**EXHIBIT A**

**Statement of Work**

**HVAC Water Treatment Systems**

I. GENERAL INFORMATION:

The United States Embassy in Manama requires professional services and contractor cost proposals to perform preventive maintenance services of the facility's HVAC Water Treatment Systems.

II. PROJECT REQUIREMENTS:

HVAC System Description:2# Multistack chillers equipped with 5 Modules & 2 pumps (1 Run/1Stp)*

Primary and Secondary Chilled Water Loop – N/A liters or N/A gallons

**Please see attachment at the end of this sheet for more details*

III. GENERAL REQUIREMENTS:

The Contractor SOW shall provide all labor, tools, and materials required to carry out all preventive maintenance as outlined in this SOW. US Embassy staff may have service manuals for all equipment included in this SOW. If they do not, the Contractor shall assist Embassy Staff in obtaining the manuals.

IV. SCOPE OF WORK - PREVENTIVE MAINTENANCE

Contractor shall provide all materials, supervision, labor, tools and equipment to perform preventive maintenance. All personnel working in the vicinity shall wear and /or use safety protection while all work is performed. Any questions or injuries **shall** be brought to the attention of the Post Occupation Safety and Health Officer (POSHO). Safety Data Sheets (SDS) shall be provided by the Contractor for all HAZMAT materials. Copies will be provided to the COR for approval.

At a minimum, the following work shall be accomplished:

HVAC Water Treatment Preventive Maintenance (PM)

**Quarterly**

Water Treatment System, Closed Loop

i. Safety & Special Instructions:
    1. Chemicals must comply with the Environmental Protection Agency (EPA) regulations and handled in accordance with occupational safety requirements. Employ

personal protection against corrosive or hazardous treatment chemicals as appropriate.

2. Be familiar with the Safety Data Sheets of any chemicals used in the water treatment program.
3. Water treatment specialists must be properly trained and certified.
4. Water treatment must be based on proven standard engineering practices.
5. Follow treatment as directed by manufacturer and in accordance with requirements specified under Section 10.
6. Maintenance includes chemicals, chemical feeding, maintaining proper water conditions, controlling bleed off, protecting idle equipment, and record keeping.
7. Ensure chemicals are properly stored; test equipment clean, and that chemicals have not passed expiration date.
8. Maintain records and test results.
9. All tests shall conform to the manufacturer test procedures and standard values.

ii. Maintenance Description:

1. Inspect system and complete water analysis.
2. Monitor and test corrosion coupons (every 90 days for mold steel and copper coupons)

iii. Maintenance Procedures:

1. Sample water from the closed loop system per manufacturer's recommendations.
2. Test for the proper levels of chemicals in the closed loop system and adjust chemical feeds as necessary to maintain optimal conditions in the system.
3. Record test results in a logbook.
4. Use the conductivity meter to test for total solids and plot in a logbook. Record and analyze abnormal changes.
5. Check the total conductivity of the system with a conductivity meter. Record results in a logbook.
6. Check pH with the pH test strips and/or pH meter.
7. Clean sample bottles and wipe down all chemical treatment equipment.
8. Change corrosion coupons. Send used coupons to the laboratory for analysis. Contractor to supply written coupon corrosion test report to the Facilities Manager within fourteen (14) calendar days after analysis.

iv. Process Instrumentation Engineer Checks and Adjustments

1. Visual inspection for the controller, sensor, pumps, tubing and other accessories
2. Testing of the chemical parameters
    a. pH
    b. Total dissolved solids
    c. Conductivity
    d. Aerobic Plate Count
    e. Corrosion Inhibitor Level
    f. Biocide dosage of both the Biocides

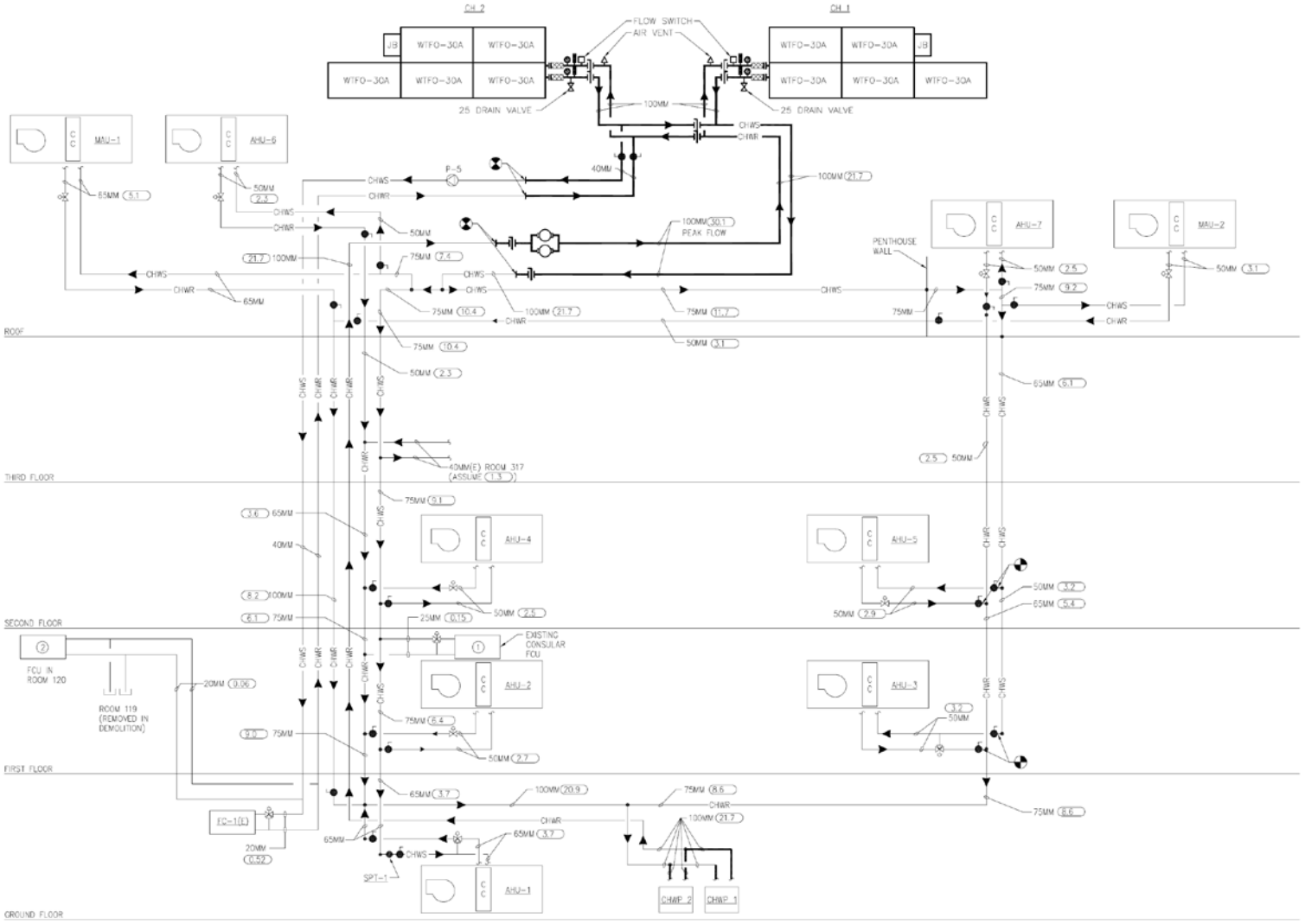
g. Test supply water for base conditions (iron, manganese, alkalinity, total hardness, silica chloride)

3. Calibration of the sensor with known standard
4. Process calibration of conductivity by a calibrated instrument with a known standard
5. Make sure that the controller is functioning properly.
6. Make sure that the solenoid valves, contact water meter, inhibitor pump and biocide pumps are physically functioning properly as per the settings in the controller.
7. Make sure that the chemical is dosed only as per the specification
8. Submit service report with detailed description of errors and causes(if any) and corrective action taken.

The water treatment Contractor shall determine the dosage levels of chemicals and stay within the specified operating parameters:

| **Parameters** | **Maintenance Levels** | |
|---|---|---|
| | **Open System** | **Closed System** |
| Corrosion on mild steel | Less than 2.0 mpy | Less than 1.0 mpy |
| Pitting attack on mild steel | None | None |
| Corrosion on copper alloys | Less than 0.2 mpy | Less than 0.1 mpy |
| Scaling and deposition | None | None |
| Microbiological fouling | 1. No visible deposits<br>2. No health hazards<br>3. Total aerobic count less than 10,000/ml | 1. No visible deposits<br>2. No health hazards<br>3. Total aerobic count less than 10,000/ml |

Chilled water schematic drawing




1 M4.2A CHILLED WATER RISER DIAGRAM
SCALE: NONE