PROFESSIONAL SERVICES AGREEMENT

This PROFESSIONAL SERVICES AGREEMENT, (hereinafter referred to as "Agreement"), is made and entered into to be effective the 25th day of March 2026, by and between the ORANGE COUNTY SANITATION DISTRICT, (hereinafter referred to as "OC SAN"), and BLACK & VEATCH CORPORATION, (hereinafter referred to as "CONSULTANT"). OC SAN and CONSULTANT are referred to herein collectively as the "Parties" or individually as a "Party."

WITNESSETH:

WHEREAS, OC SAN desires to engage CONSULTANT for **Trickling Filter Odor Control Study at Plant No. 1, Project No. PS24-04**, to provide professional services for a planning study to evaluate and make recommendations to determine a viable Trickling Filter long-term and short-term odor control technology at Plant 1; 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 services and has proceeded in accordance with said procedures to select CONSULTANT to perform this work; and

WHEREAS, at its regular meeting on March 25, 2026, the Board of Directors, by Minute Order, accepted the recommendation of the Operations Committee 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 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, and completeness and coordination of the work and 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 applicable laws, regulations, 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 professional engineering industry standards for clarity, uniformity, and completeness. CONSULTANT shall timely respond to all of OC SAN's questions, comments, suggestions, corrections, and recommendations. All comments from OC SAN, or its agent, shall be incorporated into the work prior to the next review deadline

or addressed, in writing, as to why the comment(s) has/have not been incorporated. CONSULTANT shall ensure that each submittal is 100% accurate for the level of work submitted (i.e., correct references, terms, capitalization, or equal status, spelling, punctuation, etc.)

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

D. Any CADD drawings, figures, and other work produced by CONSULTANT and Subconsultants using OC SAN CAD Manual. Conversion of CADD work from any other non-standard CADD 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 require advance written approval of OC SAN.

Electronic files shall be subject to an acceptance period of thirty-five (35) 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. All professional services performed by the CONSULTANT, including, but not limited to, all drafts, data, correspondence, proposals, and reports 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, or (b) subsequently becomes publicly known to the CONSULTANT other than through disclosure by OC SAN.

F. OC SAN shall furnish the CONSULTANT available studies, reports and other data pertinent to the CONSULTANT’s service; 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.

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 Five Hundred Forty-Eight Thousand Five Hundred and Six Dollars ($548,506). 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 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 https://www.gsa.gov/travel/plan-book/per-diem-rates.

The CONSULTANT shall be responsible for the most economical and practical means or 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 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, in a format acceptable to OC SAN. CONSULTANT shall warrant and certify the accuracy of these costs and provide all support documentation required by OC SAN. CONSULTANT understands that submitted costs are subject to Section 12 Audit Provisions.

B. CONSULTANT will submit monthly statements covering services and/or work performed for payment for those items included in Section 2 hereof no later than the second Wednesday of the following month and in the format required by OC SAN. The format must include, as a minimum: 1) current billing period invoicing, 2) current billing period "total percent invoiced to date", 3) future activities, 4) previous billing period "total invoiced to date", 5) potential items that are not included in the Scope of Work, 6) concerns and possible delays,

7) percentage of completion to date, and 8) budget status and amount remaining. Such requests shall be accompanied by such supporting data 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. OC SAN will pay approved invoices within thirty (30) days of receipt and approval by OC SAN of the payment request. OC SAN will notify CONSULTANT within fifteen (15) days following receipt of an invoice, if any corrections to the invoice are required from the CONSULTANT and if OC SAN does not approve all or part of an invoice.

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 based on the monthly statements, 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 $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. PREVAILING WAGES

To the extent CONSULTANT intends to utilize employees who will perform work during the Agreement, as more specifically defined under Labor Code Section 1720, CONSULTANT shall be subject to prevailing wage requirements with respect to such employees.

6. 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 Regulations Section 16461(e).

7. DOCUMENT OWNERSHIP – CONSULTANT PERFORMANCE

A. Ownership of Documents for the professional services performed.

All documents in all forms (electronic, paper, etc.), including, but not limited to, studies, sketches, drawings, computer printouts, disk files, and electronic copies prepared in connection with or related to the Scope of Work or professional 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 professional 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 study or deliverable 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.

8. 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:

One Million Dollars ($1,000,000) per occurrence with Two Million Dollars ($2,000,000) aggregate. If aggregate limits apply separately to this Agreement (as evidenced by submission of ISO form CG 25 03 or 25 04), then the aggregate limit may be equivalent to the per occurrence limit. Said insurance shall include coverage for the following hazards: premises-operations, blanket contractual liability (for this Agreement), products liability/completed operations (including any product manufactured or assembled), broad form property damage, blanket 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) and Riggers/On Hook Liability 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, and any other consultant, contractor, or subcontractor performing work or rendering services on behalf of OC SAN in connection with the planning, development, and construction of the project. In all its insurance coverages with the exception of Professional Liability related to the work, 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, or any other consultant, contractor, or subcontractor performing work or rendering services at the project. 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. 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.

D. 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.

E. 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.

F. Errors and Omissions/Professional Liability

CONSULTANT shall maintain in full force and effect, throughout the term of this Agreement, standard industry form professional liability / errors and omissions insurance coverage with coverage limits of not less than Two Million Dollars ($2,000,000) per claim and in the annual aggregate 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 terms 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 or omissions of CONSULTANT during the course of performing services under the terms 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.

G. 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) each occurrence and in the aggregate in a form acceptable by OC SAN.

H. Proof of Coverage

The CONSULTANT shall furnish OC SAN with original certificates and amendatory endorsements effecting coverage. Said policies 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. 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 Insured (General Liability)	The combination of (ISO Forms) CG 20 10 <u>and</u> 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 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
18480 Bandilier Circle
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. At the option of OC SAN, either: the insurer shall reduce or eliminate such deductible or self-insured retention as respects OC SAN; or the CONSULTANT shall provide a financial guarantee satisfactory to OC SAN guaranteeing payment of losses and related investigations, claim administration and defense expenses. OC SAN will not invoke the option expressed in this paragraph unless it has reasonable cause to question CONSULTANT’s financial strength.

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.

9. 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.

10. 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 under this Agreement by CONSULTANT. CONSULTANT shall include a description of the work and services to be done by each Subconsultant and each of CONSULTANT's Project team member. CONSULTANT shall include the respective compensation amounts for CONSULTANT and each Subconsultant, 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.

11. ENGINEERING REGISTRATION

The CONSULTANT's personnel and Subconsultants 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, the services of a registered engineer is required, such services hereunder will be performed under the direct supervision of registered engineers who are registered in California.

12. 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 industry standard practices and OC SAN's policy. 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.

13. LEGAL RELATIONSHIP BETWEEN PARTIES

The legal relationship between the parties hereto is that of an independent contractor and nothing herein shall be deemed to transform CONSULTANT, its staff, independent contractors, or Subconsultants into employees of OC SAN. CONSULTANT'S staff performing services under the Agreement shall at all times be employees and/or independent contractors of CONSULTANT. CONSULTANT shall monitor and control its staff and pay wages, salaries, and other amounts due directly to its staff in connection with the Agreement. CONSULTANT shall be responsible for hiring, review, and termination of its staff and shall be accountable for all reports and obligations respecting them, such as social security, income tax withholding, unemployment compensation, workers' compensation and similar matters.

14. 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 and addressed as follows:

ORANGE COUNTY SANITATION DISTRICT
18480 Bandilier Circle
Fountain Valley, CA 92708
Attention: Yai Phongmekhin, Contracts Administrator
Copy: Trimbak Vohra, Project Manager

CONSULTANT:
BLACK & VEATCH CORPORATION
300 Rancheros Drive
Suite 250
San Marcos, CA 92069
Attention: David Cover, Associate Vice President/Project Director

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

15. 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.

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 at the address listed in Section 14 - NOTICES.

16. 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, electronic materials, computation and study materials in its files pertaining to the work described in this Agreement, which is requested in writing by OC SAN.

17. 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).

D. California Air Resources Board Mobile Source Regulations

CONSULTANT and its subconsultants and subcontractors shall comply with the following California Air Resources Board Mobile Source Regulations:

- Advanced Clean Fleet (ACF): 13 CCR 2013-2013.4; 13 CCR 2015-2015.6
- Truck & Bus Regulation (T&B): 13 CCR 2025
- Clean Truck Check (CTC): 13 CCR 2195-2199.1
- Off-Road Diesel Amendments (ORD): 13 CCR 2449-2449.2

E. California Voluntary Protection Program Annual Reporting Requirement

If CONSULTANT will potentially work 1,000 combined hours in a quarter, for the term of the Agreement, CONSULTANT shall provide an annual report detailing its safety and health information, including, but not limited to, its total number of employees, work hours, number of injuries and illnesses, and number of injury and illness cases involving days away from work, restricted work activity and/or job transfer. CONSULTANT shall furnish this report to OC SAN no later than January 20th each calendar year.

Failure to provide this data by the required due date may result in suspension of CONSULTANT's services with OC SAN. Any delay arising out of or resulting from such suspension shall be CONSULTANT's sole responsibility and considered CONSULTANT caused delay, which shall not be compensable by OC SAN.

18. 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 this Agreement for that Party.

19. 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.

20. 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 he may be entitled.

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, OC SAN informs CONSULTANT that 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.

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. COMPLIANCE WITH OC SAN POLICIES AND PROCEDURES

CONSULTANT shall comply with all OC SAN policies and procedures, including, but not limited to, the Contractor Safety Standards, as applicable, and Human Resources Policies, all as may be amended from time to time.

25. 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 the 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.

26. 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.

BLACK & VEATCH CORPORATION

By _____ _____
Date

_____
Printed Name & Title

ORANGE COUNTY SANITATION DISTRICT

By _____ _____
Ryan P. Gallagher Date
Board Chairman

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

By _____ _____
Kevin Work Date
Purchasing & Contracts Manager

Attachments:
Attachment "A" – Scope of Work
Attachment "B" – Not Attached
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" – Not Used
Attachment "L" – Contractor Safety Standards
Attachment "M" – Not Attached
Attachment "N" – Not Attached
Attachment "O" – Not Attached
Attachment "P" – Human Resources Policies

YP

ATTACHMENT “A”

SCOPE OF WORK

ATTACHMENT "A"

SCOPE OF WORK

Trickling Filter Odor Control Study at Plant No. 1

Project No. PS24-04

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I. SUMMARY

This Scope of Work (SOW) requests engineering services to evaluate and seek recommendations to determine the most viable implementation to mitigate odors at the Plant 1 Trickling Filters Secondary Treatment Process Area.

II. PLANNING STUDY BACKGROUND AND OBJECTIVES

BACKGROUND

OC San owns and operates two (2) uncovered trickling filter (TF) units at Plant No. 1. The trickling filters were built in 2006 by Project P1-76, and their primary objective is to remove Biological Oxygen Demand (BODs) from the primary effluent stream and convert them into suspended solids. Due to the TF surface being exposed to the atmosphere, they have been one of the potential nuisance odor sources at Plant No. 1. The odor has been identified as musty in nature, and odor constituents may have been composed of reduced sulfur compounds, ammonia, and volatile organic carbons (VOCs). Depending on the wind direction and weather conditions, odors related to the TF process have been ongoing issues at Plant 1. Therefore, the trickling filters have been operating at reduced flow to minimize the nuisance impacts to the public.

Meanwhile, the TF units are being operated to provide the Ground Water Replenishment System (GWRS) with the aqueous ammonia residual concentration in the TF effluent. (SEE FIGURE 1 for General Site Location)

Additionally, in 2017, P1-126 Feasibility Study and SP-166 Odor Control Master Plan (OCMP) considered options to cover the trickling filters and explored other means to minimize odor. The Odor Control Master Plan specifically recommended placing covers on the trickling filters and treating foul air with new single-stage chemical scrubbers. It was also reported that trickling filters were designed to have sufficient structural support for a geodesic dome if it is required in the future. The P1-126 concept report and the OCMP are important reference documents that are attached to this scope

Consequently, this Planning Study (PS24-04) will conduct a dedicated study to identify both short-term and long-term TF odor mitigation strategies to potentially allow the trickling filters to continue operating at their design capacity and find viable ways to address the odor issues.

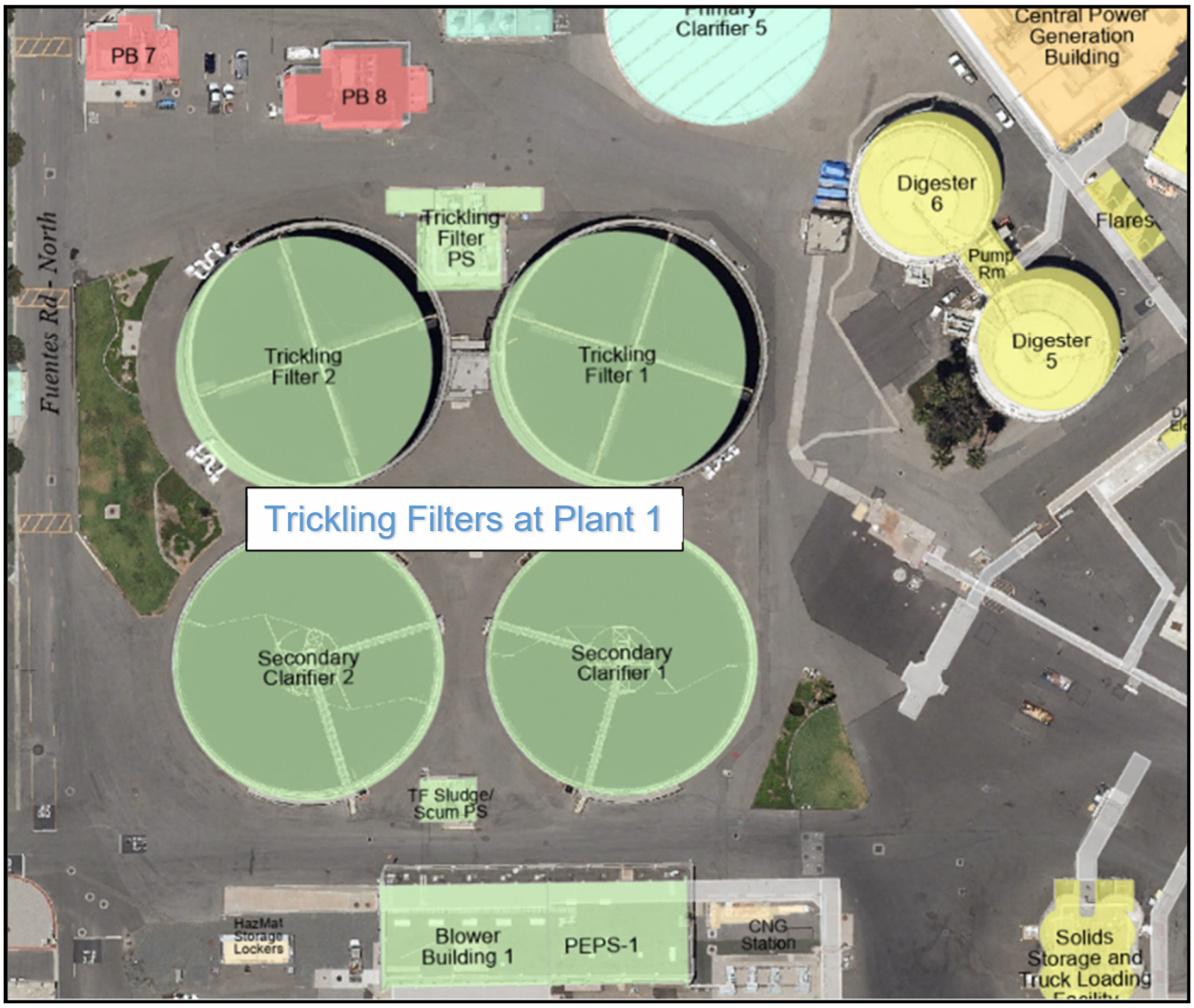

Figure 1 – General Site Location

GENERAL PROJECT DESCRIPTION

This Scope of Work (SOW) requests engineering services to conduct a planning study to evaluate and make recommendations to determine a viable TF odor control technology at Plant 1. The study will include:

a. Analysis of odor control technology alternatives based on OC San odor control policy and strategic plan, including:
    i. Evaluations and recommendations of both short-term and long-term odor mitigation strategies.
    ii. Recommendations for odor control systems based on the existing facilities/landscape and other relevant factors such as life cycle cost & Operations and Maintenance costs

Tasks 1 through 3 assessments will be submitted as Chapters, culminating in a Planning Study Report. The final report will outline conceptual design, implementation plans, project schedule, and construction cost estimate for CIP project planning for the preferred short-term odor control alternative. Additionally, high level recommendations will be made for a long term odor control system as well as modifications of operations and maintenance as required.

LIST OF AVAILABLE INFORMATION:

- Previous work or investigations
  - P1-126 Concept Report
  - SP-166 Odor Control Master Plan
- Record information
  - P1-76 Record Drawings
  - P1-76 Shop Drawings
- Other relevant data, such as historical foul air sampling results from both plants

III. PROJECT SCHEDULE

Table 2 below lists the time frames associated with each major project deliverable for Task 1 through Task 8 and with OC SAN's review and approval of those deliverables. The CONSULTANT shall comply with the deadlines indicated on this table. Timing of Task 9 is contingent upon completion of the Trickling Filter Media Replacement Project (P1-142).

Table 1 – Project Milestones and Deadlines

MILESTONE	DEADLINE
Kickoff Meeting	The kickoff meeting will be scheduled to coincide with the Study (Project) Notice to Proceed (NTP).
Submit Draft Chapter 1 (Review of Existing Data and Field Sampling)	45 workdays from the Project NTP
Submit Draft Dispersion Modeling TM	100 workdays from the Project NTP
Submit Draft Chapter 2 (Short-term Odor Control)	110 workdays from the Project NTP
Submit Draft Chapter 3 (Long-Term Odor Control)	135 workdays from the Project NTP
Submit Draft Planning Study Report	150 workdays from Project NTP
OC SAN Review of Draft Planning Study Report	20 workdays from receipt of the Draft Study Report
Submit Final Planning Study Report	30 workdays from receipt of OC SAN comments on the Draft Study Report.
Total	200 Workdays (10 months approximately)

IV. PROJECT EXECUTION

TASK 1 - REVIEW EXISTING DATA AND PERFORM FIELD SAMPLING (Chapter 1)

The CONSULTANT shall evaluate the relevant data, record drawings, documents, reports that will be provided by OC San staff. The existing data available will include:

- TF and Secondary Clarifiers treatment record drawings,.
- TF operational philosophy and Operations Manual and Practices (OMaPs).
- Prior studies related to TF odor control such as P1-126 conceptual report and Odor Control Master Plan.
- Available air quality sampling data and foul air constituents' concentrations.
- Previous TF concrete assessment.
- P1-142 media replacement project information and condition assessment data.

The CONSULTANT's Odor Control Task Lead and Project Manager shall attend a one-day field visit for field testing, sampling, and trickling filter observation. Should sampling not be completed during this visit, CONSULTANT's Odor Control Task Lead shall attend a field visit on a second day to complete sampling. The Consultant shall assess condition of the trickling filters using the data provided in reports supplemented with any visual observations from the field visit and make recommendations for any further inspection or condition assessment. CONSULTANT shall develop sampling protocol to be approved by OC San ahead of the field visit.

During the field visit, the CONSULTANT shall perform testing, wastewater sampling, and odor sampling as follows:

- Fan performance: For evaluation of fan performance, CONSULTANT shall document airflow of each blower during the field investigation using pressure gauge readings and fan curves (or other available means that does not include fan testing) and compare to their rated capacity. Fans would need to be operational for this effort. Should fans not be operational during the sampling field visit, it is assumed that OC SAN can provide this data.
- Wastewater sampling: OC SAN shall supply two samples of primary effluent for analysis.
    - Jar test: The CONSULTANT shall use the first sample to measure dissolved sulfide concentration, pH, and ORP. A jar test shall then be performed using hydrogen peroxide (H_2O_2) to determine the appropriate dosing rate and reaction time required to fully oxidize sulfides present in the liquid phase.
    - Shake test: The CONSULTANT shall use the second sample for a "shake test" to evaluate the stripping potential of hydrogen sulfide (H_2S) and reduced sulfur compounds. Colorimetric (Draeger) tubes shall be used for this analysis for three odorants (methyl mercaptan, hydrogen sulfide, and dimethyl sulfide). Results from the shake test will provide an indication of the odor potential associated with the trickling filters' distribution arm.

- Vapor phase odor sampling:

    - Continuous sampling: CONSULTANT shall perform continuous H_2S sampling over a two-week period using Acrulog H_2S dataloggers. A total of eight Acrulogs are assumed, four per trickling filter; two at the trickling filter surface (ideally, one mounted to the distribution arm and one behind the distribution arm), one in the trickling filter's plenum at the bottom, and one downstream of the fan from a sampling port at the exhaust stack . Fans shall be operational for exhaust stack measurement and vent doors should be closed during fan operation. If feasible, one continuous week of sampling shall be conducted with the fans operational and one continuous week with the fans off. Should OC SAN elect to only turn fans off at night, the exact timing of the operation of the fans shall be logged by OC SAN and provided to BV. The continuous sampling will serve as an observation of odors over time and will show the diurnal variations and duration of odor events. CONSULTANT shall return to the site after the two-week sampling period to retrieve Acrulogs.

    - Instantaneous sampling: CONSULTANT will collect instantaneous samples at the trickling filter surfaces and ventilation ports using colorimetric (Drager) tubes for three odorants (methyl mercaptan, hydrogen sulfide, and dimethyl sulfide).

    - Odor sampling: Consultant will take four air samples for lab analysis for odor units and SIFT analysis for total reduced sulfur compounds. These results will serve as inputs to the dispersion model. Consultant will use a flux chamber to collect samples in 10L Tedlar bags from the surface of one trickling filter and from the vent doors during "fan off" operation. After the fans have been turned on, CONSULTANT shall take a second set of samples from the surface of the trickling filter and from the sample port in the exhaust stack. It is assumed that odor generation is similar in both TFs and samples from one TF are representative for both trickling filters.

    - Spot checks: During field visit, CONSULTANT shall use a Jerome meter for instantaneous spot checking of H_2S around the trickling filters and adjacent fenceline.

- Air Velocity and Movement: CONSULTANT shall use an anemometer to check air velocity at the surface of trickling filters and at the trickling filter natural ventilation ports when ports are uncovered and fans are non-operational. CONSULTANT will utilize a smoke pen to verify direction of air movement with fans operational and non-operational.

CONSULTANT will compare collected field data to existing data and coordinate with OC SAN for confirmation on data to use for odor control assessment (Tasks 2 and 3) and dispersion modeling (Task 5) prior to initiating those tasks.

The CONSULTANT shall document the Task 1 effort in the first chapter of the Planning Study. Upon receipt of review comments from OC SAN, CONSULTANT shall incorporate comments with the updated Chapter submitted with the Draft Planning Study Report.

Major Deliverable:

- Draft and Final Chapter 1 of the Planning Study will summarize findings and recommendations for the following items:

    - Assess existing ventilation fan performance in regard to TF operation and odor control by comparing field findings to rated capacity.
    - Perform operational review of the trickling filters, including assessment of air drawdown and wetting rates, to maximize efficiency and maintain operation of the trickling filters at their design capacity.
    - Establish odor and odorant concentrations to use for dispersion modeling and odor control alternative assessment.
    - Provide recommendation for any further condition or structural assessment.

The information provided shall be used for planning and executing the work as part of the study and should not be relied upon to prepare the final recommendations. Information not included in the Exhibits, which are attached to this SOW, will be made available after NTP.

Level OF Efforts Assumptions:

- Assume existing odor constituent data is valid and supplement with odor data obtained under Task 1.
- All field sampling performed by CONSULTANT shall be conducted during business hours (8am to 5pm).
- Field sampling is intended to be performed prior to trickling filter media replacement (project P1-142). Additional field sampling after media replacement is included as Task 9.
- Uncovered Plant 1 Data from OCMP and other sampling data is valid.
- Covered Plant 2 Data from OCMP and other sampling data is valid.
- Field sampling protocol shall be coordinated with OC SAN through workplan meeting under Task 7. A formal sampling protocol will be provided ahead of the site visit and sampling event.
- Structural assessment and condition assessment shall be a desktop study based on review of information provided by OC SAN and photos from the field visit; no additional inspection or site visits are required. An allocation of 18 hours for structural engineers and 18 hours for condition assessment engineers is assumed for Task 1. Any additional effort beyond these allocations can be provided via amendment.
- Deliverables shall be provided in electronic format.
- OC SAN review comments on Chapter 1 of the Planning Study shall be provided in Excel spreadsheet with CONSULTANT to provide responses within the spreadsheet.

TASK 2 – EVALUATION OF SHORT-TERM ODOR MITIGATION STRATEGIES (Chapter 2)

The CONSULTANT shall identify and evaluate odor control mitigation technologies, which could be implemented immediately or in the short term to reduce trickling filter odor. The evaluation criteria shall closely follow the existing OCMP and OC San strategic plan.

The technologies and implementations may include:

- Providing viable options to modify the operations of TF process to mitigate odor without reducing treatment capacity.

- Recommending odor control technologies that can be easily implemented, including a conceptual layout or sketch and a construction cost estimate.

The CONSULTANT shall document the Task 2 effort in Chapter 2 of the Planning Study Upon receipt of review comments from OC SAN, CONSULTANT shall incorporate comments with the updated Chapter submitted with the Draft Planning Study Report.

Subsequent to submittal of the Draft Chapter 2, the preferred short-term odor control solution shall be selected. Upon confirmation from OC SAN on preferred approach, the short-term assessment will be expanded to include the following implementation planning elements for the selected short-term odor control system that will be summarized in the Planning Study:

- Conceptual design drawings (10%)
  - Short-term odor control system plans and sections (2 drawings).
  - Foul air ductwork and fan assembly plan for short-term odor control system (if relevant) (1 drawing).
  - Process flow diagram for short-term odor control system (1 drawing).
  - Implementation and construction sequencing for short-term odor control system (1 drawing).
- Impacts to other projects/project interdependencies.
- Construction cost estimates and schedule estimates.
- Preliminary specification list for major project elements.

Major Deliverable:

- Draft and Final Chapter 2 of the Planning Study , which will summarize findings and recommendations including:
  - Figures and sketches for the short-term odor mitigation designs.
  - Capital cost, Operations and Maintenance cost, implementation plans, and construction schedule.

Level OF Efforts Assumptions:

- Assume three (3) alternatives will be evaluated based on the existing condition. Multiple alternatives may be recommended for implementation.

- Field/Site observations are not required.
- Impacts on other projects shall also be considered.
- Conceptual drawings for alternatives evaluation purposes shall be developed in Bluebeam (PDF).
- Conceptual design drawings for implementation planning shall be developed under Task 4 in AutoCAD (using OC SAN BIM CAD standards and borders).
- Electrical and I&C assessment and drawings are not required.
- Structural drawings are not required.
- Deliverables shall be provided in electronic format.
- OC SAN review comments on Chapter 2 shall be provided in Excel spreadsheet with CONSULTANT to provide responses within the spreadsheet.

TASK 3 – EVALUATION OF TF COVERS AND ODOR MITIGATION ALTERNATIVES (Chapter 3)

The long term odor control alternatives rely on covering the TFs and treating the surface foul air with appropriate odor control technology. For purposes of this study, it is assumed that the trickling filter structures can accommodate the loading from covers. CONSULTANT shall evaluate and recommend an appropriate cover type and TF material compatibility, along with an odor control technology. The evaluation criteria shall closely follow the existing OCMP and OC San Strategic Plan.

For purposes of this study, it is assumed that chemical scrubbers are the preferred technology. Two vapor phase treatment alternatives will be considered; (1) integration with the P1-126 Primary Odor Scrubber Complex POSC (currently in design); and (2) a dedicated chemical scrubber system for treatment of TF foul air.

The CONSULTANT shall document the Task 3 effort in Chapter 3 of the Planning Study . Upon receipt of review comments from OC SAN, CONSULTANT shall incorporate comments with the updated Chapter submitted with the Draft Planning Study Report.

Major Deliverable:

- Draft and Final Chapter 3 of the Planning Study which will summarize findings and recommendations for the following items:
  - Provide a high level recommendation on TFs covers, including the type of cover and material cost. A single cover configuration will be considered that minimizes volume beneath the cover while accommodating the center column mechanism with CONSULTANT identifying corresponding exhaust rate and loading.
  - Provide high level preventative maintenance recommendations for covered TF facilities.
  - Provide a recommendation for the most appropriate odor control alternative based on a qualitative and cost comparison.
  - Concept design is not required for long-term alternatives.

Level Of Effort Assumptions:

Assume odor modeling is required using available data from both Covered and Uncovered TFs provided in Task 1. (Note: Provide a separate cost for modeling effort as a separate line item)

- Assume the trickling filter structures can accommodate new covers. Additional structural assessment would be required prior to design and installation of new covers.
- Assume existing odor data is valid to use in modeling, supplemented as needed by the odor data collected during the study.
- Assume 2 (two) cover types and 2 (two) odor control alternatives will be evaluated. Odor control alternatives assumed chemical scrubbers as the preferred technology; no additional technology evaluation is required.
- Field/Site observations are not required..
- Conceptual drawings shall be developed in Bluebeam (PDF).
- Electrical and I&C drawings are not required.
- Deliverables shall be provided in electronic format.
- OC SAN review comments on Chapter 3 shall be provided in Excel spreadsheet with CONSULTANT to provide responses within the spreadsheet.

TASK 4 - PREPARATION OF A PLANNING STUDY REPORT

The CONSULTANT shall prepare a Draft and Final Planning Study Report to summarize findings and recommendations from the preceding tasks as well as further define the concept design and implementation planning for the selected short-term alternative.

TASK 4.1 – PLANNING STUDY REPORT

The CONSULTANT shall submit a Draft Planning Study Report associated with the tasks included in this SOW. Upon receipt of review comments from OC SAN, CONSULTANT shall incorporate comments and submit a Final Planning Study Report.

The Planning Study Report shall include the following:

- Executive Summary with key findings and recommendations from Tasks 1-3.
- Chapters above and/or any additional reports associated with this SOW.
- Meeting minutes for all meetings and workshops associated with this SOW.
- Conceptual design drawings for the selected short-term alternative (up to five drawings). Preliminary drawing list assumes the following concept drawings for the preferred short-term alternative:
    - Short-term odor control system plans and sections (2 drawings developed under Task 2).
    - Foul air ductwork and fan assembly plan for short-term odor control system (1 drawing developed under Task 2).
    - Process flow diagram for short-term odor control system (1 drawing developed under Task 2).

- Implementation and construction sequencing for short-term odor control system (1 drawing developed under Task 2).

- Electrical capacity assessment (see Task 4.2).
- Impacts to other projects/project interdependencies.
- Construction cost estimates and schedule estimates.
- Preliminary specification list (if applicable) for major project elements for short-term odor control system.

Major Deliverables:

- Planning Study Report package (Draft and Final)

Level Of Effort Assumptions:

- OC SAN BIM/CAD standards and borders shall be utilized.
- Assumes conceptual design drawings represent a 10% level of design.
- Structural drawings are not required.
- Development of specifications are not required.
- Deliverables provided in electronic format.
- Drawings not required for preferred long-term alternative.
- OC SAN review comments on Planning Study Report shall be provided in Excel spreadsheet with CONSULTANT to provide responses within the spreadsheet.

TASK 4.2 – ELECTRICAL CAPACITY ASSESSMENT

The CONSULTANT shall provide of the following assessment of electrical elements of the project for the recommended short-term solutions:

- Identify power requirements for the preferred short-term alternative.
- Assess available MCC capacity in existing power building.

CONSULTANT shall document findings from Task 4.2 as part of Chapter 2 of the Planning Study.

Major Deliverable:

- Findings documented in Planning Study

Level OF Efforts Assumptions:

- OC SAN design standards shall be utilized.
- Plan layouts are not required.
- Available MCC capacity shall be determined based on discussions with OC SAN staff and available information; field visit is not required.
- Development of electrical and I&C specifications are not required.

- Recommendations for required upgrades are not included.
- An allocation of 20 hours is assumed for this task. Any additional effort beyond this allocation can be provided via amendment.

TASK 5 – DISPERSION MODELING

CONSULTANT shall review prior dispersion model inputs and findings, and confirm modeling scenarios with OC SAN prior to performing any modeling. Upon receiving OC SAN approval to proceed, the CONSULTANT shall perform AERMOD dispersion modeling to evaluate the impact of the existing Plant 1 trickling filter odors on the surrounding community by collection and compiling meteorological, terrain, and source data needed as model inputs. It is assumed that the odor data collected under Task 1 will be used as the basis for modeling, supplementing with existing odor data as appropriate. If sampling with fans operational is not conducted, historical sampling data shall be used for modeling scenarios with fans on. Modeling results (impacts as dilution-to-threshold, D/T) will be presented in both tabular and graphical (isopleth map) formats.

Budgeting for this effort assumes that four scenarios will be evaluated for maximum impact; preliminarily it is assumed that the scenarios will include the following:

- Scenario 1 - baseline conditions with existing trickling filter fans off
- Scenario 2 – baseline conditions with existing trickling filter fans on
- Scenario 3 - short-term controlled scenario assuming exhaust stack extension to maximum allowable height for Plant 1
- Scenario 4 – short-term controlled scenario assuming implementation of dispersion fans

Final model scenarios will be determined after sampling performed under Task 1 is complete.

CONSULTANT shall present findings from Task 5 efforts in a one-hour virtual workshop to be attended by the PM, PE, and Dispersion Modeler. CONSULTANT shall document the dispersion modeling effort in a Draft Dispersion Modeling Technical Memorandum. Upon receipt of review comments from OC SAN, CONSULTANT shall incorporate comments and submit a Final Dispersion Model Technical Memorandum with the Final Chapter 2 of the Planning Study.

Deliverables:

- Draft and Final Dispersion Modeling Technical Memorandum.
- Workshop agenda and meeting minutes.

Level OF Efforts Assumptions:

- AERMOD shall be used for dispersion model.
- Model shall utilize odor data collected during Task 1, supplemented with available existing odor data as needed.
- Deliverables shall be provided in electronic format.
- OC SAN review comments on Dispersion Modeling Technical Memorandum shall be provided in Excel spreadsheet with CONSULTANT to provide responses

within the spreadsheet.

- OC SAN review comments on the Dispersion Modeling Technical Memorandum shall be provided in Excel spreadsheet with CONSULTANT to provide responses within the spreadsheet.

TASK 6 - PROJECT MANAGEMENT

The CONSULTANT shall be responsible for managing the CONSULTANT's project execution, schedule, budget, Subconsultants, and coordination with other projects.

The CONSULTANT shall be responsible for managing all subconsultants, including the assignment of scope, management of deliverables and schedules, reporting of progress, invoicing, and quality control.

TASK 6.1 – PROJECT MANAGEMENT PROGRESS MEETINGS

The CONSULTANT shall prepare an agenda and conduct monthly project management meetings (up to 10 meetings, one hour duration each) with OC SAN's Project Manager and the CONSULTANT's Project Manager. The purpose of the meetings will be to review the CONSULTANT's overall project progress and monthly Progress Report. Other meetings shall be scheduled on an as-needed basis.

TASK 6.2 – PROJECT SCHEDULE

The CONSULTANT shall create a simple project schedule. At a minimum, the schedule shall indicate the following:

- Projected start date and finish date for each activity.
- Each project tasks.
- Major meetings and workshops.

TASK 6.3 – PROJECT LOGS

The CONSULTANT shall maintain a project log to track the study progress and action items.

TASK 6.4 – PROGRESS REPORTS

CONSULTANT shall submit monthly progress reports at the same time as monthly invoices that include the following contents:

- Work activities completed to date, in the current reporting period, and projected for the coming month.
- A brief description of outstanding issues and their potential for impact on scope, schedule, budget, and quality.
- Potential changes in the project scope.
- Budget status including estimates of actual costs to date, earned value, costs to complete, and costs at completion.

- Schedule status with a description of any variances between scheduled and forecasted milestone dates.
- A discussion of corrective actions to be taken to avoid or mitigate cases where the project schedule is expected to be delayed.

TASK 6.5 – PROJECT INVOICES

The invoices shall document the man-hours and billing rate for each person that works on the project. Overhead, profit and any direct costs shall also be shown for each task. As part of the summary section of the invoice, CONSULTANT shall also include the following information:

- Budget.
- Current billing period invoicing.
- Previous billing period “total invoiced to date”.
- Budget Amount Remaining.
- Current billing period “total percent invoiced to date”.

Approval of an invoice by OC SAN requires a Progress Report for the period covered by the invoice. Payment of an invoice will be delayed until the Progress Report is submitted.

OC SAN will provide a sample invoice structure to the CONSULTANT at the beginning of the project.

TASK 7 – MEETINGS AND WORKSHOPS

The CONSULTANT shall hold meetings and workshops throughout the Planning Study to keep OC SAN apprised of the work, review work-in-progress, share information, discuss project submittals, present findings of technical analyses, receive and resolve comments, and obtain decisions and direction by OC SAN staff. This task defines the major meetings and workshops to be held by the CONSULTANT. The CONSULTANT shall prepare agendas, minutes, and meeting materials for all meetings and workshops.

The CONSULTANT shall assume the following meetings will be required during the development of the planning study.

Number of Meetings/ Workshops	Proposed Topics	Consultant Attendance:
• One 1-hr Project Kickoff Meeting	--	• PM, Technical Lead(s) (in-person) • PE (virtual)
• One 1-hr Meeting	• Pre-field visit workplan meeting	• PM, Tech lead (in-person) • PE (virtual
• Four 1-hr Meetings	• Focus meetings with technical leads	• PM, PE, Tech leads (virtual)

Number of Meetings/ Workshops	Proposed Topics	Consultant Attendance:
• Two 2-hr Workshops	• One workshop each for Task 2 and 3	• PM, Tech lead(s) (in-person) • PE (virtual)
• One 2-hr Workshop/Presentation	• Final recommendation presentation to OC San Staff	• PM, Tech lead(s) (in-person) • PE (virtual)
• One 1-hr Meeting	• Review OC SAN comments on draft report	• PM, Tech lead(s) (in-person) • PE (virtual)
• Bi-Weekly 1/2-hr Meetings as Progress/Technical Meetings	• Meet with OC SAN project team and relevant staff	• PM and PE (virtual)

The CONSULTANT shall provide meeting agendas and presentations 5 working days before each Workshop and transmit the meeting/workshop minutes to the OC SAN staff within three business days of the meeting in MS Word format using OC SAN's template, or an approved substitution. The monthly progress meetings and focus meetings can be assumed virtual, with all other meetings being hybrid and/or in person, as accepted by the OC SAN Project Manager. Assume that workshops are in person and meetings are virtual.

A copy of all comments on project issues obtained by the CONSULTANT from OC SAN staff without OC SAN's Project Manager's direct involvement shall be submitted for OC SAN's Project Manager's approval within three business days of receipt.

TASK 8 - QUALITY CONTROL

The CONSULTANT shall be responsible for the technical adequacy and quality control of his work. Prior to the submittal to OC SAN, each portion of a submittal shall be thoroughly reviewed and corrected by a member of the CONSULTANT's QC Team.

The reviewer shall attest to their review in the form of a written affidavit outlining the submittal subject and identifying the corrected deficiencies.

Quality Control for work and deliverables is budgeted under the other tasks with Task 8 budget allocated for maintaining quality procedures and documents.

TASK 9 – SUPPLEMENTAL FIELD SAMPLING AND DISPERSION MODELING

Through the P1-142 project, OC SAN will be replacing media in the trickling filters. CONSULANT shall perform additional field sampling and dispersion modeling to reflect this improvement and refine the study recommendations. CONSULTANT shall perform the following activities under this task:

- Ongoing project management and administration for additional three months in project schedule.

- Development of sampling protocol.

- The CONSULTANT's Odor Control Task Lead and Project Manager shall attend one day site visit to conduct vapor phase odor sampling at the one trickling filter with new media installed:

    - Continuous sampling: CONSULTANT shall perform continuous H_2S sampling over a two-week period using Acrulog H_2S dataloggers. A total of four Acrulogs are assumed; two at the trickling filter surface (ideally, one mounted to the distribution arm and one behind the distribution arm), one in the trickling filter's plenum at the bottom, and one downstream of the fan from a sampling port at the exhaust stack . Fans shall be operational for exhaust stack measurement and vent doors should be closed during fan operation. If feasible, one continuous week of sampling shall be conducted with the fans operational and one continuous week with the fans off. Should OC SAN elect to only turn fans off at night, the exact timing of the operation of the fans shall be logged by OC SAN and provided to BV. The continuous sampling will serve as an observation of odors over time and will show the diurnal variations and duration of odor events. CONSULTANT shall return to the site after the two-week sampling period to retrieve Acrulogs.

    - Odor sampling: Consultant will take four air samples for lab analysis for odor units and SIFT analysis for total reduced sulfur compounds. These results will serve as inputs to the dispersion model run defined below. Consultant will use a flux chamber to collect samples in 10L Tedlar bags from the surface of one trickling filter and from the vent doors during "fan off" operation. After the fans have been turned on, CONSULTANT shall take a second set of samples from the surface of the trickling filter and from the sample port in the exhaust stack.

- Dispersion modeling update
    - CONSULTANT shall perform one additional dispersion model run for the preferred short-term controlled scenario using the sampling data collected under this task.

- Summary Memorandum
    - CONSULTANT shall develop a Summary Memorandum to document the Task 9 efforts, findings, and recommendations for integration with the Planning Study Report.

Deliverables:

- Summary memorandum to document task findings and impact on Planning Study recommendations.

Level OF Efforts Assumptions:

- Assumes an additional three months of schedule for project management activities.
- AERMOD shall be used for dispersion model.
- Model shall utilize odor data collected under this Task, supplemented with available existing odor data as needed.
- Updates to the Planning Study Report are not required.

- Deliverables shall be provided in electronic format.

V. GENERAL REQUIREMENTS

GENERAL

Working Hours

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

VI. STAFF ASSISTANCE

The OC SAN staff member or designee assigned to work with the CONSULTANT on this project is Trimbak Vohra at 916-531-5444. e-mail tvohra@ocsan.gov

EXHIBITS:

Exhibit 1 – Location Map

Exhibit 2 to 13 – Not applicable

Exhibit 14 - Bluebeam Designer Training for Submission

Exhibit 15 - Bluebeam Designer User Training

Exhibit 16 - OC SAN Engineering Design Guidelines and Standards –

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Exhibit 17 - Project Reference Materials (PROVIDED SEPERATELY IN PLANETBIDS)