REQUEST FOR PROPOSALS

DESAL ANTISCALANT/CLEAN-IN-PLACE CHEMICALS
BID NO: 18-18006

ADDENDUM 5

BIDS DUE: April 30, 2018 @ 3:00 PM Central Time

To report suspected ethics violations impacting the San Antonio Water System, please call 1-800-687-1918.

The addendum 5 is issued to change the following in attachment D.

- Clarification
- Questions
- Revised Compensation Schedule- please submit the revised compensation schedule in a sealed envelope marked pricing
- Revised Attachment D

IT IS NECESSARY TO RETURN THIS ADDENDUM 5 AS PART OF YOUR BID SUBMISSION

CLARIFICATION:

Item e of attachment D in addendum 1 needs to be replaced with the following paragraphs:

e) The pilot system needs to monitor physical and chemical parameters of feed, permeate and concentrate streams. The following physical and chemical parameters need to be measured continuously:
   - Feed, permeate, and concentrate pressure for stages 1, 2, and 3
   - Feed, permeate and concentrate temperature of stages 1, and 3
   - Feed permeate, and concentrate flow rates, in stages 1, 2, and 3
   - pH, and conductivity of feed, permeate and concentrate streams in stages 1, 2, and 3

   Total dissolved solids (TDS), total organic carbon (TOC), iron (total and dissolved) and silica concentration of first-stage feed and third-stage permeate need to be measured once a week for first four weeks when the pilot study will be performed using the antiscalant. The supplier/vendor will use the methods provided in Table D-1 to measure these parameters. The supplier/vendor will use a laboratory facility accredited by the State of Texas under the National Environmental Laboratory Accreditation Program (NELAP) to measure the parameters.

Table D-1

Parameters	**Method**
Iron, Total	**EPA 200.7**
Iron, Dissolved	**EPA 200.7**
Silica	**EPA 200.7**
Total Dissolved Solids (TDS)	**SM 2540C**
Total Organic Carbon (TOC)	**SM 5310C**

Add item l in attachment D of addendum 1

l) SAWS Technical Evaluation Committee will evaluate the responses to the RFP. The firm(s) that will obtain the highest score(s) during the evaluation process will be the only firm(s) who will be selected to perform the pilot study. 'Selection Process' section of the RFP describes the evaluation criteria in details.

Item “a” of attachment D in addendum 1 needs to be replaced with the following paragraphs:

a) Before awarding the RFP, the SAWS will require the supplier to conduct a pilot study for 35 days, of which 30 consecutive days (non-stop 24/7) will be allocated to demonstrate the performance of the selected scale inhibitor, and 5 consecutive days will be allocated to demonstrate the performance of the selected CIP chemicals. After performing the CIP, the supplier/vendor will run the pilot unit for additional 10 consecutive days to show that the normalized flow rate, and the feed, and concentrate pressure of 1^{st}, 2^{nd}, and 3^{rd} stages restored in the original condition.

Item “f” of attachment D in addendum 1 needs to be replaced with the following paragraph”

f) After the completion of the pilot study with anti-scalant, the supplier will remove the lead membrane element from the first stage, and the lag membrane element from the third stage, and perform an autopsy on these membranes. During the autopsy, the supplier will identify organic, inorganic and biological materials that are deposited on the membrane surface. The supplier will replace the lead membrane element of the first stage and lag membrane element of the third stage with clean membrane elements before starting the CIP.

Add item k in attachment D of addendum 1

k) SAWS will NOT pay for installation, operation and decommission of the pilot system. Additionally, SAWS will NOT provide any labor and/or equipment during the installation, operation, and decommissioning of the pilot system. The vendor/supplier will be filly responsible for installation, operation, and decommissioning of the pilot system.

Item g of attachment D in addendum 1 needs to be replaced with the following paragraphs:

g) The supplier will issue a pilot study report within **15** days of the completion of the pilot study. The report will include the operational data as well as the membrane autopsy result. The operational data will include graphs for Time vs normalized flow during the 30-day operation of the pilot system before performing CIP, and 10 day operation of the pilot system after performing CIP. The report will also include recovery-rejection data for each stage, differential pressure data for each stage, and salt passage through each stage.

QUESTION:

1. Does a wet test need to be done when submitting a membrane to SAWS? From point 8 in Attachment D (Pilot Study) it says “The supplier will be responsible to bring the equipment, membranes, pumps, piping, chemicals, and other accessories required to conduct the pilot study.” I would just like confirmation that this means the supplier must supply the 3-stage RO pilot unit, correct?

   Response: Yes

2. Would the use of a freight carrier for trucking the chemicals from the manufacturing facility to the SAWS facility be considered a "subcontractor?"

   Response: Yes.

3. Reviewing your water analysis we see Iron in the raw water but nothing mentioned in the feed water entering the RO. Is the iron missing or you have a treatment system to knock out iron. Also we would like to know that in the history of RO plant operation what sort of problems faced so far like iron or calcium fouling, organic to account for in our chemical package.

   Response: SAWS has provided information on the chemical analysis of raw and feed water that are currently available to SAWS. If the supplier/vendor wants to have additional data on the raw and/or feed water, the supplier/vendor should contact SAWS to collect samples from SAWS BGD plant, and perform the analysis on the vendor/supplier's cost.

4. Please clarify the number of autopsies required per CIP event. Would we need to autopsy one element from each of the trains (4 primary, 2 secondary), or just a single element from one train? Would lead and tail membrane autopsies be required? Would these be required prior to every primary and secondary train CIP during the duration of the supply contract?

   Response: SAWS anticipates that one autopsy will be required for tail-end membrane element from third-stage. However, depending on the nature of the fouling, autopsies of additional membrane elements may be needed.

5. Do the replacement elements the supplier provides (when conducting an autopsy) need to be new elements, or can they be cleaned used elements?

   Response: Please see second bullet point of addendum 4

6. Please clarify the level of presence required during CIPs within the first year. Do we need to have a representative onsite every day of the CIPs, and for all RO trains being cleaned?

   Response: In the first year, for every CIP event, supplier/vendor representative needs to be present at the site for at least two consecutive days (16 hours)

7. How much advanced notice (business days) will be provided for the CIP support visits?

   Response: One week

8. Will SAWS accept both liquid or powder versions of CIP chemicals, or is one preferred? Also, would 45-55lb (product dependent) pails be acceptable in place of the requested 90lb jugs.

Response: Yes, SAWS will accept both liquids and powder version of CIP chemicals. The price schedule has been revised and will be priced by pound. Please indicate the size of the jug/pail you will be submitting for each line item for CIP chemicals.

9. Please clarify what SAWS will pay for in regards to the pilot.

   Response: SAWS will not pay for the pilot

10. Is the feed water provided for the pilot already pH adjusted to 6.5? If not will SAWS provide sulfuric acid for the RO pilot pH adjustment?

    Response: The supplier/vendor needs to adjust the pH.

11. In the Pilot Study attachment (Attachment D) it states that the pilot must continuously monitor chemical properties (TDS, TOC, Iron, Silica). Do these have to be continuous online analyzers, or would periodic (2-3 analysis during the 30 day pilot study) grab samples be sufficient. Would SAWS be able to collect the grab samples if complete sample kits are provided?

    Response: Please see above

12. Could the pilot results reporting period be extended to 10-14 days after pilot completion? 7 days is a limited amount of time to remove, ship, autopsy, and analyze the foulant from the two RO elements to be autopsied.

    Response: Please see above

13. Will a CIP be conducted on all RO trains prior to switching to the new antiscalant supplier?

    Response: SAWS will consider the recommendation from the selected supplier/vendor regarding the matter.

14. Can you provide us the split/breakup the flow, flux on the primary first and second stages on the permeate/reject flows.

    Response: Here is the information on feed and permeate flow for 1st, 2nd and 3rd stages:
    1st stage feed flow: ~1,927 gpm
    1st stage permeate flow: ~1,084 gpm
    2nd stage feed flow (which is also the 1st stage concentrate flow): ~843 gpm
    2nd stage permeate flow: ~457 gpm
    3rd stage feed flow: ~770 gpm
    3rd stage permeate flow: ~385 gpm

15. On page three of thirty-three the first line states: “SAWS will pay for the chemicals, installation, and monitoring in accordance to the price proposal”. Can we ask for additional compensation to cover installation and monitoring pilot cost in price schedule?

    Response: SAWS will NOT pay for installation, operation and decommission of the pilot system. Additionally, SAWS will NOT provide any labor and/or equipment during the installation, operation, and decommissioning of the pilot system. The vendor/supplier will be fully responsible for installation, operation, and decommissioning of the pilot system.

16. To design a three stage RO pilot plant, can we receive the details of the parameters like RO feed pressure, area stages, flow, flux, salt level changes, recovery, etc. including PEID (flow diagram) to show the instruments? Can we get the RO projection as a reference to understand plant parameters?

    Response: SAWS will provide the information to the selected vendor before the pilot study will start.

17. Can you allow us to tour the plant?

    Response: Please contact Shawn Dorn via email at shawn.dorn@saws.org to schedule your tour and copy Robert.escobar@saws.org.

18. How do we schedule water collection from the plants?

    Response: Please contact Shawn Dorn via email at shawn.dorn@saws.org to schedule your water collection and copy Robert.escobar@saws.org.

19. Will the successful bidding companies be informed on the number of other pilots that will be run?

    Response: SAWS will send a letter to the selected firm. SAWS will also send letters to the firm(s) who will not be selected to perform the pilot. The firm who will obtain the highest score in the RFP evaluation process will be allowed to perform the pilot study.

20. If the pilot is interrupted within the 30 day trial for less than a day is there a 30 day reset?

    Response: Yes

21. How many vendors will be allowed to pilot?

    Response: The vendor who will obtain the highest score through the evaluation process of the RFP will be the only vendor who will be allowed to perform the pilot.

22. What is the current antiscalant being used and what is the dosage rate?

    Response: Currently SAWS is using a proprietary antiscalant from Avista Technologies. The dosage rate is between 2 and 3 ppm.

23. You mentioned April 9th was the day to ask for a membrane to be autopsied, can we still request a membrane?

    Response: According to Addendum 4, if the supplier needs to perform an autopsy on an existing membrane element that H2Oaks BGD plant is using, then the supplier needs to provide a new membrane element to SAWS H2Oaks facility on April 17, 2018. The manufacturer and model number of the new membrane element needs to be same as the manufacturer and model number of the existing membrane elements that SAWS H2Oaks BGD facility is using. SAWS BGD plant is currently using RO membrane elements manufactured by Dow Filmtec (model number: BW30-400/34). SAWS will get the used membrane ready at H2Oaks facility for the suppliers to pick-up on April 18, 2018 at 3:00 p.m.

24. Please clarify statement: *"SAWS will pay for the chemicals, installation and monitoring in accordance to the price proposal."*

    Response: The supplier/vendor needs to incorporate the pilot study cost within the cost for chemicals (antiscalant and CIP). SAWS will not pay separately for the installation, operation, or decommissioning of the pilot system.

25. Must the cleaning chemicals be in 90 pound jugs as described "*Low pH cleaning chemical (90 pound jugs*)" or will smaller pails/pack sizes be acceptable?

    Response: Yes

26. Is supplier required to provide new/clean membrane elements for all normal cleaning events?

    Response: The supplier/vendor will provide the new membrane element whenever it deems necessary (before the cleaning event).

27. What is the current price per pound?

    Response: Antiscalant price is $21.06 per gallon. 90lb jugs price is $369.90.

28. What is the dose rate of the current products being used?

    Response: Current dosage rate is 2 to 3 mg/L

29. What is the Target pH

    Response: Target pH for feed water is 6.5.

30. What is the annual consumption?

    Response: Annual consumption varies. SAWS does have 4 primary RO trains; each primary RO train requires approximately 16 ml/min of anti-scalant

31. Would the use of a freight carrier for trucking the chemicals from the manufacturing facility to the SAWS facility be considered a "subcontractor?"

    Response: Yes

32. It is not feasible to monitor chemical parameters continuously during a pilot, especially complex parameters such as TOC, iron and silica. The listed parameters need to be performed in a laboratory. Sampling for these parameters on a weekly basis is more reasonable. Being that the source water is from wells, the water quality is expected to be stable so weekly samplings would be very representative.
    Conductivity of course can be monitored continuously and can be used as indicator of unexpected changes in water quality due to influences from other sources.

    Response: Please see above

33. Can the pilot be remotely monitored and operated or will an operator need to be onsite?

    Response: SAWS will not be involved for installing, operating or decommissioning any portion of the pilot system. It is completely up to the supplier how they want to install, operate and decommission the system.

34. Will the Raw water feeding the RO contain acid? If no will SAWS provide the acid injection system?

    Response: SAWS will not provide any equipment to install, operate or decommission the pilot system

35. What is the frequency of data collection and reporting?

    Response: Please see above

36. Will SAWS provide a forklift for loading and unloading of pilot RO unit?

    Response: Please see above

37. Will dosage be taken in to consideration for the unit price or are we to bid to the quantities on page 18 of the RFP?

    Response: If the supplier/vendor has an innovative approach to improve the existing SAWS BGD system, they should include their idea in the 'Project Approach' section of the response to RFP. To compare the price among different suppliers, the suppliers need to fill out 'compensation schedule' as shown in the RFP document.

38. On page three of thirty-three the first line states: "SAWS will pay for the chemicals, installation, and monitoring in accordance to the price proposal". Can we ask for additional compensation to cover installation and monitoring pilot cost in price schedule?

    Response: The supplier/vendor needs to incorporate the pilot study cost within the cost for chemicals. SAWS will not pay separately for the installation, operation or decommissioning of the pilot system.

39. To design a three stage RO pilot plant, can we receive the details of the parameters like RO feed pressure, area stages, flow, flux, salt level changes, recovery, etc. including PEID (flow diagram) to show the instruments? Can we get the RO projection as a reference to understand plant parameters?

    Response: SAWS will provide the information to the selected supplier/vendor at least one week before starting the pilot study.

40. On the plant recovery of 80% from the primary trains can you provide us the split/breakup of the flow, flux on the primary first and second stages on the permeate/reject flows.

    Response: Total permeate flow from each primary RO train is 1,541 gpm. Set point for first stage permeate flow is 1,084 gpm. Set point for permeate flow from second stage is 457 gpm. Actual values vary +/- 5 %.

41. Can a supplier substitute the 3-stage pilot skid with a skid that achieves the specified 90% recovery and similar flux by incorporating recycle to confirm scale control through to the most concentrated tail-end position?

    Response: The supplier/vendor needs to mimic the current SAWS BGD set-up, which is a three-stage system.

42. Can some parameters (e.g. pH, temperature, TOC, iron, silica) be measured periodically throughout the study instead of being continuously monitored?

    Response: Please see above.

REVISED

Compensation Schedule

Quantities provided are only estimates and are in no way binding to SAWS.

SAWS reserves the right to add or delete items and change quantities depending on SAWS needs.

Group 1

No.	Description	QTY	Unit Price	UOM	Extended Price
1	Liquid scale inhibitor (antiscalant) bulk	24,000	$	Gallons	$
2	Freight	15	$	Each	$
				Group 1 Total	$

Group 2

No.	Description	QTY	Unit Price	UOM	Extended Price
1	Low pH cleaning Chemical Size of jug/pail quoting:	30,000	$	LB	$
2	High pH cleaning Chemical Size of jug/pail quoting:	30,000	$	LB	$
3	Freight	25	$	Each	$
				Group 2 Total	$
				Grand Total Group 1 & 2	$

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REVISED ATTACHMENT D

PILOT STUDY

b) Before awarding the RFP, the SAWS will require the supplier to conduct a pilot study for 35 days, of which 30 consecutive days (non-stop 24/7) will be allocated to demonstrate the performance of the selected scale inhibitor, and 5 consecutive days will be allocated to demonstrate the performance of the selected CIP chemicals. After performing the CIP, the supplier/vendor will run the pilot unit for additional 10 consecutive days to show that the normalized flow rate, and the feed, and concentrate pressure of 1st, 2nd, and 3rd stages restored in the original condition.

a) The supplier will submit a pilot study protocol to SAWS 15 days before starting the pilot study. The protocol will include, but not limited to, the following: a detailed schedule, process description, health and safety procedures, etc.

b) During the pilot study, the supplier will use a three-stage reverse osmosis system (at 90 percent recovery) that mimics SAWS BGD system.

c) The supplier will be responsible to operate, and maintain the pilot system. The supplier will also be responsible to collect and process the data of the pilot study.

d) The pilot system needs to monitor physical and chemical parameters of feed, permeate and concentrate streams. The following physical and chemical parameters need to be measured continuously:
   - Feed, permeate, and concentrate pressure for stages 1, 2, and 3
   - Feed, permeate and concentrate temperature of stages 1, and 3
   - Feed permeate, and concentrate flow rates, in stages 1, 2, and 3
   - pH, and conductivity of feed, permeate and concentrate streams in stages 1, 2, and 3

   Total dissolved solids (TDS), total organic carbon (TOC), iron (total and dissolved) and silica concentration of first-stage feed and third-stage permeate need to be measured once a week for first four weeks when the pilot study will be performed using the antiscalant. The supplier/vendor will use the methods provided in Table D-1 to measure these parameters. The supplier/vendor will use a laboratory facility accredited by the State of Texas under the National Environmental Laboratory Accreditation Program (NELAP) to measure the parameters.

Table D-1

Parameters	Method
Iron, Total	EPA 200.7
Iron, Dissolved	EPA 200.7
Silica	EPA 200.7
Total Dissolved Solids (TDS)	SM 2540C
Total Organic Carbon (TOC)	SM 5310C

e) After the completion of the pilot study with anti-scalant, the supplier will remove the lead membrane element from the first stage, and the lag membrane element from the third stage, and perform an autopsy on these membranes. During the autopsy, the supplier will identify organic, inorganic and biological materials that are deposited on the membrane surface. The supplier will replace the lead membrane element of the first stage and lag membrane element of the third stage. with clean membrane elements before starting the CIP.

f) The supplier will issue a pilot study report within **15** days of the completion of the pilot study. The report will include the operational data as well as the membrane autopsy result. The operational data will include graphs for Time vs normalized flow during the 30-day operation of the pilot system before performing CIP, and 10 day operation of the pilot system after performing CIP. The report will also include recovery-rejection data for each stage, differential pressure data for each stage, and salt passage through each stage.

g) The supplier will be responsible to bring the equipment, membranes, pumps, piping, chemicals, and other accessories required to conduct the pilot study. The supplier will be responsible to pay the entire cost for conducting the pilot. SAWS will provide a space for performing the pilot. SAWS will also provide raw water for the pilot study.

h) SAWS reserves all rights to reject a scale inhibitor and/or CIP chemical if the performance of the chemicals are not satisfactory to SAWS.

i) To perform pilot study at H2Oaks Research area, the supplier will be responsible to hire the services of a licensed electrician to install the appropriate circuits needed to run the pilot units. This includes circuit breakers, cables, conduits, step down transformers, receptacles, and disconnect switches. There is a 50-amp, 480-volt, 3-phase panel located in the Research area that can be used to install the required circuit breakers and required circuits. The panel has 4-2" empty conduits extended above the suspended ceiling on to a cable tray system that runs around the research area inside the suspended ceiling.

If voltages other than 480-VAC are needed, the Contractor is responsible to install a step down transformer and associated cables and conduits. Temporary extension cords will not be allowed. All circuits, whether 480 VAC, 3-phase or other lower voltages, need to be installed by a licensed electrician and be in compliance with the 2017 National Electrical Code.

j) SAWS will NOT pay for the installation, operation and decommission of the pilot system. Additionally, SAWS will NOT provide any labor and/or equipment during the installation, operation, and decommissioning the pilot system. The vendor/supplier will be fully responsible for the installation, operation, and decommissioning the pilot system.

k) SAWS Technical Evaluation Committee will evaluate the responses to the RFP. The firm that will obtain the highest score during the evaluation process will be the only firm who will be selected to perform the pilot study. 'Selection Process' section of the RFP describes the evaluation criteria in details.