

PRESENTED TO:

***CITY OF
IMPERIAL***

**PROPOSAL:
WATER RESERVOIR
CLEANING, INSPECTION, AND
REPAIR SERVICES FOR
MISCELLANEOUS RESERVOIRS**



**HARPER & ASSOCIATES
ENGINEERING, INC.**

PREPARED BY:

KRISTA HARPER, VICE PRESIDENT

1240 E. ONTARIO AVE., SUITE 102, CORONA, CA 92881

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COVER LETTER

Thank you for the opportunity to submit the following comprehensive Proposal to provide engineering services for the Water Reservoir Cleaning, Inspection, and Repair Services for Miscellaneous Reservoirs. The Proposal was prepared based on receipt and review of the Request for Quotations. We are confident our firm offers the City an exceptional opportunity to take advantage of our engineering services with an outstanding array of technical talent and expertise.

The cost estimate, terms, and conditions of this Proposal are valid for ninety (90) days from receipt of Proposal. HAE will provide and maintain in full force and effect, while operating under an agreement with the City, a Comprehensive Liability insurance policy which shall include bodily injury and property damage coverage of \$2,000,000 combined single limit, Automobile Liability insurance with limits of \$2,000,000, Worker's Compensation insurance with limits of coverage as prescribed by law, and an Errors and Omissions Professional Liability policy with a minimum limit of coverage of \$2,000,000. The insurance certificates will state "City of Imperial is an additional insured."

Please contact me at our office at 1240 E. Ontario Avenue, Suite 102, Corona, CA 92881 or (951) 372-9196, via FAX at (951) 372-9198, or e-mail at Krista@HarperEng.com regarding contract negotiations, binding the contract, any questions, or if additional information is required.

Respectfully submitted,
HARPER & ASSOCIATES ENGINEERING, INC.

A handwritten signature in blue ink that reads "Krista Harper". The signature is written in a cursive, flowing style.

Krista Harper, P.E.
Vice President



EXECUTIVE SUMMARY

Harper & Associates Engineering, Inc. (HAE) is pleased to submit this Proposal for the Water Reservoir Cleaning, Inspection, and Repair Services for Miscellaneous Reservoirs. HAE has been operating since 1979, and specializing in this field and the needs within the water and wastewater industry has given our company immense knowledge surrounding what is needed for long lasting success. Our desire is to always provide our clients with exceptional knowledge, high quality workmanship, and personalized service in all projects. HAE has a unique history providing evaluation and cleaning of reservoirs in the water industry since 1996. A unique feature of the HAE Dive Team that you will have trouble finding with a competitor is that we have engineers as a part of our team. Our three-man team is standard and has open communication and real-time video of the diver in the water at all times during evaluations and cleaning of reservoirs. This team has accomplished well over 1000 dives and is Cal/OSHA, AWWA, and EPA compliant.

HAE's vast experience with assessing over a thousand structures in the water and wastewater industry enables us to provide the City with thorough condition assessments of their structures, which will include detailed reports. The detailed reports include itemized recommendations for coating, painting, corrosion-related structural repairs, and safety and health modifications. The detailed reports will also include accurate cost estimates for all recommended items, which are based on our numerous current and previous projects of similar scope.

A detailed background for the team is included in the Project Team section of this Proposal. Samples of our Dive Logs and detailed Resumes are provided in Appendix A. Please feel free to contact our references listed below as we are confident regarding an history of customer satisfaction. Thank you for the opportunity to submit this comprehensive Proposal.

QUALIFICATIONS & BACKGROUND

40 years of specialty experience

HAE is a corrosion and reservoir structural consulting engineering firm specializing in water reservoirs and related facilities, operating since 1979. HAE would be considered a small business in comparison to many larger firms, but the decision was made early on to be a small firm that specializes in this unique field of engineering. By specializing, HAE has developed a comprehensive understanding of this field and the needs within the water industry. The desire is to provide our clients with exceptional knowledge, high quality workmanship, and personalized service on all projects. The fact that HAE has successfully specialized in this unique field for over 40 years speaks well of the firm's reputation in the industry, integrity, financial stability, and resources to successfully accomplish projects.

HAE can accomplish evaluations by drained, dive, and float methods. These evaluations have helped our team develop expertise regarding coatings in reservoirs, their modes of failure, and the corrosion-related structural damage caused by coating failures. Our team has also developed a thorough knowledge of the Cal/OSHA regulations, seismic regulations, and AWWA standards needed to bring a reservoir into compliance with current codes. By having our own diving crew led by an engineer, we can guarantee our evaluations are thorough and all aspects of reservoir rehabilitation are carefully considered. This team is also the most efficient and thorough dive team in Southern California when cleaning your reservoirs. As a firm that specializes in services for water storage reservoirs, we can provide turnkey projects for our clients. We provide the initial evaluation and cleaning, then a detailed report. Next, we can prepare comprehensive technical specifications and plans, bid documents, and customized bidding services. After the preparation of these documents we can begin construction assistance and finish the project with quality control inspection. This start to finish process distinguishes HAE from other engineering firms.

As can be seen in the references provided, many clients have used our engineering services exclusively for their reservoir projects for many decades. We believe our long-standing service to a variety of public agencies throughout California, many on a continuous basis throughout our 42 years in business, is a testimonial to the quality of services we provide. We encourage the City to confer with any of the references included in this Proposal. The primary assurance is the fact that all work will be done by highly qualified and experienced engineers with an outstanding array of technical talent and expertise and who are uniquely familiar with water reservoir projects.

SCOPE OF WORK

TASK NO. 1 - FIELD EVALUATION

The objective of this item is to determine the condition of the reservoirs as relates to corrosion factors, including coatings and paint, and take field measurements for safety modifications to recommend corrective and preventive measures, including filing a written report. To accomplish this objective, HAE recommends the following approach.

1. Telephone conference with the City to verify approach to project.
2. Accomplish field investigation of complete interior surfaces and exterior of the reservoirs to evaluate the present condition of the reservoirs from the following standpoints:
 - a. Corrosion-related structural soundness of the reservoirs, foundations, and anchor bolts
 - b. Condition of protective coatings and paint: how they are protecting the steel from corrosion, their aesthetic qualities, the percent failures, their ability to be recoated, and DFT mil thickness tests
 - c. Test adhesion of exterior paint per ASTM D3359
 - d. Environmental and operating conditions which affect the use of the reservoirs, maintenance of the reservoirs, the aggressiveness of the atmosphere and water, and extent of abrasion damage
 - e. Condition of appurtenances: float, overflow, inlet, ladders, etc.
 - f. Observe and note structural, safety, and health code violations per DOHS, Cal/OSHA, and AWWA requirements.
 - g. Condition of cathodic protection system, if present.
 - h. Collect two (2) paint samples in each area of interior coating and exterior paint. Test coating and paint for metals analysis.
3. Field evaluation of the water storage reservoirs utilizing Certified Divers/Engineers to visually inspect, photograph, and video visible deficiencies below the waterline would entail one site visit per reservoir, unless corrosion damage is sufficient to warrant further evaluation.



- a. Evaluation of the vapor zone in the reservoirs would be accomplished via inflatable raft with the water level 3 to 4 feet below the roof line.
 - b. The roof hatch must be a minimum of 24" to permit entrance of the diver into the reservoir.
 - c. A narrated video will be taken of the surfaces during the inspection. The video will be recorded on thumb-drive with 1080p resolution and submitted with the report.
4. Surfaces shall be photographed with a minimum resolution of 10 megapixels showing all the problem areas and appurtenances of the interior and exterior of each reservoir and the photos will be entered into Photographic Surveys.
5. Prepare an Engineer's Report for each reservoir containing observations, recommendations to repair or mitigate deficiencies in the reservoir, life expectancy, safety and operational deficiencies, potential structural deficiencies, and cost estimates. The report will also include a diagram of the reservoir depicting the location from where the photographs were taken.
6. Submit three (3) hard copies and a pdf file of the written report. A thumb-drive of all the reports, inspection photographs, and a narrated video of the interior and exterior inspections and underwater cleaning video will be submitted to the City.
7. Telephone conference with the City's staff to discuss the report
8. The following sanitary measures will be fully complied with in accordance with AWWA C652, Section 5 during the diving of the reservoirs.
- a. HAE has a set of diver's equipment dedicated for use only in potable water and a second set of diver's equipment dedicated for use in reclaimed water reservoirs only.
 - b. No body parts shall come in contact with potable water.
 - i. Diver's suit shall be prophylactic in design. Only non-permeable dry suits shall be used which incorporate an integrated hard helmet, neck and wrist dams, and boots.
 - ii. Wetsuits, hoods, and open or removable masks and face plates are not acceptable for use in potable water.
 - c. All equipment shall be thoroughly disinfected by a 100% wash-down with, or immersion in, a 200 ppm solution of chlorine and water.
 - d. All personnel on the dive team shall be free of communicable diseases and shall not have been under a physician's care within the seven-day period prior to entering the reservoir. All personnel will be in good health prior to entering the reservoir.

9. Harper & Associates Engineering, Inc. fully complies with all the safety procedures in accordance with Cal/OSHA Title 8, General Industry Safety Orders, Group 26, Article 152, 153, 6050-6056.

- a. The diver shall carry an auxiliary breathing system consisting of a pony bottle and regulator.
- b. Dive crew shall have three-way hard wired communication at all times. The diver attendant shall be a fully equipped certified diver and shall be equipped to perform an extraction of the diver in the water. The standby person on the ground shall be monitoring the dive by live video feed. The standby person shall also have a phone for calling in case of an emergency.
- c. All members of the dive team shall possess a current certificate of qualification and training in CPR/First Aid.

TASK NO. 2 - CLEANING

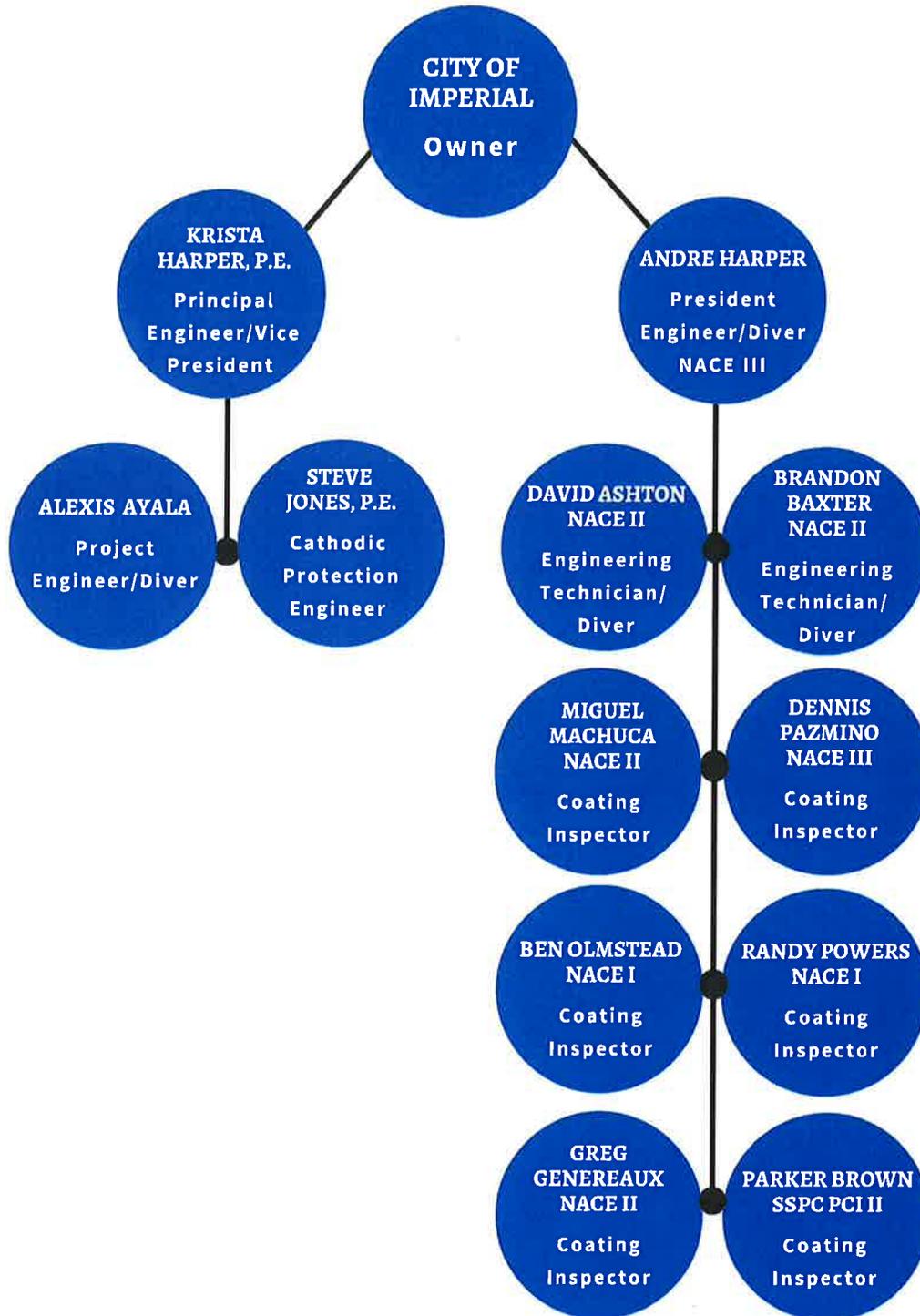
The objective of this item is to remove dirt, debris, and sediment from the horizontal surfaces in the reservoirs.

1. Interior vacuuming of reservoirs utilizing Certified Divers/Engineers shall include floor surfaces, column bases, and appurtenances and shall exclude the vertical surfaces such as walls, columns, steep slopes, and the water column (particles suspended in the water).
 - a. If piles of sand, debris, failed coating, rust scale, or rocks are discovered in the reservoir, it may not be possible to use HAE's standard vacuuming procedures. This will be considered a changed condition and the City will be contacted before HAE proceeds with cleaning.
2. HAE will furnish the City with real time videos illustrating the cleaning of each reservoir and a detailed narration of what was seen by the diver regarding the condition of the interior and exterior surfaces. All video transmission shall be recorded on DVD with 1080p resolution along with live voice narration.
3. In accordance with RFP, bottom sediment shall be disposed of on-site. HAE will de-chlorinate all water discharged from the site with sodium-meta-bisulphate or approved equal.
4. Sanitary and safety measures will be fully complied with as noted in 9. and 10. above.
5. HAE will take measurements of bottom sediment depths in at least eight (8) different locations.
6. HAE will collect a sediment sample for analysis by the City.

TASK NO. 3 - MINOR COATING REPAIRS

1. HAE does not typically recommend accomplishing underwater coating repairs, as these types of repairs are only temporary. The degree of surface preparation that can be accomplished underwater and the method of application does not provide a long-term fix for the coating system. If there is significant corrosion within the reservoir, random repairs are not useful and, if there are only random corrosion spots, installation of a cathodic protection system is a better option, as a cathodic protection system will provide long-term protection for current and future coating defects.

a. However, if the City chooses to accomplish coating repairs, HAE will make the minor repairs, including surface preparation by Hand Tool Cleaning (SSPC-SP2) to remove corrosion, and abrading the surface, and applying AquataPoxy to the prepared surfaces.



ORGANIZATION CHART

The following personnel will be the team for the City's project. Detailed qualifications are referenced in the Resumes.

PROJECT TEAM

Krista Harper, P.E., Principal Engineer

Ms. Harper, as Principal Engineer, will be responsible for QA/QC and will be the Project Manager. Ms. Harper is a Registered Civil Engineer in the State of California (C71280). For the past 25 years, Ms. Harper has been Senior Project Manager for HAE, working extensively in both corrosion and structural engineering projects, primarily related to steel and concrete tank evaluations and rehabilitation.

Andre Harper, President and Lead Diver

Mr. Harper will accomplish the field evaluation of the reservoirs and prepare reports. Mr. Harper holds a degree in engineering from California State Polytechnic University, Pomona, and is NACE Level III certified (55395). Mr. Harper has worked with HAE for the past 25 years, performing the diving inspections of hundreds of tanks for the evaluation of coating, painting, and seismic/structural projects. Mr. Harper is a Project Engineer for HAE and supervises all field operations for the firm.

Alexis Ayala, Project Engineer and Diver

Mr. Ayala will be the Project Engineer who will assist with the field inspection, preparing the reports, technical specifications, and AutoCAD plans. Mr. Ayala holds a degree in engineering from California State University, Fullerton, and has worked with HAE for three years. Mr. Ayala is bilingual in Spanish and English, both written and oral.

David Ashton, Engineering Technician and Diver

Mr. Ashton is an Engineering Technician who will assist with field inspections and preparing reports for condition evaluations of the reservoirs. Mr. Ashton is a certified diver and has performed dive inspections of nearly 200 tanks. In addition, Mr. Ashton is a NACE Level II Certified Coating Inspector (47738). Mr. Ashton has worked for HAE for eight years.

Brandon Baxter, Engineering Technician and Diver

Mr. Baxter is an Engineering Technician who will assist with conducting field inspections and preparing reports for condition evaluations of the reservoirs. Mr. Baxter is a certified diver and has performed dive inspections of nearly 200 tanks. In addition, Mr. Baxter is a NACE Level II Certified Coating Inspector (55401). Mr. Baxter has worked for HAE for six years.

References

**COACHELLA VALLEY
WATER DISTRICT
64 TANKS
CLIENT SINCE: 1999**

**MR. BRIAN FOGG
75-515 HOVLEY LANE EAST
PALM DESERT, CA 92211
(760) 398-2651**



HAE has been accomplishing reservoir projects for the District since 1999. These projects have included performing dive and float evaluations of all 64 reservoirs for corrosion, structural, and safety compliance and preparation of a maintenance Prioritization Report for all 64 reservoirs. HAE prepared the plans and specifications and provided quality control inspection and construction management for the rehabilitation of 20 reservoirs, including coating, painting, and structural safety upgrades. In addition, HAE has designed eight new reservoirs and provided the construction management and quality control inspection of four of the new reservoirs.

**CITY OF RIVERSIDE
5 RESERVOIRS
CLIENT SINCE: 2017**

**MR. FERNANDO ROMERO
3900 MAIN STREET
RIVERSIDE, CA 92522
(951) 826-5443**



HAE has been accomplishing reservoir projects for the City since 2017. In 2019, HAE completed a project which included performing dive and float evaluations of five reservoirs for corrosion, structural, and safety compliance. HAE also cleaned all five reservoirs for the City.

ROWLAND WATER DISTRICT 14 RESERVOIRS

**MR. ERIC HALL
3021 S. FULLERTON ROAD
ROWLAND HEIGHTS, CA 91748
(562) 697-1726**



Projects included underwater investigation and cleaning of the interior of the reservoirs, as well as preparation of reports for each reservoir investigated. The reports included photo surveys, observations, conclusions, recommendations, and cost estimates. The District also required a narrated video for each reservoir. Once all reservoirs were evaluated, a detailed ten-year maintenance schedule was established for the District to assist in long-term planning for maintenance of their reservoirs. HAE prepared the specifications and plans for the rehabilitation of five reservoirs and provided the quality control inspection.

CUCAMONGA VALLEY WATER DISTRICT 35 RESERVOIRS

**MR. MIKE MAESTAS
10440 ASHFORD STREET
RANCHO CUCAMONGA, CA 91730
(909) 987-2591**



In 2018, HAE provided Cucamonga Valley Water District with reservoir evaluations, cleaning, and a Prioritization Report for all 35 reservoirs. In our comprehensive Prioritization Report, HAE recommended the order in which the reservoirs need to be rehabilitated. The factors used to recommend the order was the condition of the reservoirs, the safety standards currently present, and the ability of each reservoir to be taken out of service. HAE completed all work in an efficient and timely manner.

CRESCENTA VALLEY WATER DISTRICT 14 RESERVOIRS

MR. DAVID GOULD
2700 FOOTHILL BOULEVARD
LA CRESCENTA, CA 91214
(818) 248-3925

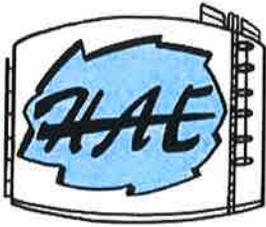


Projects have included dive investigation of all reservoirs, including cleaning and dive inspection of the interiors for seismic/structural and corrosion protection; testing for lead and heavy metals; preparation of reports with recommendations and cost estimates; preparation of a priority list, technical specifications, and bid packages; and project management of the rehabilitation projects. Cathodic protection systems were designed and installed in ten of the reservoirs to protect them until rehabilitation could be accomplished. A separate project for the District for three concrete reservoirs was also accomplished, including field investigation of interiors by method of diving and exteriors for seismic/structural and corrosion protection.

CITY EFFORTS

In support of HAE's efforts in this project, the City agrees to provide the following items, personnel, and/or services to be utilized in connection with this work.

1. The City shall make available to the Consultant reasonable and timely staff input for purposes of conference discussion, reviewing submittals from the Consultant, and providing factual information and/or suggestions relating to the work in a manner such that the Consultant may meet the project completion schedule.
2. The City shall provide designated water operations person for access to reservoir sites, upon request by the Consultant, at time and in the manner mutually agreed upon as required to accommodate work of Consultant.
3. The City will provide payment on monthly progress estimates to the Consultant based upon work accomplished during the previous month or portion thereof.
4. The City will provide copies of existing drawings and records for the reservoirs to assist in the evaluations.



**ANDRE
HARPER**
PRESIDENT



OVERVIEW

Mr. Harper, President of Harper & Associates Engineering, Inc., has been working for the past 25 years extensively in corrosion and tank structural engineering projects, primarily related to steel and concrete tank evaluations and rehabilitation. Mr. Harper is a Project Engineer for HAE responsible for overseeing all field operations and is the lead diver for diving inspections for the evaluation of coating, painting, and seismic/structural projects. Mr. Harper has performed over a thousand inspections on steel and concrete water tanks, wastewater treatment plants, elevated tanks, pressure vessels, and pipelines.

EDUCATION

BSCE, Construction Engineering
California State Polytechnic
University, Pomona

Cal/OSHA Confined Space Certified
Dive Certified
CPR Certified

32 YEARS
EXPERIENCE

CERTIFIED
#55395
NACE LEVEL
III

MEMBERSHIPS

American Water Works Association

**National Association of Corrosion
Engineers**

Inland County Water Association

**Southern California Water Utility
Association**

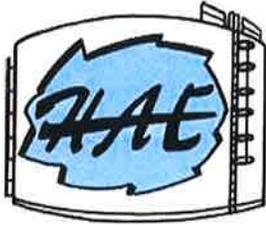
PROJECT EXPERIENCE

2019 - Rubidoux Community Services District - Dive and Seismic Evaluation of Four Tanks

2012-2020 - Laguna Beach County Water District - Dive and Drained Evaluation of 13 Concrete and Steel Reservoirs

2016 - Glendale Water and Power - Dive Evaluation of Three Reservoirs and Six Hydropneumatic Tanks

2007 - Evaluation and Prioritization of 36 Tanks for Long Beach Water Department



KRISTA HARPER, P.E.

VICE PRESIDENT



OVERVIEW

Ms. Harper, Vice President and Principal Engineer of Harper & Associates Engineering, Inc., has been working for the past 25 years extensively in corrosion and tank structural engineering projects, primarily related to steel and concrete tank evaluations and rehabilitation. Ms. Harper is responsible for quality assurance/quality control for all aspects of the firm including analysis of corrosion problems, preparation of specifications and plans, construction management, maintenance programs, inspection, and coordination with clients.

EDUCATION

BSCE, Construction Engineering
California State Polytechnic
University, Pomona

2019 Inductee into the
School of Engineering
Hall of Fame

30

**YEARS
EXPERIENCE**

C
71280

**REGISTERED
CIVIL
ENGINEER**

MEMBERSHIPS

American Water Works Association
Past Chairman of the Tanks,
Reservoirs, Structures,
Maintenance Committee and Past
Chairman Corrosion Control
Committee

**National Association of Corrosion
Engineers**

Inland County Water Association

**Southern California Water Utility
Association**

PROJECT EXPERIENCE

2020 - Coachella Valley Water District - Update 64 Reservoirs Prioritization Report originally prepared in 2016

2020 - City of Vernon - Evaluation, Cleaning, and Prioritization of Six Reservoirs

2019 - Cucamonga Valley Water District - Evaluation, Cleaning, and Prioritization of 35 Reservoirs

2019 - East Valley Water District - Evaluat and Prioritization of 23 Reservoirs

APPENDICES

City of Imperial
Water Reservoir Cleaning, Inspection, and Repair Services for Miscellaneous Reservoirs

Activity Name	Duration (Days)	Start Date	Finish Date	Oct 20							Nov 20							
				27	4	11	18	25	1	8	15	22	29					
1 Notice to Proceed	1.00	9/28/20	9/28/20															
2 Submittals	3.00	9/29/20	10/1/20															
3 Insp/Clean Aten	1.00	10/5/20	10/5/20															
4 Insp/Clean Water	1.00	10/6/20	10/6/20															
5 Insp/Clean Shop	1.00	10/7/20	10/7/20															
6 Prepare Reports/Videos	35.00	10/8/20	11/25/20															
				27	4	11	18	25	1	8	15	22	29					

APPENDIX #2

CITY OF IMPERIAL REQUEST FOR QUOTATIONS

PROJECT: WATER RESERVOIR CLEANING, INSPECTION, AND REPAIR

SERVICES FOR MISCELLANEOUS RESERVOIRS

QUOTATION						
ITEM	DESCRIPTION	QTY	DEPTH OF SEDIMENT	U/M	UNIT PRICE	TOTAL PRICE
RESERVOIR SHOP						
1	Inspection/Evaluation of Interior, Equipment, and Foundation, including dive inspection and video/photo survey of reservoir interior	1	-	EA	\$3,365	\$3,365
2	Clean Reservoir Bottom (Floor) of 1/4 to 1/2 inch of sediment	1	0.5	Inch	\$1,125	\$-1,125
3	Clean Reservoir Bottom of Additional Sediment per 1/4" of Depth	1	0.25	Inch	\$350.	\$350
4	Make Minor Coating Repairs (1 square foot patch area)	20	-	SF	\$-125	\$-125

ATEN RESERVOIR						
5	Inspection/Evaluation of Interior, Exterior, Equipment, and Foundation, including dive inspection and video/photo survey of reservoir interior	1	-	EA	\$3,165	\$3,165
6	Clean Reservoir Bottom (Floor) of 1/4 to 1/2 inch of sediment	1	0.5	Inch	\$1,250	\$-1,250
7	Clean Reservoir Bottom of Additional Sediment per 1/4" of Depth	1	0.25	Inch	\$350	\$350
8	Make Minor Coating Repairs (1 square foot patch area)	20	-	SF	\$-125	\$-125

WATER PLANT						
9	Inspection/Evaluation of Interior, Exterior, Equipment, and Foundation, including dive inspection and video/photo survey of reservoir interior	1	-	EA	\$3,165	\$3,165
10	Clean Reservoir Bottom (Floor) of 1/4 to 1/2 inch of sediment	1	0.5	Inch	\$1,500	\$-1,500
11	Clean Reservoir Bottom of Additional Sediment per 1/4" of Depth	1	0.25	Inch	\$350	\$350
12	Make Minor Coating Repairs (1 square foot patch area)	20	-	SF	\$-125	\$-125