ Electrical

☒ Instrumentation and Control

2.1.5 PRELIMINARY DESIGN REPORT (PDR) PRODUCTION, CONTENTS AND ORGANIZATION

A. Preliminary Design Report (PDR) Production involves the preparation of design memos, drawings, calculations, and other supporting material resulting in the PDR.

B. The CONSULTANT shall combine the materials described below into a draft PDR. The PDR shall be structured as outlined below, with the contents corresponding to the tasks listed in this Scope of Work.

Volume 1 – Preliminary Design Report Technical Memos

Executive Summary
Design Memos
Design Memo 1, 2, 3, etc.
List of Proposed Specification Sections

Volume 2 – Drawings (see Preliminary Design Drawings list below)

Volume 3 – Submittal Documentation

Calculations
Equipment Data & Catalog Cuts
Decision Log
Meeting Minutes

C. The Executive Summary shall summarize the conclusions of the Memos included in the report, and specifically include a summary construction schedule and construction cost estimate.

D. The draft PDR and final PDR shall be submitted in searchable PDF format legible on-screen and as a hard copy. The number of hard copies is indicated in **Exhibit 9 – Deliverables Quantities.** The labeling and organization of the PDF submittal shall be in accordance with **Exhibit 14 – Bluebeam Designer Training for Submission.**

E. Each evaluation memo and design memo shall be a separate file.

F. The OC SAN Project Manager may request that the CONSULTANT submit an electronic proof set of the Draft PDR and Final PDR prior to hard copy production in order to initially confirm that the submittal is ready for printing.

2.1.6 PRELIMINARY DESIGN COST ESTIMATE

A. The CONSULTANT shall provide a cost estimate for the associated PDR submittal indicated below in accordance with **Exhibit 1 – Preliminary Design Report Requirements.**

2.2 PRELIMINARY DESIGN ACTIVITIES

The following services shall be provided by the CONSULTANT or an appropriately qualified subconsultant. In any case, the CONSULTANT shall be responsible for managing all subconsultants, including reviewing their work products prior to submission to OC SAN.

2.2.1 HYDRAULIC MODEL ANALYSIS

A. CONSULTANT shall evaluate and verify the most current hydraulic model, using Infoworks, which will be provided after awarding the project. CONSULTANT shall use the hydraulic model as a reference to confirm the future flow conditions/scenarios to the aeration basin influent splitter box, after elimination of the PEPS facility (by another project – P1-126). CONSULTANTS shall coordinate with P1-126 design team to obtain the primary effluent flow conditions.

B. Additional model runs maybe required by CONSULTANT to determine the heights of the gates at aeration basin splitter box, RAS splitter boxes, relative to the Primary Effluent Distribution Box 2 (PEDB 2) launder weir height, prior to replacing the gates.

2.2.2 DENITRIFICATION IMPROVEMENT

A. CONSULTANT shall review the recommendations from PS21-03 – Denitrification Improvement Study and analyze the recommended option(s). If the CONSULTANT concurs with the recommended option(s) they shall further verify the required improvements including MLR pump capacity, quantity of pumps, anoxic zones quantity and sizing. CONSULTANT shall evaluate other option(s) if they disagree with the PS21-03 recommendations and present their alternatives and recommendation to OC SAN. The CONSULTANT is responsible for all denitrification improvements.

B. The Biowin input data from PS21-03 is attached in the Exhibit 19. CONSULTANT shall use a process model to verify the result.

C. This section shall also cover the piping layout and locations of the pipe, pumps, and implementation.

D. This task shall be documented under the corresponding Project Specific Design Memo.

2.2.3 CONDITION ASSESSMENT

A. CONSULTANT shall conduct a field inspection and prepare a Condition Assessment Report including remedial recommendations for the facilities listed below.

1. 72-inch primary effluent piping at the east side of the aeration basin, approximately 100 feet
2. 90-inch primary effluent piping from PEDB-2 to influent splitter box at the west side of the aeration basin, approximately 300 feet
3. 84-inch secondary effluent connection from SEJB 1 to SEJB, approximately 60 feet
4. Assessments for aeration basin splitter box, RAS splitter boxes, and RAS pump station
5. Assessments for all the handrails prior to replacement
6. Concrete assessments for the aeration basins and secondary clarifiers.

B. The condition assessment will require supervised permit-required confined space entry inspections. CONSULTANT shall provide all personnel and equipment required for confined space entry and inspection. CONSULTANT shall also provide all WORK, including but not limited to, work sequencing, coordinating with O&M, bypass pumping, dewatering, cleaning, wash down, and jetting of pipelines and basins as needed to complete the assessments, and produce a comprehensive design memo.

C. Existing condition assessment CCTV video data is not available for the above facilities. CONSULTANT shall coordinate shutdowns with OC SAN to inspect these facilities. CONSULTANT shall submit properly laid-out draft inspection plan(s) within three months of preliminary design NTP. Based upon the hydraulic analysis and condition assessment data, CONSULTANT shall provide recommendations for rehabilitation or replacement of these assets.

D. This task shall be documented under the corresponding Project Specific Design Memo.

2.2.4 AERATION BASIN SURFACE FOUL AIR EXHAUST SYSTEM

A. At the AS-1 facility, there are four aeration basin surface air exhaust fans that have been decommissioned along with the 72-inch air duct, which conveyed the “foul air” and discharged through the stack located on top of the PEPs building.

B. CONSULTANT shall evaluate the existing air exhaust system, based on the existing and future process, routine and non-routine maintenance activities, potential fugitive foul air release, to determine if a new exhaust system is required.

C. Assume that odor control system is not required for the exhausted foul air. The Title V air permit currently covers the entire secondary treatment system (both AS-1 and AS-2) at Plant No. 1, and it allows for the exhaust air to be discharged through a stack without any odor control treatment system.

D. If the exhaust air system is not required for the aeration basins, CONSULTANT shall provide design services to demolish the existing system, including fans, Exhaust Air Treatment Chamber (in PEPs building), Chamber Stack (in PEPs building), and foul air piping.

E. If a new exhaust system is required, CONSULTANT shall provide design services for the proposed system.

2.2.5 GEOTECHNICAL INVESTIGATION

A. CONSULTANT shall secure the services of a qualified Geotechnical Engineering firm to prepare a Geotechnical Data Report that addresses geotechnical concerns for all applicable Project Elements of the project Scope of Work.

B. Soil Explorations

1. The geotechnical services shall include exploratory work such as soil borings necessary to observe, test, classify soils, and monitor groundwater levels and potential groundwater pollutants of concern.
2. The number and spacing of borings shall be based on the geotechnical professional's interpretation of needs and recommendation; however, a maximum of five hundred feet (500') shall be allowed between pipeline alignment borings along a pipeline alignment.
3. If unexpected or unique soils are encountered, an adequate number of borings shall be taken to try and define the limits of the anomaly.
4. Borings shall also be taken at or near the upstream and downstream connection points for the proposed facility.
5. The depth of the borings shall be adequate to characterize the soils to a depth of at least five feet below the bottom of an excavation or any proposed sewer invert elevation. At least two borings shall extend ten (10) feet below the proposed excavation bottom or sewer invert.
6. The number of borings, trenching, CPTs, or other exploratory testing shall be as indicated in CONSULTANT's Technical Proposal and Fee Proposal. In the event that additional exploratory investigations are required, the price for such testing shall be negotiated on the basis of the unit priced indicated in CONSULTANT's Fee Proposal.

C. Ground Water Pump Testing

1. Conduct ground water pump testing to determine dewatering parameters for inclusion in the specifications.
2. Provide a complete specification for the abandonment of wells for areas where aquifers could be compromised. Potential abandonment methods for deep penetrations might consist of over-drilling and fill with cement-bentonite grout slurry, or deep pressure grouting to create a concrete seal.

2.2.6 UTILITY INVESTIGATION

A. To better manage the risks associated with construction excavation, CONSULTANT shall perform a thorough search of all utilities impacted by the work for all applicable Project

Elements of this Scope of Work, regardless of size and all other facilities above or below ground. Utilities include all in-plant, utility company-owned and public agency-owned piping, duct banks, and other interferences. The search shall include utilities within the public right-of-way, and those located on private property and OC SAN property impacted by the proposed project. The search shall include the records and plans of OC SAN and all respective public and private companies and utilities.

B. Review of OC SAN Records

1. OC SAN's "As-built/Record" plans may be incomplete or inaccurate with respect to the routing of individual utilities, pipelines, etc. in the vicinity of the project. CONSULTANT shall check OC SAN records against those of the other agencies, companies, and utilities. These may include, but not be limited to, oil, gas, fuel, water, and sewer pipelines; traffic control facilities, telephone and electrical conduit and duct banks, storm drains, manholes, and other structures.

C. On-Site Inspection

1. An on-site inspection shall be made in the project area. During the on-site inspection, a senior-level CONSULTANT representative shall walk the site accompanied by OC SAN's Project Engineer and Supervising Inspector. The CONSULTANT representative shall be experienced in the location and identification of utilities in the field. During the on-site inspection the CONSULTANT shall document all visible features that indicate utilities within the project area and compare them with the available utility plans.

D. Utilities for Adjacent Properties

1. CONSULTANT shall investigate all utilities serving properties adjacent to the work, and submit a spreadsheet at the end of the utility research accounting for all anticipated utilities for OC SAN review, with the following information:
    a. List all utilities anticipated or each adjacent property.
    b. Indicate whether or not each such utility was found on as-built drawings of any agency, with an identification of the agencies identifying such utility.
    c. Indicate whether or not the utility was field located by utility through USA process, and, if so, by which agency.

E. CONSULTANT shall provide all required stamped traffic control plans as part of the encroachment application process required by all cities for use during the geophysical investigations, potholing, geotechnical borings and field investigations.

F. Subsurface Utility Investigations

1. Investigation of existing utilities shall be in accordance with the respective ASCE guidelines, except as amended by this Scope of Work. A brief description of the ASCE guidelines defines the Quality Level of detail for researching subsurface utilities as follows:
    a. **Quality Level D:** Information derived from existing records or oral recollections.
    b. **Quality Level C:** Information obtained by surveying and plotting visible above-ground utility features and by using professional judgment in correlating this information to Quality Level D information.
    c. **Quality Level B:** Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate position of subsurface utilities. Quality Level B data shall be reproducible by surface geophysics, such as ground penetrating radar, at any point of their

depiction. This information is surveyed to applicable tolerances and reduced onto plan documents.

d. **Quality Level A:** Precise horizontal and vertical location of utilities obtained by the actual exposure (or verification of previously exposed subsurface and surveyed utilities) and subsequent measurement of subsurface utilities, usually at a specific point. Minimally intrusive excavation equipment is typically used to minimize the potential for utility damage. A precise horizontal and vertical location, as well as other utility attributes, is shown on the plan documents. Accuracy is typically set to 15-mm vertical and to applicable horizontal survey and mapping accuracy.

2. Refer to CI/ASCE 38-02, Standard Guidelines for Collection and Depiction of Existing Subsurface Utility Data for details.
3. CONSULTANT shall determine all utilities impacted by the work for all applicable Project Elements of this Scope of Work. Utilities include all in-plant utilities, utility company-owned, and public agency-owned piping, duct banks, and other interferences. All utilities encountered during the preliminary design shall be shown on the plans.
4. Subsurface investigation for all utilities in and around the work area shall be performed to Quality Level D and Quality Level C. All utilities shall be plotted both in plan and profile on a scaled drawing that can later be incorporated into scaled (1” = 40’) plan drawings.
5. CONSULTANT shall submit, for acceptance by OC SAN, recommendations on which utilities should be investigated to Quality Level A and where Quality Level B investigations should be performed. As part of the submittal, a Potholing Plan and Geophysical Investigation Plan shall be developed including proposed pothole locations and type of geophysical investigation.
6. Prior to OC SAN’s acceptance of the Potholing Plan/Geophysical Investigation Plan, a project field walk by the CONSULTANT Project Manager, OC SAN Project Engineer, Supervising Inspector, and other designated OC SAN personnel shall be performed.

G. Potholes and Geophysical Investigation

1. CONSULTANT shall secure the services of a subcontractor to perform the pothole work and geophysical investigation (including ground-penetrating radar).
2. CONSULTANT shall “pothole” and perform geophysical investigation on all utilities described and shown in the accepted Potholing Plan/Geophysical Investigation Plan. CONSULTANT’s staff shall be on-site during potholing to provide direction to potholing crew. OC SAN staff shall also be present during potholing. Field investigations include visiting the project work site and each utility to verify the location of all interferences.
3. CONSULTANT shall provide all the related work necessary, including, but not limited to:
    a. Documentation of information
    b. Notification of USA’s “Dig Alert”
    c. Providing field survey
    d. Obtaining required permits
    e. Submission of traffic control plans
    f. Setting up traffic control
    g. Soft dig potholing

h. Ground-penetrating radar
i. Excavating
j. Backfilling
k. Repairing pavement to local jurisdiction requirements

4. “Soft” excavation potholing methods such as vacuum extraction is preferred; however, excavation methods shall be chosen to adequately define the utility. Crosscut trenches may be preferred for defining some utility locations. Hydro-jetting soft dig should be avoided in sandy, wet, and contaminated soil conditions.
5. Potholing subcontractor shall measure and document the depth of pavement and of base material at each pothole, and every five feet along crosscut trenches.
6. Work conducted within OC SAN’s treatment plants shall comply with the requirements of the OC SAN Stormwater Management Plan. Work conducted outside OC SAN’s treatment plant shall comply with the requirements of the local jurisdiction.
7. CONSULTANT shall provide a licensed land surveyor or hire a licensed survey subcontractor(s) to field-locate the actual horizontal and vertical location of the constructed potholes. Survey controls shall be set and coordinated with the survey controls used on previous construction drawings. OC SAN control points shall be checked; northing, easting and elevation data for each pothole shall be shown on the Contract Drawings; and physical tie-ins provided to easily re-establish pothole locations after construction. CONSULTANT shall supply and supervise survey work and subcontractors needed to perform the pothole work. Survey datum differences shall also be reconciled.
8. The results of potholing and geophysical efforts shall be summarized in a field findings report.
9. CONSULTANT shall backfill and repair potholes consistent with the requirements of the local jurisdiction. If CONSULTANT is unable to determine local jurisdiction requirements prior to the proposal, CONSULTANT shall assume the following requirements:
    a. The materials removed from the excavation may not be used for backfilling, unless approved by the local jurisdiction. If approved, excavated material used to fill potholes shall be placed with a maximum lift thickness of four inches and mechanically compacted.
    b. If not approved, the CONSULTANT shall be responsible for hauling off and disposing of excavated pothole material. In this case, excavation holes shall be filled with a cement slurry mix from the bottom up. The excavated materials shall be tested for hazardous materials and disposed of offsite accordingly. Testing shall be the minimum required for classifying the materials. The potholing samples shall be tested by a California Environmental Laboratory Accreditation Program (ELAP) certified laboratory to identify characteristics of hazardous waste. A substance shall be considered hazardous if it possesses properties of toxicity, ignitability, corrosivity and/or reactivity per California Code of Regulations Title 22, Section 66261. In addition, Minimum the laboratory testing shall include an on-site Organic Vapor Analyzer (OVA) test for potential hydrocarbon contaminants. Should the OVA reading be equal to or greater than 45 ppm, further laboratory Minimum testing shall be performed to include Benzene, Toluene, Ethyl Benzene, and Xylene (BTEX) test per EPA guideline

8020 and Total Hydrocarbons (TPH) tests per EPA guideline. should the OVA reading be equal to or greater than 45 ppm.

c. AC pavement shall be replaced to full depth or the structural section (AC & Base) plus two inches with hot mix asphalt unless otherwise required by the City of Fountain Valley. Cold mix shall only be allowed when the patch will be replaced by the project and where approved by the City of Fountain Valley.
d. Concrete pavement shall be replaced to full depth plus two inches with Portland cement unless otherwise required by the City of Fountain Valley.

H. Quantitative Assumptions

1. CONSULTANT's fee proposal shall include a cost for potholes and unit cost for additional potholes. The cost shall provide for a minimum of 25 potholes during preliminary design and 25 potholes during final design.
2. CONSULTANT's fee proposal shall include a cost for geophysical investigation. The cost shall provide for a minimum of 35,000 square feet during preliminary design.

I. Depiction of Utilities and Potholes on Plans

1. All utilities encountered during the preliminary design shall be shown on the Plans. Project work that requires other agencies to relocate existing utilities shall be coordinated during the design by CONSULTANT. Each subsurface utility shown on the drawings shall include the Quality Level to which it was investigated as required by CI/ASCE 38-02. Pothole locations shall be shown on drawings with survey information.

J. Relocation of Existing Utilities

1. Project work that requires other agencies to relocate existing utilities shall be coordinated during design by CONSULTANT.

2.2.7 FIRE PROTECTION SERVICES

A. CONSULTANT shall secure the services of a Subconsultant to determine the fire protection requirements and prepare preliminary design and final plans and specifications for the selected plan and assist OC SAN in obtaining approval from the fire authority.

B. Fire Flow Analysis:

☒Evaluation of existing potable water system is not required. Assume that the existing potable water system has adequate pressure and volume to supply the required sprinkler systems and hydrants.

☐Evaluate existing potable water system for adequate pressure and volume to supply the required sprinkler systems and hydrants.

2.2.8 ELECTRICAL LOAD MEASUREMENTS

A. CONSULTANT shall perform preliminary calculations of existing equipment (i.e. all UPS panelboards) early in PDR that require UPS power. CONSULTANT shall take load measurements of all existing UPS panelboards being repowered from a regional UPS to determine UPS capacity.

B. CONSULTANT shall develop a list of loads load measurements that need to be taken to perform load calculation.

C. CONSULTANT shall take electrical measurements per Engineering Design Guidelines, Chapter 10, Section 10.2.1.4 "Report- Load Measurement and Recording".

D. The load measurements data shall be compiled in a Load Measurement and Recording Report included as an attachment to the Electrical Design Memo.

2.2.9 VALUE ENGINEERING ASSISTANCE

A. CONSULTANT shall participate in a Value Engineering (VE) program as described in the EPA publication entitled "Value Engineering for Wastewater Treatment Works", dated September 1984. The workshop will be managed primarily by an independent VE consultant hired by OC SAN.

B. Examples of topics that may be covered in the Value Engineering Study include: project concepts, operations requirements, maintenance requirements, user friendliness and safety, possible project improvements, cost saving measures, public nuisance issues, site access, safety, and constructability.

C. The VE workshop will be held by the VE Consultant at an off-site location in or around the City of Fountain Valley, California, over a period of three (3) days as follows:

1. CONSULTANT shall prepare all documentation to be reviewed at the workshop and mail the materials to all VE workshop participants at least one (1) week prior to the workshop.
2. The morning of Day One (1) shall involve a detailed presentation by CONSULTANT to the VE Consultant and OC SAN staff regarding the design and construction project to cover the design concepts for each project element. The presentation shall be followed by a site walk. A question-and-answer session shall follow and continue through lunch which will be arranged for and provided by the VE Consultant. OC SAN stakeholders may also be available to answer questions.
3. During the afternoon of Day One (1), CONSULTANT shall give a detailed presentation to the VE Consultant and OC SAN staff regarding the design and construction project schedule and a history of the decisions which limit the project and its sequencing. A question-and-answer session for this presentation shall follow. OC SAN stakeholders may also be available to answer questions.
4. Day Two (2) will be a workday for the VE Consultant. At least one designated individual from the CONSULTANT shall remain to answer questions and gather additional information that the VE Consultant might need. OC SAN stakeholders may also be available to answer questions.
5. The morning of Day Three (3) will be reserved for the VE Consultant to formulate their recommendations in preparation of their presentation that afternoon to CONSULTANT and OC SAN staff. At least one designated individual from CONSULTANT shall be available again to help the VE Consultant in their efforts. OC SAN stakeholders may also be available for a discussion. The afternoon presentation by the VE Consultant will outline their recommendations that are anticipated to be the body of the VE report. A designated individual from VE Consultant will record the comments and take notes from the workshop to document the process.
6. CONSULTANT shall participate in the workshop as described herein, evaluate the VE Report recommendations, conduct additional engineering analyses as determined by OC SAN, and meet with OC SAN to discuss the results of the engineering analyses and incorporation of all additional recommendations into a Final VE Report.

2.2.10 PERMITTING ASSISTANCE

A. CONSULTANT services related to Permitting Assistance may span across Phase 2 – Preliminary Design and Phase 3 - Design. When such services are required, they will be based on the requirements of Section III – Project Schedule and the schedule constraints associated with each particular permit. The CONSULTANT shall allocate the budgeted hours between the Environmental Documentation services in Phase 2 and Phase 3 based on when these services will be required.

B. For all applicable Project Elements of this Scope of Work, CONSULTANT shall provide Bid Documents that ensure that the facility features and the facility performance, and construction procedures comply with all conditions of existing permits and permits required to construct this project. Construction drawings, specifications and supplemental drawings shall be prepared, as necessary, in the format required to obtain all permits.

C. CONSULTANT shall assist OC SAN in obtaining permits. This assistance shall include completing application forms provided by OC SAN, preparing supporting documentation for the permit applications as required by the issuing agency, furnishing the required number of copies of all construction drawings and exhibits, and attending meetings with permitting agencies at the request of OC SAN.

D. With the exception of construction contractor-furnished permits, OC SAN staff will execute all applications. All permit fees will be paid directly by the OC SAN and will not be part of CONSULTANT's fee.

E. CONSULTANT shall submit all supporting documentation in a timely fashion for all permits required for this project as described below.

F. Stormwater Permitting

1. Stormwater permitting is not required for this project.

G. Orange County Health Care Agency

1. Underground storage tank removal.

H. City of Fountain Valley Fire Department

1. Blower Building 1 new fire alarm system.

2.2.11 PROJECT MANAGEMENT

A. CONSULTANT shall be responsible for managing CONSULTANT's project execution, schedule, budget, subconsultants, and coordination with other projects. The CONSULTANT shall perform the project management requirements in accordance with **Exhibit 3 – Project Management Requirements** with the project specific options identified below.

B. Project Management Plan (PMP):

☐Not required

☒ Required

☒PMP approval prior to beginning technical work on the project.

C. Project Logs

☒Major Decision Log

☒Project Decision Log

☒Action Item Log

☒Decision Issues Log

☒Meeting Log

☒Risk Management Log

D. Progress Report, Status of Cost Model

☐Not required

☒ Required

E. Project Invoices

1. Estimating earned value, tasks shall be further broken down to subtasks of no more than $100,000.
2. Costs for invoicing shall be grouped into the following work packages:

Work Package	Description	Tasks
3146	Preliminary Design	All Phase 2 tasks, except those listed above.
3251	Design Submittal 1	Tasks 3.1 through 3.3, divided into effort by design submittal. FDS is charged against DS3.
3252	Design Submittal 2	
3253	Design Submittal 3	
3254	Bid Support Services	Task 3.4

2.2.12 RISK MANAGEMENT

A. When required below, CONSULTANT shall provide risk management in accordance with **Exhibit 4 – Risk Management Requirements** with the project specific options identified below.

B. Risk Management:

☐Not required

☒Required
Initial Risk Workshop
PDR Risk Management Workshop: 2 hours. (Held 4 weeks prior to draft PDR at OC SAN)

C. Moderator

1. CONSULTANT shall provide a suitably qualified moderator to conduct the Workshops defined in **Exhibit 4 – Risk Management Requirements.** The moderator shall have the following attributes:
   a. Sufficiently technically knowledgeable to understand the nature of the risks involved, but the moderator need not be a subject matter expert.
   b. Not extensively involved in the project to date, so that the moderator has no personal stake in the issues. CONSULTANT's Project Manager and Project Engineers for this project are not considered suitable.
      (1) Employed by CONSULTANT, a Subconsultant, or a specific individual.

2. The Preliminary Design Risk Management Workshop shall be planned and scheduled for a duration of 3 hours and will be held at OC SAN offices.

2.2.13 QUALITY CONTROL

A. The CONSULTANT shall provide quality control requirements in accordance with **Exhibit 6 – Quality Control Requirements.**

2.3 PDR WORKSHOPS AND MEETINGS

2.3.1 GENERAL

A. Workshop and meeting planning, requirements, agendas, and meeting minutes shall be in accordance with **Exhibit 5 – Workshop and Meeting Requirements.**

2.3.2 PDR PRODUCTION WORKSHOPS

A. Predesign Kickoff Workshop

1. A three-hour project kick-off meeting shall be held with OC SAN staff to introduce principal members of OC SAN and CONSULTANT's teams. The discussion topics shall include: OC SAN's responsibilities, CONSULTANT's responsibilities, invoice procedures, personnel badges, parking, site access, CONSULTANT's Scope of Work, detailed project schedule with milestones, Work Breakdown Structure requirements, and OC SAN confined space and other safety policy training.

B. PDR Production Workshops shall be held during Preliminary Design to review project progress during PDR Production. The subjects to be covered in each workshop are discussed below. Each workshop shall be 2 to 3 hours in length.

PDR PRODUCTION WORKSHOPS	
TOPIC	**NUMBER OF WORKSHOPS**
PDR Production Kickoff	1
PDR Production Workshops	-
Design Parameters and Design Verifications	2
Hydraulic Model Analysis and Results (described below)	3
Denitrification improvement (described below)	2
Condition Assessment and Results (described below)	3
Facility Operation (Project-wide issues)	1
Electrical (including temporary equipment)	4
Instrumentation and Control (including temporary equipment)	4
Utility Investigations	2
Implementation Plan and Sequencing Constraints (described below)	3
Equipment and Process Workshop (described below)	4
Temporary Facilities (described below)	3

PDR PRODUCTION WORKSHOPS	
TOPIC	**NUMBER OF WORKSHOPS**
Maintainability Workshop (described below)	1
PDR Constructability Workshop (described below)	1
Geotechnical, permitting, and Hazardous Materials handling	1
Equipment Vendors Coordination	3
Equipment and Process Redundancy Workshop (described below)	1

2.3.3 DESIGN MEMO WORKSHOPS

A. CONSULTANT shall hold workshops to present and review the Design Memos as required in **Exhibit 5 – Workshop and Meeting Requirements.**

2.3.4 PROJECT SPECIFIC DESIGN MEMO WORKSHOPS

CONSULTANT shall hold the following workshops at a minimum for the project specific design memos. Each workshop will have the durations of two to four hours.

Task No.	Topic	Description
2.2.1	**Hydraulic Model Analysis (3 workshops – to be completed prior to corresponding design memorandum)**	**Evaluations.** One workshop may be used to provide evaluations and analysis of the most recent model results provided by OC SAN and discuss approaches for incorporating them into this project. This workshop can be used to plan the tasks/activities required to replace the gates within the aeration basins.
		Hydraulic Impacts. One workshop may be used to discuss the results of the hydraulic model/calculations to properly size the gates as well as the flow/capacity projections.
2.2.2	**Denitrification Improvement (Aeration basin modification) (2 workshops)**	**Alternatives Evaluation.** One workshop may be used to provide review and extrapolation of the planning study results and the tasks/activities required to provide a recommendation to OC SAN team.
		Design Decision. This workshop is to present and review recommended design improvement and implementation.
2.2.4	**Condition Assessment (3 workshops – to be completed prior to corresponding design memorandum)**	**Site Visit Planning.** Two workshops may be used to strategize condition assessments of facilities, CCTV for pipes, and equipment covered in this SOW, numbers of site visits, and schedules, including subcontractors' schedules.
		Present Findings. One workshop may be used to present the findings, evaluations, and conclusions of the site visits, including risks, deficiencies, risk managements, and provide recommendations.
2.2.3	**Temporary Facilities (Aeration splitter box, plant water pump station, air piping) (3 workshops)**	**Alternatives Evaluation:** This workshop(s) may be used to evaluate bypass alternatives for all required temporary facilities. The required temporary facilities and recommended alternatives shall be presented to Operations and Maintenance staff in this workshop.

Task No.	Topic	Description
		Sequencing and Schedules: This workshop may be used to discuss sequencing, schedules, and coordination for all temporary facilities.
	Implementation Plan and Sequencing Constraints (3 workshops – to be completed prior to corresponding design memorandum)	**Kickoff and Evaluation.** One workshop may be used to provide flow parameters on wet weather, dry weather, peak, average, low flow conditions, assumptions, maintenance schedules, operational challenges, and control strategies. This workshop is to ensure that stake holders agree with the project team. This workshop may provide 3 alternatives to sequence the constructions.
		Recommendation. One workshop may be used to provide additional information, if needed, and agree on a recommended sequencing steps and schedules.

2.3.5 PDR REVIEW WORKSHOPS

A. CONSULTANT shall hold the following workshops to review the draft Preliminary Design Report as required in **Exhibit 5 – Workshop and Meeting Requirements:**

1. Draft PDR Presentation Workshop
2. Draft PDR Review Workshop
3. PDR Validation Workshop

2.3.6 EQUIPMENT AND PROCESS REDUNDANCY WORKSHOP

A. An equipment and process redundancy workshop shall be held after the draft process flow diagrams have been developed to review the proposed redundancy requirements and equipment sizing versus equipment quantity for the systems provided by the project. The equipment and processes shall be designed to include sufficient redundancy in process trains and standby equipment to allow for serviceability without disruption in plant operations. Philosophies to be discussed shall include the following:

1. Equipment which may be difficult, costly, or time consuming to maintain may require additional redundancy to mitigate reliability issues.
2. In general, there is a trade off on the size of the selected equipment. Large equipment reduces the total quantity of equipment to perform the function. This helps with reducing the number of equipment pieces that must be maintained but may result in burdensome and lengthy downtime for repair. Small equipment provides the reverse. More equipment is needed for the function creating more things to maintain. However, it provides for more flexibility and typically has a shorter down time.
3. Considerations must be provided to avoid single points of failure. For example, redundancy in mechanical equipment can be negated if all equipment is powered on a single common MCC.
4. The CONSULTANT shall develop and establish the reliability and redundancy criteria through workshops and evaluation and design memoranda.
5. Operations and Maintenance (O&M) staff including staff from Maintenance Reliability and Planning must be involved in the establishment of the maintainability design rules.

B. The equipment and process redundancy workshop shall be held at OC SAN's facilities and shall generally be 2 hours in length. The CONSULTANT shall facilitate this workshop and OC SAN and CONSULTANT staff shall attend.

C. A follow up workshop shall be held at OC SAN's facilities to review the final equipment and process redundancy requirements.

D. CONSULTANT shall be responsible for completing the following tasks relative to the workshop:

1. Prepare package for the equipment and process redundancy workshop participants. The package shall consist of process flow diagrams and other information selected by CONSULTANT.
2. Prepare presentation on the project.
3. Summarize the equipment and process redundancy workshop comments and action taken on each comment in a memorandum.
4. All comments and recommendations of the workshop shall be incorporated into the Process Design Configuration Design Memo and the bid documents.

2.3.7 MAINTAINABILITY WORKSHOPS

A. A maintainability workshop shall be held after draft floor plans have been developed to:

1. Review the working space around equipment, accessibility requirements, specific activities required to be performed by maintenance staff, ease of servicing for equipment and devices, means to removing equipment from the point of installation to a location outside the facility.
2. The workshop shall be used to develop a set of project maintainability design rules based on the requirements in Chapter 7 of the Engineering Design Guidelines, coordination with OC SAN staff, lessons learned from prior projects, CONSULTANT staff expertise, and manufacturer data.
3. The CONSULTANT shall research and provide maintainability information for the following equipment:
    a. Blowers and diffusers (fine and coarse bubbles)
    b. Mixed Liquor Return (MLR) pumps and mixers
    c. RAS pumps, WAS pumps
    d. Baffle walls materials and construction
4. Operations and Maintenance (O&M) staff including staff from Maintenance Reliability and Planning shall be involved in the establishment of the maintainability design rules.

B. The maintainability workshop shall be held at OC SAN's facilities and shall generally be 2 hours in length. OC SAN and CONSULTANT staff shall attend this workshop.

C. A follow up maintainability workshop shall be held at OC SAN's facilities to review the draft project maintainability design rules.

D. The project maintainability design rules shall be followed during detailed design.

E. CONSULTANT shall be responsible for completing the following tasks relative to the workshop:

1. Prepare package for the maintainability workshop participants. The package shall consist of plans, process flow diagrams, P&IDs and other information selected by CONSULTANT.
2. Prepare presentation on the project.
3. Review 3D model if applicable to the project.
4. Summarize the maintainability review workshop comments and action taken on each comment in a memorandum.

5. All comments and recommendations of the workshop and the project maintainability design rules shall be incorporated into the Maintainability Design Memo and the bid documents.

2.3.8 PDR CONSTRUCTABILITY WORKSHOP

A. A constructability workshop shall be held after the draft PDR submittal review to identify any fatal flaws in the design relative to constructability. Some of the subjects that shall be covered in this workshop include the following: conflicts between design disciplines, geotechnical considerations, construction sequencing, power outages, equipment shutdowns, viability of equipment relocation, safety, operational requirements, access for maintenance, size-critical equipment requirements and constraints, permitting, public nuisance issues, other local conditions, and constraints.

B. This workshop shall be held at OC SAN facilities and shall generally be 4 hours in length. OC SAN and CONSULTANT staff shall attend this workshop.

C. CONSULTANT shall be responsible for completing the following tasks relative to the workshop:

1. Prepare package for constructability review workshop participants. The package shall consist of detailed plans and specifications and other information selected by CONSULTANT.
2. Prepare presentation on the project.
3. Summarize the constructability review workshop comments and action taken on each comment in a memorandum.
4. All comments and recommendations of the workshop shall be incorporated into Implementation Plan Design Memo and the Bid Documents.

2.3.9 TECHNICAL PROGRESS MEETINGS

A. Technical Progress Meetings shall be held every four (4) weeks to review various issues with OC SAN's project team. A total of 14 meeting shall be held during Preliminary Design Phase. The CONSULTANT shall coordinate with the OC SAN Project Manager to determine what topics will be covered in what meetings, and what OC SAN and CONSULTANT team members are required for each.

2.3.10 FOCUSED MEETINGS

A. Focused meetings shall be held throughout preliminary design to discuss specific issues in detail and generate comments and direction from OC SAN staff. The following tentative list of topics may be covered in these meetings:

1. Site survey
2. Site utility coordination
3. Geotechnical report
4. Quality control plan
5. Common names for facilities and equipment
6. Process Flow diagram/Operating Philosophy (several meetings as needed)
7. Permits
8. OC SAN Safety Standards, confined spaces, and other safety requirements
9. Fire Department requirements
10. City requirements
11. Fire protection

12. Survey and geotechnical requirements
13. Potholing
14. Hazardous Area classification (with OC SAN Authority Having Jurisdiction representative participating)
15. Utilities and utility tie-ins
16. Technical Definitions/equipment data sheets
17. Control concepts
18. Instrumentation and control upgrades
19. Sample P&ID; basis for equipment tag numbering
20. Sample control descriptions
21. Sample EID database
22. Sample SAT database
23. Data network block diagram/network connection diagram
24. I/O relocation plan
25. Electrical distribution system, system controls and the related upgrades
26. Single-line diagrams and electrical demolition
27. Modes and analyses cases for electrical studies
28. Criticality Table update
29. Standby power
30. Construction sequencing
31. Special studies
32. Coordination with other projects
33. Additional meetings as necessary

B. Meeting lengths shall be as required to cover the topic in question. Depending on subject matter and attendees, one meeting may cover multiple subjects. CONSULTANT shall determine how many meetings will be needed to cover these topics. CONSULTANT may suggest additional topics as necessary. Supplementary meetings may be scheduled with OC SAN staff, as necessary to allow coordination between CONSULTANT and OC SAN staff.

2.3.11 COORDINATION WITH OTHER PROJECTS MEETINGS

A. The project shall be a complete and fully functional facility that is integrated with existing facilities and coordinated with other construction projects. CONSULTANT shall coordinate potential conflicts with the following adjacent projects and participate in the number of meetings indicated in the following table:

PROJECT COORDINATION MEETINGS		
PROJECT	**PROJECT DESCRIPTION**	**COORDINATION MEETINGS**
P1-126	PSB No. 3-5 Replacement at Plant No. 1	3 meetings @ 1 hour
Other projects coordination	As needed for other projects	3 meetings @ 1 hour

2.3.12 STORMWATER COMPLIANCE MEETING

A. A formal meeting shall be held with OC SAN's stormwater compliance staff to review the project scope and identify all issues during and after construction affecting compliance with stormwater regulatory requirements and OC SAN's policies and practices.

3. PHASE 3 – DESIGN

3.0 BID DOCUMENTS

3.0.1 GENERAL

A. CONSULTANT shall provide engineering services to prepare biddable plans, technical specifications, and other Bid Documents as required based on the design concepts and criteria developed during Phase 2 – Preliminary Design. In this Scope of Work, construction documents include specifications; drawings; cable, conduit, and cable tray schedules; commissioning plan materials; equipment and instrumentation database (EID); SCADA Administration Tool (SAT); and bypassing plans.

3.0.2 ENGINEERING DESIGN GUIDELINE UPDATES

A. All changes in OC SAN's Engineering Standards, OC SAN's Design Guidelines, and/or changes in design concepts and facility layouts as a result of OC SAN comments that may occur up to transmittal of OC SAN comments on Design Submittal 2 shall be incorporated into the Design by CONSULTANT with no increase in CONSULTANT's Not-to-Exceed upper limit on fees.

3.0.3 GENERAL REQUIREMENTS AND ADDITIONAL GENERAL REQUIREMENTS

A. The following are the minimum Additional GRs topics required for this project:

☒Summary of Work

☒Work Sequence

☒Work Restrictions

☒Permits

☒Environmental Restrictions and Controls

☒Measurement and Payment (includes Mobilization/Demobilization)

☒Seismic Design Criteria (for those restraints, supports, etc. to be design by the Contractor)

☒Shipping, Storage and Handling

☒Project Control Management System (PMWeb construction management software)

☒Equipment Service Manuals

☒Equipment and Instrument Database (EID)

☒Commissioning

☒Training of OC SAN Personnel

☒Hazardous Materials Mitigation and Controls

☐Mold Remediation and Controls

☒Vehicular access, staging and security

3.0.4 DESIGN SUBMITTALS

A. The CONSULTANT shall produce the following design submittals as indicated below in accordance with **Exhibit 2 – Design Requirements.** If a design submittal is eliminated, then the design submittal shall include the requirements associated with the required design submittal along with the requirements associated with the previous unchecked design submittals.

☒Design Submittal 1

☒Design Submittal 2

☒Design Submittal 3

☒Final Design Submittal

B. Continuing Work After Design Submittal Submission

☒CONSULTANT is expected to continue design work on the project while OC SAN staff reviews Design Submittal 1 and Design Submittal 2. For Design Submittal 3, CONSULTANT shall stop all design work until receipt of OC SAN comments on that submittal.

☐CONSULTANT is expected to **stop design work** on the project until OC SAN staff completes the review of each Design Submittal.

3.0.5 CABLE AND CONDUIT SCHEDULE

☐CONSULTANT shall put the cable and raceway schedule on the drawings. CONSULTANT may utilize an Excel spreadsheet and copy the spreadsheet onto the drawings.

☒CONSULTANT shall utilize OC SAN's Microsoft Access Cable and Raceway Schedule database electronic format. See exhibit titled "Cable Conduit and Tray Schedule Database".

3.0.6 COMMISSIONING PLAN MATERIALS

A. The CONSULTANT shall provide a commissioning plan material in accordance with **Exhibit 2 – Design Requirements.**

B. Specification Section 01810, Commissioning and Specification Section 01810, Attachment A Commissioning Procedures

☐OC SAN will prepare Section 01810

☒CONSULTANT shall prepare Section 01810 Attachment A

☒CONSULTANT shall edit Section 01810

C. The CONSULTANT shall provide a commissioning plan FAT Narrative in accordance with **Exhibit 2 – Design Requirements.**

☒CONSULTANT shall prepare FAT Narrative/Commissioning Plan (for all Systems)

D. ORT Procedures

☐OC SAN will prepare ORT procedures for standard templates

☒CONSULTANT shall prepare ORT procedures using OC SAN's ORT procedure generator

☐CONSULTANT shall prepare new ORT procedures (not in standard templates)

E. Pre-FAT Procedures

☐Pre-FAT procedures not required

☐OC SAN will prepare Pre-FAT procedures

☒CONSULTANT shall prepare Pre-FAT procedures

F. FAT Procedures

☐OC SAN will prepare FAT procedures

☒CONSULTANT shall prepare FAT procedures

☒CONSULTANT shall prepare FAT Narratives

G. RAT Procedures

☐RAT procedures not required

☐OC SAN will prepare RAT procedures

☒CONSULTANT shall prepare RAT procedures

H. PAT Procedures

☐PAT procedures not required

☐OC SAN will prepare PAT procedures

☒CONSULTANT shall prepare PAT procedures

3.0.7 EQUIPMENT AND INSTRUMENTATION DATABASE (EID)

☐EID is not required.

☐OC SAN will develop the EID in accordance with **Exhibit 2 – Design Requirements**.

☒CONSULTANT shall develop EID in accordance with **Exhibit 2 – Design Requirements**.

3.0.8 SCADA ADMINISTRATION TOOL (SAT)

☐SAT is not required.

☐OC SAN will develop the SAT in accordance with **Exhibit 2 – Design Requirements.**

☒CONSULTANT shall develop the SAT in accordance with **Exhibit 2 – Design Requirements.**

3.0.9 CONSTRUCTION SUBMITTAL ITEMS LIST

☐OC SAN will develop the Construction Submittal Items List in accordance with **Exhibit 2 – Design Requirements**.

☒CONSULTANT shall develop the Construction Submittal Items List in accordance with **Exhibit** 2 – Design Requirements**.**

3.0.10 TEMPORARY FACILITIES DURING CONSTRUCTION

☐Temporary facilities and bypass pumping are not required.

☐Temporary facilities and bypassing during construction are required, as described under the "Temporary Facilities During Construction" paragraph under the Project Elements and shall be described in words on the drawings and technical specifications.

☒Detailed plans and work sequence for temporary facilities and bypassing during construction, as described under the “Temporary Facilities During Construction” paragraph under the Project Elements and PDR activities.

A. CONSULTANT shall design measures for the temporary handling of flows to be implemented by the Contractor during construction considering OC SAN’s goal of zero sewage spills.

B. If existing facilities such as valves, gates, stop logs, etc. are being used for shutdowns or diversions, include a plan for testing those facilities during Phase 3 - design to verify that they will function adequately for the purpose. If testing cannot be performed, CONSULTANT shall identify the risks associated with using the facility for bypassing, along with contingency plans and mitigation measures to be implemented if they are found not function adequately during construction.

3.1 DESIGN SUPPORT DOCUMENTATION

3.1.1 DESIGN SUBMITTAL SUPPORT DOCUMENTATION

A. The CONSULTANT shall provide a Design Submittal Support Documentation in accordance with **Exhibit 2 – Design Requirements.**

B. Design Information

1. CONSULTANT shall include the following material with each Design Submittal:
   a. CONSULTANT shall maintain the Project Logs specified under Phase 2 Project Management through Phase 3. Current copies of all logs shall be included with each Design Submittal.
   b. Written response log to OC SAN comments on the previous submittal.
   c. CEQA and Regulatory Compliance Matrix. This matrix shall list each applicable CEQA mitigation requirement and all known permit requirements with the corresponding description of how each requirement is to be satisfied. Measures to satisfy requirements might be in the GRs, Additional GRs, particular specification requirements, or actions taken separately from the construction contract.
   d. Calculations
   e. Draft or final Geotechnical Reports not submitted in the previous submittal and those revised since the previous submittal.
   f. Proposed list of suppliers to be named in the specifications for major equipment
   g. Draft or final Fire Protection Reports not submitted in the previous submittal and those revised since the previous submittal.
   h. Draft or final Field Findings Reports not submitted in the previous submittal and those revised since the previous submittal.
   i. Equipment data sheets
   j. Equipment catalog cuts and vendor quotations.
   k. Commissioning Package List: The Preliminary Commissioning Package List first developed in the PDR Production Phase shall be updated in each Design Submittal and used as a starting point to develop the list of commissioning procedures.
   l. All memos that may have been prepared since the previous submittal was delivered.

C. Facility Operation and Maintenance

☐Not required.

☒Update operating philosophies

☐Update estimates of Operation and Maintenance staffing requirements

D. Electrical Deign Documentation

☐Electrical design documentation not required.

☒Updated Electrical Load Criticality Table

☐Electrical Analysis Report

☒Load list for all equipment

☒Equipment sizing from three manufacturers for motor control centers, switchgear, transformers and power panels

☒Lighting calculations

☒Standby generator sizing calculations

☒Ductbank cable pulling tension, derating and cable tray fill calculations

E. Power System Studies

☐ETAP not required.

☒Plant ETAP model for the project performed by OC SAN.

☐Plant ETAP model for the project performed by CONSULTANT.

☐Electrical Systems Analysis Report performed by CONSULTANT.

3.1.2 CONSTRUCTION COST ESTIMATE

A. The CONSULTANT shall provide cost estimates for the associated design submittal indicated below in accordance with **Exhibit 2 – Design Requirements.**

☒Design Submittal 1 (Required in addition to Exhibit 2 and Engineering Design Guidelines requirements)

☒Design Submittal 2

☒Design Submittal 3

☒Final Design Submittal

3.1.3 CONSTRUCTION SCHEDULE

A. The CONSULTANT shall provide a Preliminary Construction Schedule for the associated design submittal indicated below in accordance with **Exhibit 2 – Design Requirements.**

☐Construction Schedule is not Required

☒Design Submittal 1

☒Design Submittal 2

☒Design Submittal 3

☒Final Design Submittal

3.1.4 PROCUREMENT ALTERNATIVES

A. The CONSULTANT shall recommend the appropriate procurement alternatives as described in **Exhibit 2 – Design Requirements.**

☐Procurement alternatives not required

☒Procurement alternatives required

B. Equipment that may be needed to be obtained from a sole source supplier for this project includes: (N/A)

C. Equipment to be pre-qualified will include: (N/A)

3.2 DESIGN ACTIVITIES

The following services shall be provided by the CONSULTANT or an appropriately qualified subconsultant. In any case, the CONSULTANT shall be responsible for managing all subconsultants, including reviewing their work products prior to submission to OC SAN.

3.2.1 EASEMENTS, PROPERTY BOUNDARIES AND WORK AREA LIMITS

A. CONSULTANT services related to Easements, Property Boundaries and Work Area Limits on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 – Design as required. CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

3.2.2 TOPOGRAPHIC SURVEY

A. CONSULTANT shall use existing OC San topographic information on this project.

3.2.3 GEOTECHNICAL BASELINE REPORT

A. CONSULTANT shall prepare a Geotechnical Baseline Report (GBR). The GBR shall be prepared by the prime CONSULTANT, rather than by the Geotechnical Subconsultant that prepared the Geotechnical Data Report.

B. The Geotechnical Baseline Report (GBR) shall conform to the most recent issue of the American Society of Civil Engineers (ASCE) "Geotechnical Baseline Reports of Underground Construction: Guidelines and Practices".

C. The GBR shall be site specific and shall include a narrative of all known soil conditions and subsurface expected constraints. The GBR shall establish quantitative thresholds and shall make specific recommendations to the Contractor regarding actions to be taken by the Contractor during construction, such as dewatering, removal of boulders by size, all other excavation and backfill stages, etc. Thresholds expressed as ranges of values will not be acceptable to OC SAN (i.e. 100-200 gpm, or 5-10 CY). All thresholds shall be expressed in the form of one number (i.e. 150 gpm, or 7 CY).

D. The GBR will be used during construction to enforce the Differing Site Condition clause included in the construction Contract Agreement.

E. The draft GBR shall be submitted to OC SAN staff for review and comments along with the DS2 submittal package. The final GBR incorporating OC SAN comments shall be submitted with the DS3 submittal package.

3.2.4 UTILITY INVESTIGATION

A. CONSULTANT services related to Utility Investigation on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 – Design as required. CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

B. Final Design Submittal Utility Coordination Reviews

1. During DS3 submittal review, an on-site inspection shall be made in the project area. During the on-site inspection, a senior-level CONSULTANT representative shall walk the site accompanied by OC SAN's Project Engineer and Supervising Inspector. The CONSULTANT's representative shall be experienced in the location and identification of utilities in the field. During the on-site inspection the CONSULTANT shall document all visible features that indicate utilities within the project area and compare them with the Contract Drawings.

3.2.5 FIRE PROTECTION SERVICES

A. CONSULTANT shall secure the services of a Subconsultant to determine the fire protection requirements, prepare final plans and specifications for the selected plan and assist OC SAN in obtaining approval from the fire authority.

3.2.6 NOISE EVALUATION SERVICES

A. CONSULTANT shall secure the services of a Subconsultant to prepare a field finding Noise Report. This report shall include the following:

1. Visit site and conduct ambient noise measurements to establish baseline.
2. Identify external sources of noise.
3. Identify potential methods for defining noise impacts.
4. Develop noise model consistent with noise impact assessment methods.
5. Determine exterior noise levels and compliance with assessment standards.
6. If required, develop mitigation measures to meet design standards.
7. Determine compliance with OSHA's regulations.
8. If needed, determine mitigation measures to meet OSHA's requirements.
9. Prepare written report on findings and recommendations.

3.2.7 PERMITTING ASSISTANCE

A. CONSULTANT services related to Permitting Assistance on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 - Design. CONSULTANT shall allocate the budgeted hours between the Permitting Assistance services in Phase 2 and Phase 3 based on when these services will be required.

3.2.8 PROJECT MANAGEMENT

A. CONSULTANT shall be responsible for managing CONSULTANT's project execution, schedule, budget, subconsultants, and coordination with other projects. CONSULTANT services related to Project Management on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 – Design as required. CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

3.2.9 RISK MANAGEMENT

A. CONSULTANT shall provide risk management in accordance with **Exhibit 4 – Risk Management Requirements**. Moderator shall be as specified for Phase 2 – Preliminary Design.

B. Risk Management:

☐Not required

☒Required

☒DS1 Risk Workshops: 1 hour (held during OC SAN's review of DS1 at OC SAN)

☒DS2 Risk Workshops: 1 hour (held during OC SAN's review of DS2 at OC SAN)

☒DS3 Risk Workshop: 2 hours (held during OC SAN's review of DS3 at OC SAN)

3.2.10 QUALITY CONTROL

A. The CONSULTANT shall provide Quality Control requirements in accordance with **Exhibit 6 – Quality Control Requirements.**

☐Independent Multi-Discipline Design Workshop is not required.

☒Independent Multi-Discipline Design Workshop is required. (minimum duration of 4 days)

3.3 DESIGN WORKSHOPS AND MEETINGS

3.3.1 GENERAL

A. Workshop and meeting planning, requirements, agendas, and meeting minutes shall be in accordance with **Exhibit 5 – Workshop and Meeting Requirements.**

3.3.2 DESIGN PHASE WORKSHOPS

A. The focus of workshops is to review project progress to date and the technical decisions that have been made in focused meetings. CONSULTANT shall conduct the workshops listed below in Phase 3 – Design for each design submittal, except FDS. The CONSULTANT shall allow the following time for each workshop:

DESIGN PHASE WORKSHOPS	
WORKSHOP TYPE	**DURATION**
Design Kickoff Workshop	2 hours per meeting
Design Review Meetings	2 hours per discipline/workshop
Design Validation Meeting	2 hours per meeting/workshop

B. The following Design Review Meetings shall include the following topics, as applicable to the project:

1. Electrical
2. I&C
3. Process
4. Civil/Yard
5. Construction sequencing
6. Maintainability

C. A series of workshops shall be provided for the Design Review Meetings.

D. During final design, workshops shall be held after each design submittal.

3.3.3 PRE-DS2 CONSTRUCTABILITY WORKSHOP

A. A constructability workshop shall be held prior to the DS2 submittal and shall be a 3-day workshop. The constructability review is intended to provide OC SAN with an objective third- party review of the Bid Documents for effectiveness in communicating information to prospective bidders. The review shall determine if the Bid Documents have sufficient information needed to bid and construct the project and avoid misunderstandings and misinterpretations that may lead to conflict, confusion or claims during construction. This review is not a comprehensive plan check, a dimensional check or a value engineering assignment. Further, it is recognized that comments may only be given on the level of detail provided at this level of design.

B. Constructability review participants shall include highly experienced individuals from construction companies, OC SAN construction management staff and CONSULTANT construction management staff. Specialty Consultants and discipline engineers may also be included.

C. Each constructability review participant shall receive a package at least two weeks in advance. The package shall include plans and specifications, general conditions, the CPM schedule, the construction cost estimate, permits, and other pertinent information. The confirmation statements regarding the size-critical equipment as required in the Engineering Design Guidelines, Chapter 01, Design Guidelines – General Requirements, Section 01.2.15.2 "Size-Critical Equipment" shall also be included in the review package.

D. The constructability review shall be held on-site at the OC SAN facility(ies).

E. Day 1 shall start with a site visit, for the reviewers to acquaint themselves with the site conditions. After the site visit, the CONSULTANT shall make a short presentation, followed by a question-and-answer period. This is anticipated to take about 1/2 day. The second half of Day 1, Day 2, and the first half of day three shall be individual workdays for the Constructability Review Team. The CONSULTANT shall not attend, although one designated individual from the CONSULTANT′s Design Team shall remain to answers questions and gather additional information that the constructability review team might need.

F. On the afternoon of Day 3, the CONSULTANT shall return and listen to comments from the Constructability Review Team. A designated individual shall record the comments, and take notes from the workshop, to document the process.

G. Topics the Constructability Review Team must consider shall include:

1. Project consistency, discrepancies, and constructability issues
2. Contradictions, bid package strategies, and biddability issues
3. Power outages and equipment shutdowns
4. Size critical equipment requirements and constraints
5. Utility company requirements
6. Construction methods and mitigating impacts
7. Viability of equipment relocation
8. Operational requirements
9. Interim Control Plan
10. Access for maintenance
11. Access to make proper connections
12. User-friendliness and safety
13. Coordination with other projects

14. Draft Commissioning Plan
15. Public nuisance issues
16. Risk sharing
17. Construction sequencing and schedule, materials storage and work zone accessibility
18. Clarity of the scope of work, and interface activities
19. Impacts on existing operation
20. Access
21. Cost control
22. Partnering with contractor
23. Other local conditions and constraints

H. The Constructability Review Team shall provide a list of comments and the CONSULTANT shall respond to each comment, selecting those comments to be included in the final plans and specifications.

I. To facilitate the Constructability Review Workshop, CONSULTANT shall complete the following tasks:

1. Prepare package for constructability review participants. The package shall consist of detailed plans and specifications and other information selected by CONSULTANT. The package shall be mailed to participants at least one week prior to the workshop.
2. Arrange for off-site location for Constructability Review Workshop.
3. Provide for a constructability review facilitator.
4. Prepare presentation on the project for the Constructability Review Team.
5. Meet with Constructability Review Team to receive comments.
6. Provide listing of constructability review comments and action taken on each comment. (The summary report of constructability review comments shall be prepared by the Constructability Review Team.)

J. All comments and recommendations of the workshop shall be incorporated into the Bid Documents at no additional cost to OC SAN.

K. Prior to DS3, the Commissioning Team shall also conduct an additional constructability review of the final Bid Documents to review clarity of the bid package, project completeness, and other issues, as necessary.

3.3.4 DESIGN PHASE MEETINGS

A. Technical Progress Meetings

1. Technical Progress Meetings shall be held every 2 weeks for 2 hours to review various issues with OC SAN's project team. A total of 45 meetings for 2 hours shall be held during Design Phase. The CONSULTANT shall coordinate with the OC SAN Project Manager to determine what topics will be covered in what meetings, and what OC SAN and CONSULTANT team members are required for each.

B. Focused Meetings

1. Focused meetings shall be held throughout preliminary design to discuss specific issues in detail and generate comments and direction from OC SAN staff. The following tentative list of topics may be covered in these meetings:
   a. Site survey
   b. Site utility coordination
   c. Geotechnical report

d. Quality control plan
e. Common names for facilities and equipment
f. Process Flow diagram/Operating Philosophy (several meetings as needed)
g. Permits
h. Confined space and other safety requirements
i. Fire Department requirements
j. Fire protection
k. Survey and geotechnical requirements
l. Potholing
m. Hazardous Area classification (with OC SAN Authority Having Jurisdiction representative participating)
n. Utilities and utility tie-ins
o. Technical Definitions/equipment data sheets
p. Control concepts
q. Instrumentation and control upgrades
r. Sample P&ID; basis for equipment tag numbering
s. Sample control descriptions
t. Sample EID database
u. Sample SAT database
v. Data network block diagram/network connection diagram
w. I/O relocation plan
x. Electrical distribution system, system controls and the related upgrades
y. Single-line diagrams and electrical demolition
z. Modes and analyses cases for electrical studies
aa. Criticality table update
bb. Standby power
cc. Construction sequencing
dd. Special studies
ee. Coordination with other projects
ff. Additional meetings as necessary

2. Each meeting shall generally be 2 hours in length. CONSULTANT shall determine how many meetings, maximum of 45 meetings, will be needed to cover these topics. CONSULTANT may suggest additional topics as necessary. Supplementary meetings may be scheduled with OC SAN staff, as necessary to allow coordination between the CONSULTANT and OC SAN staff.

3.3.5 CONSULTANT OFFICE TECHNICAL MEETINGS (COTMS)

A. OC SAN has found it mutually beneficial to visit the CONSULTANT offices from time to time to observe the detailed design in process, answer detailed technical questions, and establish lines of communications with CONSULTANT staff. During the Design Phase, CONSULTANT shall arrange for OC SAN staff to meet in CONSULTANT′s work center and audit “over the shoulder” design reviews with CONSULTANT′s staff. The reviews will be monitored by a member of CONSULTANT′s Management Team. Signification decisions will be reported to Consultants Project Manager and OC SAN′s Project Manager and logged into the Decision Log. Action items will be identified.

B. The CONSULTANT shall schedule, at a minimum, the following CONSULTANT Office Technical Meetings (COTMs):

1. Two two-hour visit to review the Loop Tag Number scheme and control documentation.
2. Two three-hour visits to review the first few P&ID drawings.
3. Three three-hour visits to review the early Control Strategies.
4. One two-hour visit to establish the basic control panel design.
5. Two three-hour visit to review the Single Line Diagrams, Conduit, Tray and Cable Schedules
6. One two-hour visit to review each of the first elementary diagrams, first panel schematics.
7. Six two-hour miscellaneous visits (electrical, control systems, etc.)
8. One six-hour visit to review each of the SAT and EID products, including P&ID, SAT and EID coordination.

C. The CONSULTANT shall schedule each of the above COTMs and shall coordinate with OC SAN's Project Manager to be sure the correct personnel participate in the meetings. The CONSULTANT may propose additional, eliminate, or combine COTMs as needed to support the detailed design.

D. OC SAN may also request additional "over the shoulder" design review meetings to audit the design in other areas not listed above.

3.3.6 COORDINATION WITH OTHER PROJECTS MEETINGS

A. The project shall be a complete and fully functional facility that is integrated with existing facilities and coordinated with other construction projects. CONSULTANT shall coordinate potential conflicts with the following adjacent projects and participate in the number of meetings indicated in the following table:

PROJECT COORDINATION MEETINGS		
PROJECT	**PROJECT DESCRIPTION**	**COORDINATION MEETINGS**
P1-126	PSB No. 3-5 Replacement at Plant No. 1	3 meetings @ 1 hours
Other projects coordination	As needed for other projects	5 meetings @ 1 hours

3.3.7 COMMISSIONING TEAM MEETINGS

A. Design phase commissioning team meetings shall be held on a bimonthly basis after completion of OC SAN's review DS-1.

B. Meetings will generally be 2-3 hours in length. CONSULTANT shall determine number of meetings needed to cover these topics and organize the topics accordingly. CONSULTANT may suggest additional topics as necessary. Supplementary meetings may be scheduled with OC SAN staff, as necessary, to allow coordination between CONSULTANT and OC SAN staff.

C. The Commissioning Team meetings shall cover the following subjects:

1. Provide a detailed review of the proposed construction sequencing plan and make recommendations for improvements. These recommendations shall be incorporated into the plans and specifications as appropriate. Possible incentives for the Contractor to finish the project early shall be explored.
2. Identify procedures, testing requirements and sequencing for commissioning.
3. Develop a detailed outline of a commissioning plan based on the results of the recommended construction sequencing plan.

4. Prepare testing requirements and plan to prove process performance relative to design criteria developed in the PDR. Testing shall be performed after the RAT and supervised by the CONSULTANT.
5. Identify timing within the construction contract schedule when commissioning activities are required, including hold points for testing and inspection.
6. Identify roles and responsibilities of the Project Manager, Resident Engineer, Inspector, Project Engineer, PCI, Engineering support, Design CONSULTANT and Contractor.
7. Develop a timeline of commissioning
8. Develop a commissioning specification
9. Develop standard forms for testing and commissioning documentation
10. Electrical, mechanical and process tie-ins
11. Startup requirements and testing
12. O&M training

3.3.8 SAFETY AND RISK MEETING

A. Meet with OC SAN Safety and Risk Management personnel between DS2 and DS3 to review the plans and specifications in accordance with OC SAN safety policies and OC SAN Risk Management goals.

3.3.9 CONSTRUCTION SUBMITTAL ITEMS LIST MEETING

A. Meet with OC SAN between DS2 and DS3 to review the CONSULTANT's approach to developing the project Construction Submittal Items List using **Exhibit 18 – Master Construction Submittal Items List** and the CONSULTANT-provided specifications and discuss the grouping of submittals in commissioning packages and phases.

3.3.10 STORMWATER COMPLIANCE MEETING

A. A formal meeting shall be held with OC SAN's stormwater compliance staff to review the project scope and identify all issues during and after construction affecting compliance with stormwater regulatory requirements and OC SAN's policies and practices.

3.4 BID PHASE SUPPORT SERVICES

3.4.1 BID PHASE SUPPORT SERVICES

A. CONSULTANT shall provide the following bid period services:
    1. Participate in the pre-bid meeting.
    2. Prepare project drawing set and project specification addenda to provide clarification and resolve errors and omissions identified prior to bid opening.

3.4.2 BID EVALUATION ASSISTANCE

A. Participate in reviewing alternate equipment proposals from the Contractor, if applicable.

B. Participate in the evaluation of the submitted bids, furnish consultation and advice to OC SAN staff and assist with all the related equipment, cost, and other analyses as required to finalize the award decision.

3.4.3 CONFORMED DOCUMENT PREPARATION

A. Within two weeks of the bid date, prepare conformed documents set (drawings, databases, specifications, and other required materials) that incorporates the addenda. See Engineering Design Guidelines, Chapter 01, Design Guidelines – General Requirements, Section 01.4 "Preparation of Project Deliverables" for requirements as modified in Section V of this Scope of Work, "Project-Specific Deviations from OC SAN Design Guidelines" and the requirements of the CAD Manual).

4. PHASE 4 – CONSTRUCTION AND INSTALLATION SERVICES

Not in this Scope of Work.

5. PHASE 5 – COMMISSIONING SERVICES

Not in this Scope of Work.

6. PHASE 6 – CLOSE OUT

Not in this Scope of Work.

7. GENERAL REQUIREMENTS

7.0 GENERAL

7.0.1 OC SAN ENGINEERING DESIGN GUIDELINES AND STRATEGIC PLAN

A. CONSULTANT shall refer to and adhere to the requirements of OC SAN Safety Standards, OC SAN Engineering Design Guidelines, any deviations to the Engineering Design Guidelines listed below, and other OC SAN's Design Standards referenced therein. **Exhibit 17 – OCSD Engineering design Guidelines and Standards – Available online at https://www.ocsd.com/about-us/transparaency/document-central/-folder-917** is a complete set of the OC SAN Safety Standards and OC SAN Design Standards, the latest edition at the time of the design proposal stage.

B. The Engineering Guidelines define what plant design concepts/tools/methods and project management requirements shall be adhered to and in what manner they shall be used/provided by CONSULTANTs, e.g., requirements regarding design concepts, submittals, documentation details, use of OC SAN Master Specifications, and other related OC SAN Standards, etc.

C. Refer also to Section "CONSULTANT's Responsibilities" in OC SAN Engineering Design Guidelines Chapter 01. Refer to "Master Specifications Instructions for Use" that mandates rules and conventions to be used in all OC SAN project specifications.

D. The project Scope of Work defines whether each specific deliverable described in the Guidelines shall be part of the project and when each task shall take place.

E. The project Scope of Work also includes requirements that supplement and/or modify the Guidelines requirements for this project.

F. The project Scope of Work and OC SAN Engineering Design Guidelines will impact CONSULTANT′s project cost.

G. Except as specified in this Scope of Work, design of all facilities shall conform to the recommendations of the currently approved Master Plan for OC SAN facilities. The project shall also incorporate all applicable mitigation measures included in associated environmental documents and site-specific local requirements.

H. In addition, OC SAN will require the CONSULTANT to follow subsequent revisions of OC SAN Safety Standards, OC SAN Engineering Design Guidelines and other OC SAN Design Standards up to transmittal by OC SAN of comments on Design Submittal 1, shall be incorporated into the Design by CONSULTANT with no increase in CONSULTANT′s Not-to- Exceed upper limit on fees.

I. OC SAN may update OC SAN′s Master Specifications and/or add new OC SAN Master Specifications up to transmittal by OC SAN of comments on Design Submittal 2. The CONSULTANT shall utilize the new and/or modified Master Specifications for the DS3 submittal.

J. The CONSULTANT shall not begin editing the project specifications until the project team meets with OC SAN′s Design Standards Custodian to discuss and receive comments regarding the CONSULTANT′s proposed list of project specifications. This meeting will be used to determine which specifications are to use OC SAN′s master specifications, and where other sources will be utilized.

7.0.2 PROJECT PHASES AND TASKS

A. Project tasks and deliverables shall include the requirements described in this Scope of Work. CONSULTANT shall also refer to Appendix A of OC SAN Engineering Design Guidelines for the level of detail requirements for individual deliverables in each Phase of the project not covered in the Scope of Work.

7.0.3 CONSTRUCTION SEQUENCING AND CONSTRAINTS

A. CONSULTANT shall develop with OC SAN staff and include in the Bid Documents detailed requirements for construction sequencing and constraints. These shall ensure safe and reliable operation and maintenance of OC SAN facilities. The facilities must be kept on-line and fully operational with minimal interruptions throughout construction.

7.0.4 WORKING HOURS

A. Meetings with OC SAN staff shall be scheduled from Monday through Thursday between the hours of 8:00 AM and 4:00 PM. Any CONSULTANT staff working on-site shall conform to OC SAN work schedules. CONSULTANT shall refer to the Engineering Design Guidelines, Chapter 01, Section 01.3.5 “CONSULTANT Inspection of Treatment Facilities” for further requirements.

7.0.5 STANDARD DRAWINGS AND TYPICAL DETAILS

A. All the details used in the project (OC SAN′s Standard Drawings and CONSULTANT-developed typical details) shall be shown on the Plans.

7.0.6 SOFTWARE

A. The CONSULTANT is expected to develop and provide the deliverables using the standard software currently approved for use by OC SAN. The standard OC SAN software includes, but is not limited to, the following:

B. Any software that the CONSULTANT needs to comply with these standards shall be purchased and maintained by the CONSULTANT at no additional cost to OC SAN. In the event OC SAN provides the CONSULTANT with access to OC SAN software and hardware at an OC SAN facility in order to facilitate performance of their work, all software shall remain the property of OC SAN. Only software licensed to OC SAN shall be installed on OC SAN equipment. In addition, only OC SAN IT Department staff will perform the installation of this software.

C. Refer to Chapters 10 and 11 and Appendix A of OC SAN Engineering Design Guidelines for requirements on preparation of Criticality Tables and ETAP, SAT, and EID databases. Refer to OC SAN CAD Manual and to Chapter 11 and Appendix A of OC SAN Engineering Design Guidelines for requirements regarding P&ID drawings.

7.0.7 SUBMITTAL REVIEW USING BLUEBEAM

A. OC SAN has standardized on the use of Bluebeam Revu for reviewing and providing comments to PDF files. PDF files will be hosted in a Bluebeam cloud-based studio session for review. See **Exhibit 15 – Bluebeam Designer User Training** for a detailed explanation on how Bluebeam will be used to provide, validate, and close submittal review comments.

B. Prior to submitting electronic PDF files, format them as indicated in **Exhibit 14 – Bluebeam Designer Training for Submission** and "OC SAN CAD Standards Manual" prior to submission.

C. A one-hour training session on the use of Bluebeam and custom status menu will be provided by OC SAN. All Consultant team members responsible for quality control and reconciliation of submittal comments shall attend.

7.0.8 WORD TRACK CHANGES

A. Specifications documents and other MS-Word based deliverables will be hosted in OC SAN Teams environment for review. The guidelines for reviewing and commenting on MS-Word files, including Specifications reviews, can be found in **Exhibit 16 – Spec Review using Microsoft Word and Teams.**

7.0.9 GIS SUBMITTALS

A. CONSULTANT shall provide the following GIS deliverables propagated from approved design submittals after the design submittal is accepted. These GIS submittals will not be reviewed or presented by CONSULTANT. The purpose is to provide project specific GIS layers that could be used to visualize interproject dependencies and conflicts.

1. Electronic Submittal
   a. Kmz files for use with Google Earth
2. Final PDR
   a. Single project boundary (Polygon)
      (1) Boundary to encompass all new facilities and existing to be modified including:

- Buildings\Structures
- Tunnels
- Utilities
- Pavement
- Street boundary (ROW to ROW) of possible alignment

   b. Structures (Polygon)

- New structure outline
- Additions to existing structures
- Structure label

3. DS1
   a. Project boundary - updated from PDR
   b. Structures - updated from PDR
   c. Utilities (Polyline)
      (1) Utility alignment
   d. Manholes (Point)
   e. Excavation of pits (Polygon)
      (1) Pits that will stay open for extended duration
      (2) CIPP
      (3) Tunnel - jacking and receiving
      (4) All pits should be labeled
4. DS2, DS3, and FDS
   a. Project boundary - updated from previous DS
   b. Structures - updated from previous DS
   c. Utilities - updated from previous DS
   d. Manholes - updated from previous DS
   e. Excavation of pits - updated from previous DS
   f. Critical (as defined by Dig Alert) utility crossings (Point)
      (1) Crossing of Dig Alert critical utilities
      (2) Critical utility label

      - Natural gas
      - Fuel pipeline
      - 12 kV Electrical

   g. Asphalt (Polygon)
      (1) Asphalt to be replaced

7.0.10 PMWEB PROCEDURES

A. This Agreement shall utilize PMWeb as the Project Control Management System (PCMS) for overall management of the Agreement. All PCMS related documents requiring formal signatures shall be digital, and all copies digitally distributed. The PCMS conforms to the requirements set forth in California Government Code section 16.5 regarding digital signatures; therefore, digital signatures are in full force and effect and are legally the same as a hand-written signature. At least one PCMS account shall have the authority to approve Amendments.

B. OC SAN shall maintain the PCMS and serve as the administrator for the duration of this Agreement. OC SAN will provide the CONSULTANT with user access for approved personnel as needed for the duration of the Agreement. OC SAN shall control access to the PCMS by assigning user profiles and login credentials. Notify OC SAN of any changes to personnel. Access modifications shall be coordinated as needed throughout the Agreement. Do not to share PCMS account passwords with anyone inside or outside of the company.

C. Routine maintenance of the PCMS system may be required during the Agreement. Access to the PCMS system may be restricted or unavailable at these times and will be scheduled outside of typical working hours whenever possible.

D. The PCMS is a web-based environment and is therefore subject to the inherent speed and connectivity problems of the Internet. The CONSULTANT is responsible for its own connectivity to the Internet. PCMS response time is dependent on the CONSULTANT′s equipment, including processor speed, Internet access speed, Internet traffic, etc.

E. OC SAN will not be liable for any delays associated with the utilization of the PCMS including, but not limited to slow response time, down time periods, connectivity problems, or loss of information.

F. The OC SAN will provide a one-time free training session of up to two (2) hours to train CONSULTANT′s designated staff on general system requirements, procedures, and methods.

G. Automated system notifications generated via PCMS (e.g., in-system notices, system generated email, or email with attachment) shall constitute a formal written notification in compliance with the Professional Design Service Agreement (PDSA), Professional Construction Service Agreement (PCSA), or Task Order (TO) Agreement.

7.0.11 CONSULTANT TRAINING

A. The CONSULTANT shall attend the following OC SAN training before starting any design:

1. P&ID Development: 1 hour
2. EID Development and/or Demolition: 1 hour
3. CAD Training: 2 hours
4. OC SAN Tagging Procedures Training: 2 hours
5. Commissioning Package List Training: 1 hour
6. Bluebeam Training/Refresher for Design Submittal Comments: 2 hours
7. PCI SAT Training: 2 hours

8. PROJECT-SPECIFIC DEVIATIONS FROM OC SAN DESIGN GUIDELINES

The following Scope sections change the Engineering Design Guidelines requirements for this project and apply to ALL its Project Elements:

8.0 ENGINEERING DESIGN GUIDELINES

8.0.1 CHAPTER 01, "DESIGN GUIDELINES – GENERAL REQUIREMENTS"

A. Section 01.2.19 "Life Cycle Costs"

1. Replace the 1st paragraph with the following:
2. CONSULTANT shall conduct a sensitivity analysis to see if the life cycle costing analysis is sensitive to the following assumed costs:

8.0.2 ENGINEERING DESIGN GUIDELINES CHAPTER 06, "MECHANICAL DESIGN"

A. Section 06.7 "Vibration Analysis for Rotating Electrical Equipment"

1. Replace the entire section with the following:

CONSULTANT shall perform a RUN evaluation for all pumping systems according to ANSI/HI 9.6.8-2014 or latest (Rotodynamic Pumps—Guideline for Dynamics of Pumping Machinery), to assess various vibration related phenomena. RUN is the general term used to denote the quantity obtained from multiplying the Risk (R) value and Uncertainty

(U) value determined during the appropriate evaluation. This evaluation will help determine the relevant analysis level required to appropriately evaluate pumping machinery construction attributes and relevant site characteristics. CONSULTANT shall obtain (from the manufacturers of the rotating equipment) or calculate (based on anticipated turning speeds, operational requirements, etc.) the relevant equipment and system natural and/or excitation frequencies. These frequencies will include any effect from the various torsional, lateral, and structural behaviors of the equipment or system.

All other rotating equipment such as fans, blowers, compressors, and pumps/equipment not covered by other standards or specifications, etc. shall undergo a similar evaluation to determine relevant risk and analysis requirements to ensure project success and reliability targets are met. For these other types of rotating equipment not covered by other standards or specifications, the CONSULTANT shall propose a plan for OC SAN to approve prior to analysis being performed accordingly.

For the purpose of estimating level of effort, the Risk Value, "R", for critical equipment that is required for continuous operation of a process system or where standard equipment is modified slightly for this application, a R-Value of 4 should be assumed. For systems dedicated to a redundant process train or where standard equipment is used, a R-Value of 2 should be assumed.

The results from the above RUN evaluation shall be used by the CONSULTANT in their subsequent design, to help provide a robust solution for the project needs. Iterations of design and equipment substitutions shall trigger additional RUN evaluations and analysis, as needed. Final equipment acceptability and commissioning shall be per ANSI/HI 9.6.4-2009 or latest (Rotodynamic Pumps—for Vibration Measurements and Allowable Values), applicable Part of ISO 10816 latest (Mechanical Vibration), ANSI/AMCA 204-05:2012 or latest (Balance Quality and Vibration Levels for Fans), ISO 1940-1:2003 or latest (Mechanical Vibration—Balance Quality Requirements for Rotors in a Constant (Rigid) State), and ISO 21940-12:2016 or latest

(Mechanical Vibration— Rotor Balancing—Procedures and Tolerances for Rotors with Flexible Behavior) as applicable. In addition, all loads, forces and moments imparted to equipment or piping,

including resonance, shall be fully mitigated and all usage cases analyzed and documented per ASME 31.3-2018 or latest (Process Piping) at a minimum, and properly designed within applicable allowable stresses, etc. If there are conflicts in the standards specified, the more stringent value or condition to prevail.

8.0.3 NOT USED

8.0.4 ENGINEERING DESIGN GUIDELINES, CHAPTER 11, "INSTRUMENTATION AND CONTROL"

A. Section 11.4.1 "Requirements Study"

1. The Requirements Study shall not be part of the Scope of Work.

9. STAFF ASSISTANCE

OC SAN staff members or designees assigned to work with CONSULTANT on the design of this project are Cindy Murra at (714) 593-7327, e-mail to: cmurra@ocsan.gov and/or May Kyi at (714) 593-7376, e- mail to: mkyi@ocsan.gov.

10. EXHIBITS

Exhibit 1 - Preliminary Design Report Requirements

Exhibit 2 - Design Requirements

Exhibit 3 - Project Management Requirements

Exhibit 4 - Risk Management Requirements

Exhibit 5 - Workshop and Meeting Requirements

Exhibit 6 - Quality Control Requirements

Exhibit 7 - Design Submittal Requirements Matrix

Exhibit 8 - Project Schedule Calculation

Exhibit 9 - Deliverables Quantities

Exhibit 10 - Sample Construction Cost Estimate Format

Exhibit 11 - Sample Full Project Safety Review Plan

Exhibit 12 - Sample Risk Management Check List

Exhibit 13 - Sample MMRP Log

Exhibit 14 - Bluebeam Designer Training for Submission

Exhibit 15 - Bluebeam Designer User Training

Exhibit 16 - Specs Review using Microsoft Word and Teams

Exhibit 17 - OC SAN Engineering Design Guidelines and Standards – Available online at https://www.OC SAN.com/about-us/transparency/document-central/-folder- 917

Exhibit 18 – Not Used

Exhibit 19 - Project Reference Materials

- **Plant No. 1 Wastewater Process Map**
- **P1-82 Activated Sludge Plant Rehabilitation**
- **P1-129 Return Activated Sludge Piping Replacement at Plant No. 1**
- **FE 15-07 Secondary Treatment and Plant Water VFD Replacement at Plant No. 1**
- **PS 21-03 AS 1 Denitrification Alternatives**
- **SP-173 Appendix H Hydraulic Model Final Report**
- **PS 15-06 Seismic Evaluation of Structures at Plant No. 1**
- **Project Coordination Exhibit**
- **Plant and Reclaimed Water Map**
- **FE 20-05 Plant Water Piping Replacement at Secondary Clarifiers 1-26 at Plant No.1 Scope of Work**

Exhibit 20 - Sample Criticality Data Table

Exhibit 21 - Commissioning Procedure Training

Exhibit 22 - ORT Procedure Examples

Exhibit 23 - Pre-FAT Procedure Examples

Exhibit 24 - Sample FAT Procedure

Exhibit 25 - Sample RAT Procedure

Exhibit 26 - Project J-47 Cable Tray Improvements Preliminary Design Report for Plant No. 1

Exhibit 27 – Not Used

Exhibit 28 - Cable Conduit and Tray Schedule Database