SUBMIT OFFER TO:
Via Bonfire Web Portal
UNIVERSITY OF CENTRAL FLORIDA
Phone: (407) 823-2661
www.procurement.ucf.edu
https://ucfprocurement.bonfirehub.com/opportunities/147136

Your submission must be uploaded, submitted, and finalized prior to the closing time on 9/6/2024 at 3:00 p.m. We strongly recommend that you give yourself sufficient time and at least ONE (1) day before the closing time to begin the uploading process and to finalize your submission. See **Appendix 4** for submittal instructions.

University of Central Florida

INVITATION TO NEGOTIATE

Contractual Services

Acknowledgement Form

Page 1 of 50 Pages	OFFERS WILL BE OPENED September 6, 2024, at 3:00 p.m. EST and may not be withdrawn within 120 days after such date and time.	ITN NO. 2023-17OCSA
UNIVERSITY ADVERTISING DATE: **July 25, 2024**	ITN TITLE: Chemical Treatment Services Campus Water Loops	
FEDERAL EMPLOYER IDENTIFICATION NUMBER 75-2761907		
SUPPLIER NAME Chem-Aqua, Inc	REASON FOR NO OFFER:	
SUPPLIER MAILING ADDRESS 2727 Chemsearch Blvd		
CITY - STATE - ZIP CODE Irving, TX 75062	**POSTING OF PROPOSAL TABULATIONS**	
AREA CODE 904 / TELEPHONE NUMBER 866-7733	Proposal tabulations with intended award(s) will be posted for review by interested parties on the Procurement Services solicitation webpage and will remain posted for a period of 72 hours. Failure to file a protest in accordance with BOG regulation 18.002 or failure to post the bond or other security in accordance with BOG regulation 18.003 shall constitute a waiver of protest proceedings.	
972 / FAX: 438-0801		
EMAIL: paul.lioce@chemaqua.com		

Government Classifications
Check all that apply

☐ **African American**	☐ **American Woman**
☐ **Asian-Hawaiian**	☐ **Government Agency**
☐ **Hispanic**	☐ **MBE Federal**
☐ **Native American**	☐ **Non-Minority**
☐ **Non-Profit Organization**	☐ **PRIDE**
☐ **Small Business Federal**	☐ **Small Business State**

I certify that this offer is made without prior understanding, agreement, or connection with any corporation, firm or person submitting an offer for the same materials, supplies, or equipment and is in all respects fair and without collusion or fraud. I agree to abide by all conditions of this offer and certify that I am authorized to sign this offer for the Supplier and that the Supplier is in compliance with all requirements of the Invitation To Negotiate, including but not limited to, certification requirements. In submitting an offer to an agency for the State of Florida, the Supplier offers and agrees that if the offer is accepted, the Supplier will convey, sell, assign or transfer to the State of Florida all rights, title and interest in and to all causes of action it may now or hereafter acquire under the Anti-trust laws of the United States and the State of Florida for price fixing relating to the particular commodities or services purchased or acquired by the state of Florida. At the State's discretion, such assignment shall be made and become effective at the time the procurement agency tenders final payment to the Supplier.

GENERAL CONDITIONS

1. SEALED OFFERS: All offer sheets and this form must be executed and submitted as specified in Section 2.6. Offer prices not submitted on any attached price sheets when required shall be rejected. All offers are subject to the terms and conditions specified herein. Those which do not comply with these terms and conditions are either automatically rejected with respect to non-compliance with non-negotiable terms and conditions or may be rejected, at UCF's sole discretion, with respect to any other terms and conditions.

2. EXECUTION OF OFFERS: Offers must contain a manual signature of the representative authorized to legally bind the Respondent to the provisions herein. Offers must be typed or printed in ink. Use of erasable ink is not permitted. All corrections to prices made by the Supplier are to be initialed.

3. NO OFFER SUBMITTED: If not submitting an offer, respond by returning only this offer acknowledgment form, marking it "NO OFFER," and explaining the reason in the space provided above. Failure to respond without justification may be cause for removal of the company's name from the solicitation mailing list. NOTE: To qualify as a respondent, the Supplier must submit a "NO OFFER," and it must be received no later than the stated offer opening date and hour.

AUTHORIZED SIGNATURE (MANUAL)

Paul Lioce, Corporate Account Manager

AUTHORIZED SIGNATURE (TYPED), TITLE

4. PRICES, TERMS AND PAYMENT: Firm prices shall be negotiated and include all services rendered to the purchaser.

(a) TAXES: The State of Florida is a tax-immune sovereign and exempt from the payment of all sales, use and excise taxes

(b) DISCOUNTS: Cash discount for prompt payment shall not be considered in determining the lowest net cost for offer evaluation purposes.

(c) MISTAKES: Proposers are expected to examine the conditions, scope of work, offer prices, extensions, and all instructions pertaining to the services involved. Failure to do so will be at the Proposer's risk.

(d) INVOICING AND PAYMENT: All Suppliers must have on file a properly executed W-9 form with their Federal Employer Identification Number prior to payment processing.

Suppliers shall submit properly certified original invoices to:

Division of Finance
12424 Research Parkway, Suite 300
Orlando, Florida 32826-3249

Invoices for payment shall be submitted in sufficient detail for a proper pre-audit and post audit. Prices on the invoices shall be in accordance with the price stipulated in the contract at the time the order is placed. Invoices shall reference the applicable contract and/or purchase order numbers. Invoices for any travel expenses shall be submitted in accordance with the State of Florida travel rates at or below those specified in Section 112.061, Florida Statutes and applicable UCF policies.

Final payment shall not be made until after the contract is complete unless the University has agreed otherwise.

Interest Penalties: Supplier interest penalty payment requests will be reviewed by the UCF vendor ombudsman whose decision will be final.

Vendor Ombudsman: A vendor ombudsman position has been established within the UCF Division of Finance. It is the duty of this individual to act as an advocate for Suppliers who may be experiencing problems in obtaining timely payments(s) from the University of Central Florida. The vendor ombudsman can be contacted at (407) 882-1082 or by mail at the address in paragraph 4(d) above.

The ombudsman shall review the circumstances surrounding non-payment to determine if an interest payment is due, the amount of the payment; and shall ensure timely processing and submission of the payment request in accordance with University policy.

5. The Board of Trustees may not request documentation of or consider a vendor's social, political, or ideological interests when determining if the vendor is a responsible vendor. Additionally, the Board of Trustees may not give preference to a vendor based on vendor's social, political, or ideological interests.

UNIVERSITY OF CENTRAL FLORIDA

INVITATION TO NEGOTIATE (ITN) NUMBER 2023-17OCSA

FOR

CHEMICAL TREATMENT SERVICES CAMPUS WATER LOOPS

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Statement of Objective

The objective of this Invitation to Negotiate (ITN) is to enable the University of Central Florida (UCF) to enter into an agreement with a Supplier to provide a comprehensive, service-oriented water treatment program. This chemical treatment provider will be responsible for maintaining all water parameters and quality within the original equipment manufacture's specifications for chilled water and hot water systems.

The chemical treatment provider shall have relevant experience with large district applications, thermal energy storage systems, and the ability to work in a dynamic and diverse University setting.

In no order of preference, the primary goals of the service-oriented water treatment programs are as follows:

A. Minimize or eliminate chemical and/or safety hazards to personnel. UCF personnel will not handle chemicals.

B. Provide professional, knowledgeable, and involved service personnel.

C. Comply with local standards for chemical storage and documentation.

D. Accurately monitor program results and communicate appropriate recommendations with quantifiable, business-oriented justifications. Provide reports with required daily data to indicate UCF's compliance with all applicable water discharge permit requirements.

E. Reduce the overall energy/utility consumption through improved heat transfer efficiency and improved water quality by reducing system contamination and minimizing scale, corrosion, fouling, and microbiological growth, which can create deposits on heat transfer surfaces. HVAC currently accounts for over 50% of UCF's potable water demand on campus. The program should aim to reduce the burden on municipal supply while maintaining the water quality parameters set forth in this ITN.

F. Minimize the repair and maintenance costs associated with the replacement and cleaning of equipment due to scale, corrosion, fouling, or microbiological activity.

G. Provide competitive water treatment program costs.

H. Thoroughly train UCF personnel and their agents on the implementation and control of the programs. A nationally recognized certification program is preferred. All new personnel must be trained upon assuming responsibilities. Personnel and their agents will be reviewed and retrained at least annually, or as needed.

The Successful Respondent, if any, will enter into a contract with UCF that provides for the performance of all terms and conditions set forth in this ITN, unless UCF has agreed to accept or negotiate certain terms and conditions, as described in Section 2.3. Non-negotiable terms and conditions (as indicated in Appendix I) must always be performed by the Respondent.

1.2 Contract Award

UCF intends to award a contract or contracts resulting from this solicitation to the responsible Respondent(s) whose offer(s) represent the best interest to UCF, after evaluation in accordance with the criteria in this solicitation. The Contract will include this solicitation document and the Successful Respondent's proposal and all the terms and conditions found in any resulting contract. A sample of UCF's standard terms and conditions can be viewed at https://procurement.ucf.edu. The Contract will also incorporate any clarifications and, if negotiations are conducted, any additional terms and conditions that are negotiated.

A. UCF may reject any or all offers if such action is in UCF's best interest.
B. UCF reserves the right and sole discretion to reject any offer at any time on grounds that include, but are not limited to, the Respondent's offer being found to be nonresponsive, incomplete, or irregular in any way, or when the Respondent's offer is not in UCF's best interest.
C. UCF may waive informalities and minor irregularities in offers received.
D. UCF reserves the right to award a contract without negotiations. Therefore, the Respondent's initial offer should contain the best terms from a cost or price and technical standpoint.
E. UCF reserves the right to conduct negotiations with the proposer(s) whose offer may be deemed in the best interest of the university.
F. UCF reserves the right to make an award on any item for a quantity less than the quantity offered, at the unit cost or prices offered, unless the respondent specifies otherwise in the offer.
G. UCF reserves the right to make multiple awards if, after considering the additional administrative costs, it is in UCF's best interest to do so.
H. UCF is not obligated to make an award under or as a result of this solicitation.

1.3 UCF Environment

The University of Central Florida has a critical 3,375,000-million-gallon chilled water district which serves most campus buildings and laboratories. The bulk of this water (3 million gallons) resides within the Thermal Energy Storage (TES) tank and is manipulated daily to leverage peak power rates. This process is controlled to conserve energy while still meeting the demanding campus heat load. Chilled water is delivered throughout campus via three miles of 18" pipes made of various materials, including ductal iron, steel and PVC. The district supplies 42-degree water and returns 55-degree water to and from two utility plants located at opposite ends of the campus. The chilled water district has several tributaries that feed the furthest buildings on campus as well as sports venues. These tributary branches reduce in size as they go further away from the main loop, to as small as 4" at its furthest point. Chilled water is delivered to the buildings and then pumped through the different building coils before returning to the utility plants for re-processing.

Chilled water is critical to all buildings for comfort cooling and for maintaining lasers and other temperature critical equipment in laboratories. The Successful Respondent will be experienced with systems of this size and be capable of ensuring water quality and chemistry consistently meets or exceeds the expectations set forth in this ITN. Failure at any time to meet these requirements will result in loss of capability to handle the heat load capacity on campus, subsequently affecting cooling capability in all buildings and/or destroying critical research.

Additional information available at http://www.ucf.edu/about_ucf

2.0 GENERAL CONDITIONS

2.1 Authorized UCF Representative/Public Notices/UCF Discretion

The Respondent's response to this ITN and any communications and/or inquiries by the Respondent during this ITN process shall be submitted in writing to the individual and address stated below. **Inquiries are preferred via email**. UCF will consider only those communications and/or inquiries submitted in writing to the individual below on or before the date and time specified in Section 2.2, "Calendar of Events." To the extent UCF determines, in its sole discretion, to respond to any communications and/or inquiries, such response will be made in writing in the form of an addendum. UCF shall not accept or consider any written or other communications and/or inquiries (except an offer) made between the date of this deadline and the posting of an award, if any, under this ITN.

Brandon Orofino
Procurement Services Department
12424 Research Parkway, Suite 355
Orlando, FL 32816-0975
Brandon.Orofino@ucf.edu

Advance notice of public meetings regarding this ITN, if UCF determines at its sole discretion whether any such meetings will be held, will be in writing and posted on the UCF Procurement Services website. Additionally, any portion of a meeting at which a negotiation with a Supplier is conducted pursuant to a competitive solicitation at which a Supplier makes an oral presentation or at which a Supplier answers questions is exempt from s. 286.011 and s. 24(b), Art. I of the State Constitution. This also includes any portion of a team meeting at which negotiation strategies are discussed. All such meetings shall be conducted in accordance with Chapter 286 of the Florida Statutes. UCF also reserves the right and sole discretion to REJECT any offer at any time on grounds that include, without limitation, either that an offer is nonresponsive to the ITN or is incomplete or irregular in any way, or that a responsive offer is not in UCF's best interest.

2.2 Approximate Calendar of Events

Listed below are the dates and times by which stated actions should be taken or completed. If UCF determines, in its sole discretion, that it is necessary to change any of these dates and times, it may issue an Addendum to this ITN. All listed times are local time in Orlando, Florida.

Date/Time	Action
7/25/2024	Invitation To Negotiate advertised
7/30/2024	**Mandatory Site Visit at 9:00 a.m. located at UCF District Energy Plant 1, 4017 Libra Drive, Orlando FL 32816**
8/7/2024 @ 5pm	Last day to submit communications and/or inquiries in writing only; preferably by email to Brandon.Orofino@ucf.edu
8/16/2024	Responses to inquiries and Addenda
9/6/2024	Deadline for Offer submission at 3:00 p.m. (ITN opening)

2.3 Respondent Communications and/or Inquiries

A. UCF is not liable for interpretations/misinterpretations or other errors or omissions made by the Respondent in responding to this ITN. The Respondent shall examine this ITN to

determine if UCF's conditions and requirements are clearly stated. If, after examination of the various conditions and requirements of this ITN, the Respondent believes there are any conditions or requirements which remain unclear or which restrict competition, the Respondent may request, in writing, that UCF clarify or change condition(s) or requirement(s) specified by the Respondent. The Respondent is to provide the Section(s), Subsection(s), and Paragraph(s) that identify the conditions or requirements questioned by the Respondent. The Respondent also is to provide detailed justification for a change and must recommend specific written changes to the specified condition(s) or requirement(s). Requests for changes to this ITN must be received by UCF not later than the date shown in Section 2.2., entitled "Calendar of Events," for the submittal of written communications and/or inquiries. UCF shall not make any changes to any of the non-negotiable terms and conditions. The non-negotiable terms and conditions are indicated on Appendix I. Requests for changes to the non-negotiable provisions of this ITN shall automatically be rejected. Requests for changes to anything other than the non-negotiable provisions of this ITN may or may not be accepted by UCF and may or may not be negotiated by UCF, all at UCF's sole discretion.

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B. Any Respondent disagreeing with any negotiable terms and conditions set forth in this ITN is to indicate in Appendix I, Terms and Conditions Supplemental Offer Sheet, the specific ITN section(s) the Respondent disagrees with and is to provide a clear and detailed reason for the disagreement and a solution to the disagreement in his/her offer. UCF may or may not accept or agree to negotiate any of the terms and conditions that Respondents indicated they disagreed with, all at UCF's sole discretion. The indication of disagreement with any non-negotiable terms and conditions may be automatically rejected.

C. Failure to submit Appendix I and clearly indicate which terms and conditions the Respondent agrees and disagrees with (i.e., failure to initial the designated sections set forth in Appendix I, indicating that the Respondent has either understood and agreed to or disagreed with each particular section listed on Appendix I) and/or clear and detailed reasons for the disagreement, with the offer, may be grounds for rejection of that offer, at UCF's sole discretion. UCF may or may not accept and/or negotiate any such terms and conditions that the Respondent disagreed with. If UCF decides not to accept any of the terms and conditions the Respondent disagreed with, UCF shall have the right, at UCF's sole discretion, to exercise its right to reject the tentative awardee's offer and proceed to the next highest ranked respondent. As noted above, the disagreement with any non-negotiable terms and conditions by the Respondent may be automatically rejected.

D. UCF shall at its sole discretion determine what requested changes to this ITN and the resulting agreement are acceptable. Non-negotiable terms and conditions, as indicated in Appendix I, will always stay as they are, and any requested changes to such clauses may automatically be rejected. UCF shall issue an Addendum reflecting the acceptable changes to this ITN, if any, which shall be sent to all known Respondents as specified in Section 2.1.

E. Any communications, questions and/or inquiries from the Respondent concerning this ITN in any way are to be submitted in writing to the individual identified in Section 2.1 not later than **8/7/2024 at 5:00 p.m.** Eastern Standard Time as set forth in the Calendar of Events. Written inquiries are to be legible and concise and are to clearly identify the Respondent who is submitting the inquiry. Questions directed to or any responses received from any other department, person, agent, or representative of the university will not be considered valid or binding.

2.4 Respondent Conference and Site Visit

A mandatory site visit will take place on July 30, 2024, at 9:00 a.m. The visit will be conducted by Chilled Water Superintendent, Saul Santiago. During said visit, the Superintendent will give a guided tour of both plants, cooling towers, TES Tank, TES pump pad, CHP and existing chemical treatment sites. Potential Respondents are encouraged to take water samples and photographs as needed. The site visit will be located at: UCF District Energy Plant 1, 4017 Libra Drive, Orlando FL 32816.

2.5 Written Addenda

Written Addenda to this ITN along with an Addenda Acknowledgment Form will be posted on the Procurement Services website. The Addenda Acknowledgment Form is to be signed by an authorized representative of the Respondent, dated and returned with the offer. All Respondents, including known interested Respondents, are solely responsible for checking the Procurement Services website periodically to verify whether any such Addenda and forms were issued.

2.6 Offer Due/Proposal Opening Date

Proposals will be received and opened on 9/6/2024 at 3:00 p.m. via UCF's Bonfire Web Portal. For additional information, please refer to Appendix IV: Submission Instructions for Suppliers. UCF shall in no way be responsible for or accept any proposals not uploaded prior to the closing date and time. The Respondent's response to this ITN shall be prepared in accordance with Section 3.0 "Required Offer Format." Telephone, facsimile, telegraphic, and electronic mail offers, negotiations, and/or amendments to original offers shall not be accepted.

2.7 Section Not Used

2.8 Evaluation Criteria and Selection Process

A. UCF reserves the right to conduct negotiations if the decision maker (UCF Board of Trustees, Vice President/Dean or his/her written designee(s)) with the advice and consent of Procurement Services determines negotiations to be in the best interest of the university. Any portion of a meeting at which a negotiation with a Supplier is conducted pursuant to a competitive solicitation is exempt from s. 286.011 and s. 24(b), Art. I of the State Constitution. Discussions with Suppliers after receipt of an offer do not constitute a rejection, counteroffer or acceptance by UCF.

B. UCF reserves the right to conduct negotiations with the proposer(s) whose offer(s) may represent the best interest of the university. The following is a short overview of some of the decision maker's responsibilities during the solicitation and award process:

1. Establish a group of evaluators tailored for the particular acquisition that includes appropriate expertise to ensure a comprehensive evaluation of offers. The evaluators will review all responsive offers;
2. Develop the acquisition plan (strategy to award with or without negotiations) after review of offers;
3. Ensure consistency among the solicitation requirements, notices to proposers, offer preparation instructions, evaluation criteria, solicitation provisions or contract clauses, and data requirements;
4. Ensure that offers are evaluated based solely on the evaluation criteria contained in the solicitation;
5. Consider the recommendations of the evaluators or other boards (if any);

6. Select the proposer(s) whose offer(s) are the best value to the university;
7. Select a negotiation team (only if award is not made outright). This can be the evaluators or any other individual(s) the decision maker deems necessary for the acquisition. The negotiation team will negotiate with those proposer(s) determined by the decision maker to have submitted a proposal that may be beneficial to the university.

C. All offers shall be initially evaluated based on weighted criteria set forth in the table below by the group of evaluators. The group of evaluators shall consist of three (3) or more individuals who have expertise regarding, or some experience with, the subject matter of the ITN or, if none, then individuals who could be characterized as recipients, beneficiaries, or users of the ITN's subject matter. The Vice President/Dean or his/her written designee(s) will appoint the evaluators. Evaluators, at the discretion of the Vice President/Dean or his/her written designee(s), shall have the option to meet as a group any time during formulation of the specifications and solicitation stage to discuss and correct any concerns and ambiguities of the solicitation and specifications. After offer opening, each evaluator shall function independently of all other persons including, without limitations, the other evaluators, and, throughout the entire evaluation process, each evaluator is strictly prohibited from meeting with or otherwise discussing this ITN and any aspect thereof including, without limitation, the offers and their content with any other individual whatsoever. Each evaluator shall conduct an independent evaluation of the offers in accordance with the weighted evaluation criteria set forth in the following Table A:

Table A – Evaluation of Responses

Evaluation Criteria	**Max Points**
1. EXPERIENCE WITH SIMILAR SIZED CHILLED WATER DISTRICTS WITH TES TANKS	15
2. PROJECT STAFF QUALIFICATIONS/EXPERIENCE WITH CHLORINE DIOXIDE GENERATION.	15
3. OVERALL RESPONSIVENESS OF PROPOSAL TO SATISFY SCOPE/ PROJECT APPROACH	30
4. OVERALL PRICING	20
5. CONFORMANCE TO ITN'S PREFERRED CONDITIONS AND REQUIREMENTS **(FAILURE TO CONFORM TO ITN'S MANDATORY CONDITIONS AND REQUIREMENTS MAY RESULT IN REJECTION OF PROPOSAL)**	10
Evaluation of Responses Point Total	90

Each evaluator must independently score each offer in UCF's Bonfire Web Portal in accordance with the criteria herein. Each evaluator is to enter comments, if any, regarding the offer and submit his/her evaluation via Bonfire. The assigned **Procurement Services Professional identified in section 2.1** will forward a summary to the **Decision Maker** or his/her designee. At the time of such delivery to the **Procurement Services Professional**, the evaluator shall cease to participate further in this ITN process unless expressly requested otherwise by **Decision Maker.**

The **Decision Maker** shall review, in the manner and to the extent he/she deems reasonable under the circumstances, the ITN, the offers, and evaluators' scoring forms. While not bound

to them, the **Decision Maker** may give deference to the scoring forms. Based on what the **Decision Maker** determines is in the best interest of UCF, the **Decision Maker** will then make the final decision whether or not to recommend the award of a contract to a Respondent to this ITN, negotiate with the respondent(s) whose offer(s) may be beneficial to the university, or cancel the ITN.

The **Decision Maker** may, at any time during this ITN process, assign one (1) or more individuals to assist and advise the **Decision Maker** during his/her decision-making process. UCF is not obligated to make an award under or as a result of this ITN or to award such contract, if any, on the basis of lowest cost or highest commission offered. UCF reserves the right to award such contract, if any, to the Respondent(s) submitting an offer that UCF, at its sole discretion, determines is in UCF's best interest.

D. **Decision Maker** shall obtain approval from the University Board of Trustees to award a contract exceeding the President's Delegation of Authority, per Policy BOT-4.

2.9 Posting of Recommended Selection

An intent to award will be posted within a reasonable time after the Procurement Services Department receives the decision maker's recommended award decision. The recommendation to award a contract, if any, to a Respondent(s) to this ITN will be posted for review by interested parties on the Procurement Services solicitations webpage and will remain posted for a period of seventy-two (72) hours.

A. If the Respondent desires to protest the recommendation to award a contract, if any, the Respondent must file with UCF:

1. A written notice of intent to protest within seventy-two (72) hours of the posting of the recommended award. UCF shall not extend or waive this time requirement for any reason whatsoever.

2. A formal written protest by petition within ten (10) calendar days of the date on which the notice of intent to protest is filed. UCF shall not extend or waive this time requirement for any reason whatsoever.

B. Failure to timely file a protest or failure to timely deliver the required bond or other security in accordance with the Board of Governors' Regulations 18.002 and 18.003 shall constitute a waiver of protest proceedings.

1. A formal written protest by petition must be accompanied by a Protest Bond payable to UCF in the amount equal to 10% of the estimated value of the protestor's bid or proposal; 10% of the estimated expenditure during the contract term; $10,000; or whichever is less. The form of the Protest Bond shall be a cashier's check, bank official check, or money order made payable to UCF.

2. In addition to all other conditions and requirements of this ITN, UCF shall not be obligated to pay for information obtained from or through the Respondent.

2.10 Offer Validity Period

Any submitted offer shall in its entirety remain a valid offer for 120 days after the offer submission date.

2.11 Disposition of Offers; Florida Public Records Law Compliance

All offers become the property of the State of Florida, and the State of Florida shall have the right to use all ideas, and/or adaptations of those ideas, contained in any offer received in response to this solicitation. Any parts of the offer or any other material(s) submitted to UCF with the offer that are copyrighted or expressly marked as "confidential," "proprietary," or "trade secret" will only be exempted from the "open records" disclosure requirements of Chapter 119, Florida Statutes if Florida law specifically recognizes these materials as exempt from disclosure. Thus, the mere designation as "confidential," "proprietary," or "trade secret" by a Supplier does not ensure that such materials will be exempt from disclosure. Respondents must identify specifically any information contained in their bid which they consider confidential and/or proprietary and which they believe to be exempt from disclosure, citing specifically the applicable exemption law. A generic notation that information is "confidential" is not sufficient. Failure to provide a detailed explanation and justification including statutory citations and specific reference to your bid detailing what provisions, if any, the Respondent believes are exempt from disclosure, may result in the entire bid being subject to disclosure in accordance with Chapter 119 of the Florida Statutes. In the absence of a specific Florida statute exempting material from the public records law, UCF is legally obligated to produce any and all public records produced or received in the course of conducting university business, irrespective of any designation by the Supplier of those same records as "confidential," "proprietary," or "trade secret." The ultimate determination of whether a Supplier's claim of "confidential," "proprietary," or "trade secret" will support an exemption from disclosure will be made by UCF or, potentially, a court. UCF's selection or rejection of an offer will not affect this provision.

2.12 Economy of Presentation

Each offer shall be prepared simply and economically, providing a straightforward, concise description of the Respondent's capabilities to satisfy the conditions and requirements of this ITN. Fancy bindings, colorful displays, and promotional material are not desired. Emphasis in each offer must be on completeness and clarity of content. To expedite the evaluation of offers, it is desired and beneficial to evaluators that Respondents follow the format and instructions contained herein. UCF is not liable for any costs incurred by any Respondent in responding to this ITN including, without limitation, costs for oral presentations requested by UCF, if any.

2.13 Restricted Discussions/Submissions

From the date of issuance of the ITN until UCF takes final agency action, the Respondent shall not discuss the offer or communicate with any UCF employees, agents, representatives, evaluators or representatives of UCF except as expressly requested by UCF in writing. Violation of this restriction may result in REJECTION of the Respondent's offer.

2.14 Verbal Instructions Procedure

No negotiations, decisions, or actions shall be initiated or executed by the Respondent as a result of any discussions with any UCF employee. Only those communications that are in writing from the authorized UCF representative identified in Section 2.1 of this ITN that have been approved in writing by UCF's President or the President's designee shall be considered as a duly authorized expression on behalf of UCF. Only communications/inquiries from the Respondent that are signed and received on a timely basis, i.e., not later than 5:00 p.m. on

8/7/2024, will be recognized by UCF as duly authorized expressions on behalf of the Respondent.

2.15 State Licensing Requirements

To the extent applicable, the Respondent shall have all appropriate licenses to conduct business in the State of Florida and Orange County at or prior to award of a contract resulting from this competitive solicitation. The Respondent is to provide proof of such to UCF as a condition of award of a contract. If the Respondent contemplates the use of subcontractors, the Respondent is responsible for ensuring that all subcontractors are registered with the State of Florida in accordance with Chapter 607 or 620, Florida Statutes. For additional information, the Respondent should contact the Florida Secretary of State's Office.

2.16 Parking

The Respondent/Supplier(s) shall ensure that all vehicles parked on campus for purposes relating to work resulting from an agreement shall have proper parking permits. This applies to all personal vehicles and all marked and unmarked company vehicles that will be on any University campus for one (1) day or more or on a recurring basis. All such vehicles must be registered with University's Parking Services Department, and parking permits must be purchased by the Respondent/Supplier. The Respondent's/Supplier's vehicle(s) shall observe all parking rules and regulations. Failure to obtain parking permits, properly display them, and otherwise comply with all of the University's parking rules and regulations could result in the issuance of a parking ticket and/or towing at the expense of the Respondent/Supplier or Respondent's/Supplier's employees. For additional parking information or information regarding parking fees/rates, contact the UCF Parking Services Department at (407) 823-5812 or online at https://parking.ucf.edu.

2.17 Definitions

Addendum – Written or graphic instruments issued prior to the date for opening of proposals, which modify or interpret the proposal documents by additions, deletions, corrections or clarifications.

And/Or – The word "and" shall also mean "or," and the word "or" shall also mean "and" whenever the contents or purpose so require.

Contract/Agreement – The formal bilateral agreement signed by a representative of the University and the Supplier which incorporates the requirements and conditions listed in this ITN and the Supplier's offer.

Invitation to Negotiate – A written solicitation for goods or services where factors other than price are to be considered in the award determination. These factors may include such items as Supplier experience, project plan, design features of the product(s) offered, etc. An ITN is used when the specifications cannot be identified; the end result is explained, but we want qualified companies to offer their solutions for consideration.

May, Should – Indicates something that is not mandatory, but permissible, recommended, or desirable.

Minor Irregularities – Irregularities that have no adverse effect on UCF's interest will not affect the amount of the ITN and will not give a Respondent an advantage or benefit not enjoyed by another Respondent.

Must, Shall, Will – The words "must," "shall," or "will" are equivalent and indicate mandatory requirements or conditions.

Project Manager – After contract award, a liaison from the user department will oversee the Contractor's performance and report as needed to the contract administrator. The Project Manager is **Saul Santiago**.

Proposal – An executed offer submitted by a Respondent in response to an ITN and intended to be used as a basis for negotiations for a contract.

Purchase Order/Contract – The Purchase Order (PO) or other form or format provided to the awarded Respondent(s) that UCF uses to make a purchase under the contract term, which includes a formal written PO, electronic PO, Procurement Card (PCard), or any other means authorized by Procurement Services and that incorporates the requirements and conditions listed in the ITN.

Renewal – Contracting with the same contractor for an additional period of time after the initial contract term, provided the original terms of the agreement specify an option to renew or the renewal is determined by UCF General Counsel to be in the best interest of the university.

Respondent/Proposer/Vendor/Supplier/Contractor – Anyone who submits a timely offer in response to this ITN or their duly authorized representative. These may be used interchangeably within the ITN.

Response – The entirety of the Respondent's submitted proposal response to the ITN, including any and all supplemental information submitted.

Responsible Respondent – Respondent who has the capability in all respects to perform fully the contract requirements, and the experience, integrity, perseverance, reliability, capacity, facilities, equipment, and credit which will assure good faith performance.

Responsive Respondent – Respondent who has submitted an offer that conforms in all material respects to the solicitation.

Sole Point of Contact – The Procurement Services representative or designee to whom Respondents shall address any questions regarding the solicitation or award process. The sole point of contact shall be the arbitrator of any dispute concerning performance of the Contract.

Successful Respondent/Proposer/Supplier/Contractor – The firm or individual who is the recommended recipient of the award of a contract under this ITN (also synonymous with "Proposer" and "Supplier"). If a Respondent is a manufacturer, its certified dealers and resellers may also furnish products under the Contract; in choosing to do so, the dealers and resellers agree to honor the Contract, and the term "contractor" shall be deemed to refer to them. Unless awarded the Contract as a direct Respondent, however, dealers and resellers are not parties to the Contract, and the Respondent that certifies them shall be responsible for their actions and omissions.

UCF or University – University of Central Florida

UCF's Contract Administrator – The University's designated liaison with the Respondent. In this matter, UCF's Contract Administrator will be **Brandon Orofino**.

2.18 Procurement Rules

A. UCF has established for purposes of this ITN that the words "shall," "must," or "will" are equivalent in this ITN and indicate a mandatory requirement or condition, the material deviation from which could be waived by UCF. UCF will, at UCF's sole discretion, determine whether a deviation is material. Any deviation found by UCF to be material shall result in the rejection of the offer.

B. The words "should" or "may" are equivalent in this ITN and indicate very desirable conditions or requirements but are permissive in nature. Deviation from, or omission of, such a desirable condition or requirement will not in and of itself cause automatic rejection of an offer but may result in the offer being considered as not in the best interest of UCF. UCF will, at UCF's sole discretion, determine whether an offer is considered as not in the best interest of UCF and may or may not reject the offer, all at UCF's sole discretion.

C. The Respondent must comply with the instructions cited in Section 2.3. Also, the Respondent must initial the designated sections set forth on Appendix I, indicating that the Respondent has either understood and agreed to or disagreed with each particular section listed in Appendix I. Failure to submit Appendix I with each area marked as set forth above and initialed by the Respondent shall constitute grounds for rejection of the offer by UCF and shall give UCF the right to reject the offer, at UCF's sole discretion.

D. The Respondent is solely responsible for the accuracy and completeness of its offer. The Respondent's errors or omissions, if any, are solely at the risk of the Respondent and may be grounds for rejection of the offer and shall give UCF the right to reject the offer, at UCF's sole discretion.

2.19 Force Majeure

No default, delay or failure to perform on the part of UCF or the Respondent shall be considered a default, delay or failure to perform otherwise chargeable, hereunder, if such default, delay or failure to perform is due to causes beyond UCF's reasonable control including, but not limited to, strikes, lockouts, actions or inactions of governmental authorities, epidemics, pandemics, wars, embargoes, fires, earthquakes, acts of God, or default of common carriers. In the event of such default, delay or failure to perform due to causes beyond UCF's or the Respondent's reasonable control, any date or times by which UCF or the Respondent is otherwise scheduled to perform shall be extended automatically for a period of time equal in duration to the time lost by reason of the cause beyond the reasonable control of UCF or the Respondent.

2.20 Limitation of Remedies, Indemnification, and Insurance

A. The Attorney General of the State of Florida has rendered an opinion that agencies of the State of Florida cannot contractually limit the State's right to redress. Consequently, any offer by the Respondent to limit the Respondent's liabilities to the State or to limit the State's remedies against the Respondent is unacceptable and will result in the REJECTION of the Respondent's offer.

B. As an agency of the State of Florida, UCF's liability is regulated by Florida law. Except for

its employees acting within the course and scope of their employment, UCF shall not indemnify any entity or person. The State of Florida is self-insured to the extent of its liability under law, and any liability in excess of that specified in statute may be awarded only through special legislative action. Accordingly, UCF's liability and indemnification obligations under this ITN and the resulting contract, if any, shall be effective only to the extent required by Florida law; and any provision requiring UCF to provide insurance coverage other than the State of Florida self-insurance shall not be effective.

C. The Respondent(s)/Supplier(s)/ /Proposer(s) shall hold the University and the UCF Board of Trustees and the University's officers, employees, agents and/or servants harmless and indemnify each of them against any and all liabilities, actions, damages, suits, proceedings, and judgments from claims arising or resulting from the acts or omissions of the Respondent(s)/Supplier(s)/ /Proposer(s), its employees, its agents or of others under the Respondent's/Supplier's/ Proposer's control and supervision. If any part of a delivery to the University pursuant to a contract resulting from this ITN is protected by any patent, copyright, trademark, other intellectual property right or other right, the Respondent/Supplier/ Proposer also shall indemnify and hold harmless the University of Central Florida Board of Trustees and the University's officers, employees, agents and/or servants from and against any and all liabilities, actions, damages, suits, proceedings and judgments from claims instituted or recovered against the University by any person or persons whomsoever on account of the University's use or sale of such article in violation of rights under such patent, copyright, trademark, other intellectual property right or other right.

All insurance shall be procured from companies authorized to do business in the State of Florida with a minimum A.M. Best rating of A, or equivalent. Proof of coverage shall be provided by submitting to the University's Risk Management Office a certificate or certificates evidencing the existence thereof or binders and shall be delivered within fifteen (15) days of the tentative award date of the Contract. In the event a binder is delivered, it shall be replaced within thirty (30) days by a certificate in lieu thereto. A renewal certificate shall be delivered to the University at least thirty (30) days prior to the expiration date of each expiring policy.

1. **General Liability:** Supplier shall provide a Certificate of Insurance evidencing Commercial General Liability insurance coverage in force with minimum limits of $1,000,000 (ONE MILLION DOLLARS) per Occurrence and $2,000,000 (TWO MILLION DOLLARS) Aggregate. Upon acceptance and confirmation of coverage by the University and before beginning work, and at all times during the term of the contract, Supplier will maintain said General Liability insurance in force and shall provide the University with a Certificate of Insurance and Additional Insured Endorsement listing the University of Central Florida Board of Trustees as "Additional Insured." The Certificate will provide a minimum 30 days advanced notice to in the event of cancellation.

2. **Auto Liability:** If Supplier operates a vehicle on campus for commercial use in the performance of this Contact (i.e. deliveries, transport of employees, etc.), Supplier shall provide a Certificate of Insurance evidencing Auto Liability insurance with minimum $1,000,000 (ONE MILLION DOLLARS) per Accident Combined Single Limit for Bodily Injury and Property Damage. Upon acceptance and confirmation of coverage by University and before beginning work, and at all times during the term of the contract, Supplier will maintain said Auto Liability insurance in force and provide University with a Certificate

of Insurance listing the University of Central Florida Board of Trustees as "Additional Insured." The Certificate will provide a minimum 30 days advanced notice to University in the event of cancelation.

3. **Workers' Compensation:** Supplier shall provide a Certificate of Insurance evidencing Workers' Compensation coverage consistent with Florida Statute and Employer's liability no less than $500,000 (FIVE HUNDRED THOUSAND DOLLARS) for Bodily Injury by accident, each accident, Bodily Injury by disease, each employee, and policy limit. Upon acceptance and confirmation of coverage by University and before beginning work, and at all times during the term of the contract, Supplier will maintain said Workers Compensation and Employer's Liability insurance in force and provide University with a current Certificate of Insurance. The Certificate will provide a minimum 30 days advanced notice to University in the event of cancellation.

4. **Certificates of Insurance:** The University of Central Florida Board of Trustees is to be listed as Additional Insured on all Certificates issued. Supplier shall send a copy of his/her Certificate of Insurance along with accompanying Additional Insured Endorsements naming the University of Central Florida Board of Trustees to the following address:

   Email: RiskManagement@ucf.edu

5. The University, at its sole discretion, has the right to deviate from any of the insurance requirements herein. If the University decides to deviate from the insurance requirements stated herein, the University will inform the Supplier in writing.

2.21 Term of Contract

The contract resulting from this ITN, if any, shall commence on the date of the last signature, and shall end 3 years hereafter. The University may renew/extend a resultant contract, as mutually agreed to by both parties. Renewals may not exceed 5 years or twice the term of the original contract, whichever is longer. An extension may not exceed 12 months or until completion of the competitive solicitation and award or protest, whichever is longer.

2.22 Cancellation/Termination of Contract

UCF may terminate a contract resulting from this ITN without cause on thirty (30) days' advanced written notice to the Contractor. The parties to a resultant contract may terminate the contract at any time by mutually consenting in writing. Either party may terminate a resultant contract immediately for breach by the other that remains substantially uncured after thirty (30) days' advanced written notice to the breaching party, which notice describes the breach in detail sufficient to permit cure by the breaching party. The University shall be liable only for payment for services satisfactorily rendered/goods satisfactorily delivered and accepted from the date of commencement until the effective date of termination. The thirty (30) days' advanced written notice shall start on the date sent out by UCF, e.g., date of email sent, date stamp on letter mailed.

2.23 Assignment and Amendment of Contract

Neither the contract resulting from this ITN, if any, nor any duties or obligations under such contract shall be assignable by the Respondent without the prior written consent of UCF. Any contract resulting from this ITN may be amended only in writing signed by the Respondent and UCF with the same degree of formality evidenced in the contract resulting from this ITN.

2.24 Independent Parties

Except as expressly provided otherwise in the contract resulting from this ITN, if any, UCF and the Respondent shall remain independent parties and neither shall be an officer, employee, agent, representative or co-partner of, or a joint venture with the other.

2.25 Performance Investigations

As part of its evaluation process, UCF may make investigations to determine the ability of the Respondent to perform under this ITN. UCF reserves the right to REJECT any offer if the Respondent fails to satisfy UCF that it is properly qualified to carry out the obligations under this ITN.

2.26 Records

The Respondent/Supplier/ Proposer/Contractor agrees to keep and maintain separate and independent records, in accordance with generally accepted accounting principles, devoted exclusively to its obligations and activities pursuant to a contract resulting from this ITN. Such records (including books, ledgers, journals, and accounts) shall contain all entries reflecting the business operations under a resultant contract. The University or its authorized agent shall have the right to audit and inspect such records from time to time during the term of a resultant contract, upon reasonable notice to the Contractor.

2.27 Public Records

Any contract resulting from this ITN may be canceled unilaterally by the University for refusal by the Respondent/Supplier/ Proposer/Contractor to allow public access to all papers, documents, letters or other material subject to the provisions of Chapter 119, Florida Statutes and made or received by the Respondent/Supplier/ Proposer/Contractor in conjunction with a resultant contract.

2.28 Public Records, Service Contracts, Compliance With Section 119.0701, F.S.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT: Office of the General Counsel, (407)823-2482, gcounsel@ucf.edu, University Of Central Florida, 4365 Andromeda Loop N., Millican Hall, Suite 360, Orlando, FL 32816-0015.

PUBLIC RECORDS, CONTRACT FOR SERVICES
To the extent that the Contractor meets the definition of “Contractor” under Section 119.0701, Florida Statutes, in addition to other contract requirements provided by law, the Contractor must comply with public records laws, including the following provisions of Section 119.0701, Florida Statutes:

1. Keep and maintain public records required by the public agency to perform the service.
2. Upon request from the public agency's custodian of public records, provide the public agency with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in this chapter or as otherwise provided by law.
3. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the contractor does not transfer the records to the public agency.
4. Upon completion of the contract, transfer, at no cost, to the public agency all public records in possession of the contractor or keep and maintain public records required by the public agency to perform the service. If the contractor transfers all public records to the public agency upon completion of the contract, the contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the contractor keeps and maintains public records upon completion of the contract, the contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the public agency, upon request from the public agency's custodian of public records, in a format that is compatible with the information technology systems of the public agency.

A request to inspect or copy public records relating to a public agency's contract for services must be made directly to the public agency. If the public agency does not possess the requested records, the public agency shall immediately notify the contractor of the request, and the contractor must provide the records to the public agency or allow the records to be inspected or copied within a reasonable time.

If a contractor does not comply with the public agency's request for records, the public agency shall enforce the contract provisions in accordance with the contract.

This Contractor/Vendor and any subcontractors shall abide by the requirements of 41 CFR §§ 60-1.4(a), 60-300.5(a), 60- 741.5(a). These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity, national origin and for inquiring about, discussing, or disclosing compensation. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, veteran status, or disability.

2.29 Severability

If any provision of the contract resulting from this ITN, if any, is contrary to, prohibited by, or deemed invalid by applicable laws or regulations of any jurisdiction in which it is sought to be enforced, then said provision shall be deemed inapplicable and omitted and shall not invalidate the remaining provisions of such contract.

2.30 Notices

All notices and all other matters pertaining to the contract resulting from this ITN, if any, to a party shall be in writing, hand delivered, or sent by email (receipt acknowledged), registered or certified U.S. Mail, return receipt requested, and shall be deemed to have been duly given when

actually received by the addressee at the address listed in section 2.1 of this ITN.

2.31 Governing Law and Venue

This ITN and resulting contract, if any, and any disputes thereunder will be governed by the laws of the State of Florida and shall be deemed to have been executed and entered into in the State of Florida. Any such contract shall be construed, performed, and enforced in all respects in accordance with the laws and rules of the State of Florida, and any provision in such contract in conflict with Florida law and rules shall be void and of no effect. UCF and Respondent hereby agree that this ITN and resulting contract, if any, shall be enforced in the courts of the State of Florida and that venue shall always be in Orange County, Florida.

2.32 Liaison

UCF's liaison with the successful Respondent, if any, shall be **Saul Santiago**.

2.33 Subcontracts

The Respondent is fully responsible for all work performed under the contract resulting from this ITN, if any. The Respondent may enter into written subcontract(s) for performance of certain of its functions under such contract, unless otherwise specified. The subcontractors and the amount of the subcontract(s) shall be identified in the Respondent's response to this ITN. No subcontract(s) which the Respondent enters into under the contract resulting from this ITN, if any, shall in any way relieve the Respondent of any responsibility for performance of its duties under such contract. The Respondent is responsible to fully notify any subcontractor(s) of their responsibilities under any subcontract. All payments to subcontractors shall be the sole responsibility of the Respondent.

2.34 Employment of UCF Personnel

The Respondent shall not, without UCF's prior written consent, knowingly recruit for engagement, on a full time, part time, or other basis during the period of this ITN and any resulting contract, any individuals who are or have been UCF employees at any time during such period, except for UCF's regularly retired employees, or any adversely affected State employees.

2.35 Conflicts of Interest

Acceptance of a contract resulting from this ITN shall certify that Contractor is aware of the requirements of Chapter 112, Florida Statutes and in compliance with the requirements of Chapter 112, Florida Statutes and other laws and regulations concerning conflicts of interests in dealing with entities of the State of Florida. Contractor certifies that its directors and/or principal officers are not employed and/or affiliated with the University unless a current Conflict of Interest (Report of Outside Activity/Employment) form has been completed, executed by such director or officer and approved in accordance with applicable University policies or rules. Violation of this section by Contractor shall be grounds for cancellation of a contract resulting from this ITN.

2.36 Equal Opportunity Statement

The State of Florida and UCF subscribe to equal opportunity practices, which conform to both the spirit and the letter of all laws against discrimination and are committed to non-discrimination

on the basis of race, creed, color, sex, age, national origin, religion, veteran or marital status, or disability. The Respondent commits to the following:

A. The provisions of Executive Order 11246, September 24, 1965, as amended by Executive Order 11375, and the rules, regulations and relevant orders of the Secretary of Labor that are applicable to each order placed against the contract resulting from this ITN, if any, regardless of value.

B. The Respondent, if any, awarded a contract under this ITN shall agree to comply with the Americans with Disabilities Act (ADA) of 1990.

C. If the Respondent anticipates receiving $10,000 in orders during the first 12 months of the contract, if any, resulting from this ITN, the Respondent must complete a Certificate of Non-Segregated Facilities form and attach the form to the offer. A sample certificate is attached as **APPENDIX II**.

D. If the Respondent anticipates receiving $50,000 in orders during the first 12 months of the contract, if any, resulting from this ITN, and employs more than 50 people, the Respondent must complete and file prior to March 1 of each year a standard form 100 (EEO-1).

E. If the Respondent anticipates receiving $50,000 in orders during the first 12 months of the contract, if any, resulting from this ITN, and employs more than 50 people, the Respondent must maintain a written program for affirmative action compliance that is accessible for review upon request by UCF.

F. Respondents shall identify their company's government classification at time of offer submittal (See UCF Form ITN/CS: ITN acknowledgement cover page). The Respondent's identity will not foster special consideration during this ITN process; this is only for informational purposes for reporting.

2.37 Waiver of Rights and Breaches

No failure or delay by a party hereto to insist on the strict performance of any term of a contract resulting from this ITN or to exercise any right or remedy consequent to a breach thereof shall constitute a waiver of any breach or any subsequent breach of such term. No waiver of any breach hereunder shall affect or alter the remaining terms of such a contract, but every term of such a contract shall continue in full force and effect with respect to any other then-existing or subsequent breach thereof. The remedies provided in such a contract are cumulative and not exclusive of the remedies provided by law or in equity.

2.38 Headings Not Controlling

Headings used in any contract resulting from this ITN are for reference purposes only and shall not be considered a substantive part of such contract.

2.39 Employee Involvement/Covenant Against Contingent Fees

In accordance with Section 112.3185, Florida Statutes, the Respondent hereby certifies that, to the best of its knowledge and belief, no individual employed by the Respondent or subcontracted by the Respondent has an immediate relationship to any employee of UCF who was directly or indirectly involved in any way in the procurement of the contract, if any, resulting from this ITN or goods or services thereunder. Violation of this section by the Respondent shall be grounds

for cancellation of such contract. The Respondent also warrants that no person or selling agency has been employed, engaged or retained to solicit or secure any contract resulting from this ITN or any advantage hereunder upon an agreement or understanding for a commission, percentage, brokerage or contingent fee, or in exchange for any substantial consideration bargained for, excepting that which is provided to the Respondent's bona fide employees or to bona fide professional commercial or selling agencies or in the exercise of reasonable diligence should have been known by the State to be maintained by the Respondent for the purpose of securing business for the Respondent. In the event of the Respondent's breach or violation of this warranty, UCF shall, subject to the Respondent's rights under Chapter 120, Florida Statutes, have the right, at its option, to annul any contract resulting from this ITN without liability, to deduct from the charges otherwise payable by UCF under such contract the full amount of such commission, percentage, brokerage, or contingent fee, and to pursue any other remedy available to UCF under such contract, at law or in equity.

2.40 Employment of Aliens

The Contractor's employment of unauthorized aliens, if any, shall be considered a violation of §§274(e) of the Immigration and Nationality Act. If the Contractor knowingly employs unauthorized aliens, such violation shall be cause for unilateral cancellation of a contract resulting from this ITN by the University.

2.41 Site Rules and Regulations

The Respondent shall use its best efforts to assure that its employees and agents, while on UCF's premises, shall comply with the State's and UCF's site rules and regulations, if any.

2.42 Travel Expenses

The Respondent shall not under this ITN or any resulting contract charge UCF for any travel expenses, meals, and lodging without UCF's prior written approval. Upon obtaining UCF's prior written approval, the Respondent may be authorized to incur travel expenses payable by UCF to the extent and means provided by Section 112.061, Florida Statutes and applicable UCF policies. Any expenses in excess of the prescribed amounts shall be borne by the Respondent.

2.43 Annual Appropriations

The University's performance and obligations under a contract resulting from this ITN are subject to and contingent upon annual appropriations by the Florida Legislature and other funding sources.

2.44 Taxes

The State of Florida is a tax-immune sovereign and exempt from the payment of all sales, use and excise taxes. The Respondent shall be responsible to pay any such taxes imposed on taxable activities/services under the contract, if any, resulting from this ITN.

2.45 Contractual Precedence

The contract that results from this ITN, if any, and any attachments and/or addenda that are executed by University's duly authorized signatory constitutes the entire and exclusive agreement between the parties. Attachments and/or addenda may include but are not limited to UCF's Invitation to Negotiate ("ITN") including all the University's ITN specifications and the

Contractor's ITN response. In the event of any conflict or inconsistency between the aforementioned documents, the order of precedence is:

A. The Agreement/Contract;
B. University's ITN and ITN specifications;
C. Respondent's ITN response; and
D. Any other attached documents signed by the University's official signatory at the time the Agreement/Contract is executed.

2.46 Use of Contract by Other Governmental Agencies

At the option of the Supplier/Contractor, the use of the contract resulting from this solicitation may be extended to other governmental agencies, including the State of Florida, its agencies, political subdivisions, counties, and cities. Each governmental agency allowed by the Supplier/Contractor to use this contract shall do so independent of any other governmental entity. Each agency shall be responsible for its own purchases and shall be liable only for goods or services ordered, received and accepted. No agency receives any liability by virtue of this offer and subsequent contract award.

2.47 Public Entity Crimes

A person or affiliate who has been placed on Florida's Convicted Vendor List following a conviction for a public entity crime may not submit an offer on a contract to provide any goods or services to a public entity, may not submit an offer on a contract with a public entity for the construction or repair of a public building or public work, may not submit offers on leases of real property to a public entity, may not be awarded, or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the offer limit for that public entity, for a period of thirty-six (36) months from the date of being placed on the Convicted Vendor List.

2.48 Work for Hire

Any work specifically created for the University under a contract resulting from this ITN by the Contractor or anyone working on behalf of the Contractor (the term Contractor shall encompass both) shall be considered a "work for hire." All designs, prints, paintings, artwork, sketches, etchings, drawings, writings, photographs, or any other work or material or property produced, developed or fabricated and any other property created hereunder, including all material incorporated therein and all preliminary or other copies thereof, (the "Materials") shall become and remain the property of the University, and, unless otherwise specifically set forth herein, shall be considered specially ordered for the University as a "work made for hire," or, if for any reason held not to be a "work for hire," the Contractor who created, produced, developed or fabricated the Materials hereunder assigns all of his/her right, title and interest in the Materials to the University.

The University shall own all right, title and interest in the Materials. The Contractor agrees upon request to execute any documents necessary to perfect the transfer of such title to the University. The Materials shall be to the University's satisfaction and are subject to the University's approval. The Contractor bears all risk of loss or damage to the Materials until the University has accepted delivery of the Materials. The University shall be entitled to return, at the Contractor's expense, any Materials which the University deems to be unsatisfactory. On or before completion of the Contractor's services hereunder, the Contractor must furnish the University with valid and adequate releases necessary for the unrestricted use of the Materials for advertising or trade purposes, including model and property releases relating to the Materials and releases from any

persons whose names, voices or likenesses are incorporated or used in the Materials.

The Contractor hereby represents and warrants that (a) all applicable laws, rules and regulations have been complied with, (b) the Contractor is free and has full right to enter into this P.O. and perform all of its obligations hereunder, (c) the Materials may be used or reproduced for advertising or trade purposes or any commercial purposes without violating any laws or the rights of any third parties and (d) no third party has any rights in, to, or arising out of, or in connection with the Materials, including without limitation any claims for fees, royalties or other payments.

The Contractor agrees to indemnify and hold harmless the University of Central Florida Board of Trustees and those acting for or on its behalf, the State of Florida and the Florida Board of Governors and their respective officers, agents, employees and servants from and against any and all losses, claims, damages, expenses or liabilities of any kind, including court costs and attorneys' fees, resulting from or in any way, directly or indirectly, connected with (a) the performance or non-performance of the University's order by the Contractor, (b) the use or reproduction in any manner, whatsoever, or (c) any breach or alleged breach of any of the Contractor's contracts or representations and warranties herein.

2.49 Export Control

The parties shall comply with all applicable U.S. export control laws and regulations, including but not limited to the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, the Export Administration Regulations (EAR), 15 CFR Parts 730 through 799 and/or other restrictions imposed by the Treasury Department's Office of Foreign Asset Controls (OFAC), in the performance of a contract resulting from this ITN. The parties agree that no technology, related data or information will be exchanged or disseminated under such a contract nor any collaboration conducted pursuant to such a contract that are export controlled pursuant to the export control laws of the United States, including the EAR and the ITAR and any other applicable regulations.

The Parties agree that the Contractor will not provide the University with any ITAR or EAR restricted technology and/or related data, and that any ITAR or EAR restricted technologies and/or data produced in furtherance of a contract resulting from this ITN will be in the exclusive possession of the Contractor and at no time will any export controlled technologies, related data, or information be intentionally or inadvertently transferred to the University, its facilities, labs, staff, researchers, employees, officers, agents, servants or students in the performance of such a contract.

If the Contractor wishes to disclose export controlled technology or technical data to the University, the Contractor will, prior to disclosing any information, technical data or source code that is subject to export controls under federal law, notify the University in writing that the material is export controlled and shall identify the controls that apply. The University shall have the right to decline or limit (a) the receipt of such information, and (b) any task requiring receipt of such information. In the event the Contractor sends any such technical data or product that is subject to export control, without notice of the applicability of such export control, the University has the right to immediately terminate a contract resulting from this ITN. The Contractor understands and agrees that to the extent the Contractor's personnel have access to work or materials subject to U.S. export controls while on University property, such personnel will meet all federal export control regulatory requirements or have the appropriate U. S. government approval.

2.50 Nonnegotiable Conditions and Requirements

The University seeks to award a contract from this ITN that complies with applicable law and will be both fair and reasonable to all parties, protecting the best interest of the University, its Board of Trustees, faculty, staff and students. With that goal in mind, we have developed a list of terms and conditions that are either required by law and are thus non-negotiable or have been deemed to be important to the University's interests and are thus non-negotiable. Any discussions seeking to alter or remove such a term or condition from any contract resulting from this ITN shall not be granted to any Respondent. The non-negotiable terms and conditions are listed in Appendix I of this document and identified with **non-negotiable**. Respondents that disagree with any of those "non-negotiable" terms and conditions should forego submitting an offer because said offer shall be rejected as nonresponsive to this ITN. Failure to submit Appendix I with the offer constitutes grounds for rejection of the offer, and UCF shall have the right to reject said offer, at UCF's sole discretion.

2.51 Revised Quantities

The University reserves the right to increase or decrease total quantities as necessary. The University may place additional orders for the same or modified scope of the commodities/services solicited under this ITN within 180 days after expiration of the contract resulting from this ITN. Total additional quantities/modified scope, if any, are unknown.

2.52 Family Educational Rights and Privacy Act

Licensor acknowledges that Licensee has a duty to maintain the privacy of student records, including without limitation education records as defined by the Family Educational Rights and Privacy Act (20 USC § 1232g; 34 CFR Part 99) ("FERPA") and further acknowledges that as a contractor to whom Licensee has outsourced certain institutional services or functions:

A. Confidential information about Licensee's students is contained in records provided to and maintained by Licensor, and Licensor will protect the privacy of all student education records to the fullest extent required of Licensee under FERPA;

B. Licensor is performing an institutional service or function that has been outsourced by Licensee and for which Licensee would otherwise use its employees;

C. Licensor is under the direct control of Licensee with respect to the use and maintenance of education records, as defined by FERPA;

D. Licensor is subject to all FERPA requirements governing the use and re-disclosure of personally identifiable information from education records, including without limitation the requirements of 34 CFR § 99.33(a);

E. Even in circumstances that might justify and exception under FERPA, Licensor may not disclose or re-disclose personally identifiable information unless Licensee has first authorized in writing such disclosure or re-disclosure; and

F. Licensor will not use any personally identifiable information acquired from Licensee for any purpose other than performing the services or function that are the subject of this agreement.

2.53 Smoke-Free Policy

The University prohibits smoking on all university owned, operated, leased and/or controlled properties in order to maintain a healthy and safe environment for its faculty, staff, students, and visitors. Visit http://www.ucf.edu/smokefree for additional information.

2.54 Contact with Minor Children

To the extent that the Supplier qualifies as a provider pursuant to the National Child Protection Act of 1993, as amended, or as a service provider in accordance with applicable Florida law/Statutes, who has direct contact with children receiving services or with adults who are developmentally disabled receiving services or who qualifies as a direct service provider to the elderly (as defined by Florida law/Statutes), Supplier hereby guarantees that Supplier and/or anyone acting on the Supplier's behalf (including, but not limited to Supplier's employees, agents, subcontractors, etc.) has undergone/passed a Level II (two) background check with the State of Florida, as provided under Chapter 435 and hereby certifies that none of Supplier's employees, agents, subcontractors and/or anyone else acting on the Supplier's behalf, has any disqualifying offenses, including, but not limited to those listed in Section 435.04, Florida Statutes.

2.55 Reporting of Child Abuse

The Supplier hereby expressly agrees to instruct its employees, agents, subcontractors and/or anyone else acting on the Supplier's behalf to report to the University of Central Florida police any instance of child abuse, abandonment, or neglect witnessed or learned about that occurred on University of Central Florida property or during an event or function sponsored by the University of Central Florida.

2.56 Secure Handling of UCF Data

The University requires Suppliers and other third parties to review, accept, and integrate secure data handling requirements as part of any contract, agreement, or Service Level Agreement ("SLA") that involves the storage, transmission, processing, or collection of UCF data, or access to UCF data, by the Supplier. This Agreement is intended to ensure that UCF's security and compliance requirements are outlined and followed by the Supplier. Additional agreements may be required depending on the data involved. Visit http://www.infosec.ucf.edu/vrm for additional information.

2.57 Employee Background Checks

The Contractor assumes all liability arising out of, and is solely responsible for, conducting background checks for all of the Contractor's employees, agents, or independent contractors. The Contractor shall provide background checks for all of the contractor' s non-temporary employees, agents, or independent contractors working at UCF and shall ensure that all hires have been cleared before placement at the University. Temporary employees hired through a temporary staffing agency shall require the background checks listed herein, and Contractor may satisfy this requirement by conducting the background checks directly or having a contract with the temporary staffing agency that incorporates the same requirements.

Convictions discovered in the background check will be reviewed by Contractor's Loss Prevention and/or Human Resources department. Consideration may be given to the person's relationship to the job, how long ago the conviction occurred, the potential risk posed to

employees, customers, students, and the University and any other circumstances deemed relevant to the final determination of whether to employ or retain the person. Conviction information will be maintained by Contractor as confidential.

Background checks shall include, at a minimum, the following items:

A State of Florida Level I Background Check (Level 1): Which consists of criminal history background check inclusive of a search of the following:

- National Sex Offenders Registry
- Statewide criminal history background check through the Florida Department of Law Enforcement (FDLE)
- Local criminal records check through local law enforcement agencies

Certification that such personnel, agents, and subcontractors have satisfactorily completed a background check equivalent to Level 1 Background Check standards must be furnished to the University.

Depending on the nature of the position or duties required, hiring officials may require the temporary employment agency and/or contractors to provide evidence of additional levels of background checks performed pursuant to State of Florida Level 2 background check standards prior to commencement of work.

2.58 E-Verify

To the extent that Contractor meets the definition of "Contractor" or "Subcontractor" under Section 448.095, Florida Statutes, Contractor agrees that it and any Subcontractors it utilizes under this agreement are registered with and use the E-Verify system as required by Section 448.095, Florida Statutes.

3.0 REQUIRED OFFER FORMAT

3.1 Introduction

The Respondent shall not alter the ITN in any way and shall not reproduce all or any part of the ITN in its offer document. The contract, if any, resulting from this ITN shall incorporate the entire ITN and proposal by reference.

To facilitate analysis of its offer, the Respondent is to prepare its offer in accordance with the instructions outlined in this section. If the Respondent's offer deviates from these instructions, such offer may, at UCF's sole discretion, be REJECTED.

UCF EMPHASIZES THAT THE RESPONDENT CONCENTRATE ON ACCURACY, COMPLETENESS, AND CLARITY OF CONTENT. The Respondent is encouraged to use sections and tabs that are clearly identified and number and label all parts, pages, figures, and tables in its proposal submittal/offer. Additional tabs may be appended which contain any other pertinent matters that the Respondent wishes UCF to take into consideration in reviewing the offer. The Respondent's response to this ITN must be submitted via UCF's Bonfire Web Portal, as listed in Section 2.6.

3.2 Respondent/Offer Submittal Sections

The Respondent should organize its offer into the following major sections.

A. EXPERIENCE WITH SIMILAR SIZED CHILLED WATER DISTRICTS WITH TES TANKS

1. Provide an overview and history of your company, and experience in providing consulting and advisory services similar in scope to those requested in section 1.1. of this ITN.
2. The proposer should provide a list of current or very recent similar-type client accounts, if any, which are located in Florida or a similar climate. Client account information shall include contact name, address, phone number, and length of service.
3. Please provide a list of client accounts lost through early termination or non-renewal over the past five (5) years. Include contact name and phone number, length of service at each account, and reason for loss.
4. The Proposer should provide a chart of the company's organization and a description of its corporate structure. Also provide the company's chain of ownership up its ultimate parent corporation, and all subsidiaries.
5. Provide the number of years' experience providing services as described in section 1.1.

B. PROJECT STAFF QUALIFICATION & EXPERIENCE WITH CHLORINE DIOXIDE GENERATION

1. Submit individual names, degrees, certifications and years of experience administering Chlorine Dioxide systems.
2. Include the names and resumes of the service representative and primary backup who will personally service the site, and the name and background of his/her immediate supervisor. Provide their home addresses and distances to UCF Main Campus. The proposed service representative should have a minimum of five years of experience as a water treatment service technician with your company and have enough experience to direct the program without further supervision.
3. For each local representative please provide three local references with systems of similar sizes and complexities relative to the site. Include name, title, mailing and e-mail addresses, and telephone numbers. UCF and/or their agents reserve the right to contact or visit the references listed and disqualify vendors not performing satisfactory service. In the event of a change in representatives, UCF reserves the right to require an alternative representative should they deem the representative unsatisfactory for any reason.
4. For your staff, clearly identify chemical treatment skills, certifications and college degrees. Also clearly indicate if your proposal includes any subcontractors or sub-consultants.

C. OVERALL RESPONSIVENESS OF PROPOSAL TO SATISFY SCOPE/PROJECT APPROACH

1. Demonstrate an understanding of the services the university requires. Respondent is to illustrate how they would comply with the different requirements and how they would implement said processes without affecting chilled water production's ability to meet the campus heat load needs. Explain what approach you would take to ensure your process will be visible to the UCF Facilities group (i.e. through reports, metrics, etc) and not interfere with normal operation. Detail time requirements and all material/equipment necessary to accomplish this task. Give detailed timeline for proposed implementation. Document if and why your company can not meet any portions of this ITN.
2. Explain the methodology you will employ to fulfill the requirements discussed in subsections 4.1 - 4.2 and section 5.

D. OVERALL PRICING

1. List total price on the Price Summary Sheet in section 7.0 and 7.1
2. List any other categories of ancillary expenses that may be billed. Note: The University will not reimburse travel, meals or lodging expenses.
3. Itemize labor, materials/chemical cost, and cost of leasing equipment.
4. UCF prefers equipment that is not proprietary. Any proprietary equipment should be listed as such.

E. CONFORMANCE TO ITN'S PREFERRED CONDITIONS AND REQUIREMENTS. Failure to conform to the ITN's mandatory conditions and requirements may result in rejection of offer.

4.0 OTHER REQUIREMENTS

A sample copy of UCF's standard contractual agreement, which is the instrument used to bind the parties, can be viewed at http://www.procurement.ucf.edu/. Any concerns with the provisions and clauses of the offered agreement are to be addressed during the question and answer period sited in section 2.2.

4.1 GENERAL REQUIREMENTS

A. The Successful Vendor agrees to keep a complete manual of water treatment systems, defined as composite hard copy document that includes all water treatment system design, Piping and Instrument Diagram (PID), single line drawings, record drawings of installation, operation manual, maintenance information, training information and vital treatment records at each site. Material Safety Data Sheets (MSDS) are not required in this ITN submittal but will be required after award.

B. Upon award, the Successful Vendor is to submit MSDS and technical guidance with recommended practices for the storage and handling of all chemicals to be supplied. All chemicals and storage containers must be approved by UCF; all storage containers supplied by the vendor.

C. The Successful Vendor is to remove all prior treatment company's chemicals at no cost to UCF.

D. The successful Vendor shall be responsible for removing all non-permanent chemical containers and their own unused chemicals (if so directed) at any time following the end of the contract period. Such requests to remove chemicals and their containers must occur within 30 days following the end of the contract period or any extensions to the contract period. The containers shall remain the property of the vendor. If they are not removed within 30 days following the end of the contract, UCF has the right to dispose of them at no penalty.

E. All prices shall include delivery to the point of use and freight fees. NOTE: Special delivery times may be required to limit student exposure. Normal working hours are 07:30AM to 3:30PM. Unless otherwise arranged and approved by UCF University Superintendent, all deliveries shall occur during the normal work hours.

F. No drum storage is permitted on site at any time.

G. The Successful Vendor must agree to correct any work deemed deficient by UCF within 24 hours of notification of a deficiency.

H. The Successful Vendor must perform one volume study on each tower and closed loop system. For closed loops, this can be done with treatment chemicals. We suggest that this be done within the first three (3) months for towers and within the first six (6) months for closed loops. The results must be provided in writing to UCF within two (2) weeks of completion.

I. The Successful Vendor is responsible for the delivery of products to the point of use and all transfer of chemicals; however, there will be no mixing of chemicals on-site. All formulation blending must be done at the vendor's site.

J. The Successful Vendor is responsible for cleaning all scaled equipment that arises as a direct result of poor implementation of water treatment by the vendor. This must be done at the Vendor's expense.

K. The Successful Vendor is to submit a list of tests to be performed during each service visit and a calendar of services to be performed during the year. Vendor shall provide a recommended list of tests to be run by the plant per day and, if needed, during other shifts.

L. The Successful Vendor shall confirm the annual water usage rates quarterly, at a minimum, by reading the water meters.

M. For evaporative cooling towers, acceptable performance shall be indicated by corrosion rates no greater than 1 mil/year (MPY) for mild steel and 0.1 MPY for copper, total aerobic bacterial counts no greater than 10,000 cells/ml, and clean heat transfer surfaces with no pitting, as determined by UCF or its representative. For closed systems, acceptable performance shall be indicated by corrosion rates no greater than 0.5 MPY for mild steel and 0.1 MPY for copper, total aerobic bacterial counts no greater than 1,000 cells/ml.

N. The Successful Vendor shall be familiar with each component of the treatment chemicals to be applied.

O. Biological activity is the primary cause of system failures and should be monitored carefully. The successful vendor shall check the open systems for biological activity at least once per operating week. It is also recommended that biological count dip slides be taken 48 hours prior to each service visit so that the Vendor can direct any actions to be taken during the service visit, and that biological counts be recorded on each service call report.

P. Conductivity controllers proposed, if necessary, are to have pre-blowdown and lockout capabilities.

Q. All treated systems are to have corrosion coupon racks provided by the vendor.

R. All chemicals stored on site, even pails, need vendor provided containment.

S. Service call reports are to be discussed with UCF plant personnel prior to leaving the building during each service call.

T. Intermittent halogen feeds to an open recirculating system should be over four hours, reaching 1 PPM as free at the end of the fourth hour.

U. Provide all chemical feed equipment. UCF wishes to have all new updated equipment. Please list all equipment that will be provided. All equipment will be installed by the Vendor. UCF will provide power, drain, and all pipe taps. In most cases, all piping and electrical is already present.

4.2 MANDATORY REQUIREMENTS. Respondent must agree to all requirements listed in this section by initialing in Appendix I, section 4.2.

A. Service must be more than one hour for every $300.00 of chemicals spent by UCF or more than **twice per week.**

B. Provide a 60-day start up and transition plan, upgrading current equipment to the most advanced system. Note any exceptions. Campus operations CANNOT be affected. Proposer should detail how they will still meet the water quality parameters within section 5.0, 5.1, 5.2, monitoring, documentation, and specify the frequency of treatment.

C. Be available for monthly, quarterly and annual reviews at the discretion of UCF.

D. Enhanced tube condensers shall be video borescoped to evaluate deposition and cleaning effectiveness a minimum of once per year. The borescope must be outfitted with a perpendicular lens to properly inspect enhancements. This service must be included at no cost to UCF.

E. The Bid Summary Sheets in section 7 shall be used for the price determination of your response. Respondent is to show the unit cost with multipliers, adders and price escalation in your calculation. Failure to provide all components with supporting calculations, may result in rejection of your Offer.

5.0 OPEN TOWER WATER SYSTEM TREATMENT. Respondent must agree to all system treatment requirements listed in this section by initialing in Appendix I, section 5.0

A. Inhibitor Program – Hard Water (PBTC/Polymer/Azole-Based)

1. Provide the minimum/maximum control levels in PPM; active ingredients as fed; and container size, material and type.
2. The formulation must be in proportion to the following, for a feed rate of 100 PPM: greater than 5% of phosphonate as PBTC, greater than 10% of polymer (a minimum of 5% of quad polymer), and greater than 2.5% of TTA or BZT. Addition of required ppm active residuals. >3ppm phosphonate / >1ppm **Free & Available** Azole. A more diluted program can be used; however, it must be quoted at a feed rate to meet or exceed these minimums. Quote the formulation and recommended feed rate to meet these parameters. Due to the use of reclaim water at several locations, those will need to add pH trim with reclaim makeup with statement that acid trim not to exceed 50% Sulfuric Acid.

B. Dispersant (Liquid, If Needed)

1. You may propose a one-drum treatment approach.
2. Details of the dispersant components are to be included on the dispersant form if separate, or the inhibitor form if a one-drum program.

C. Biocide #1 (Halogen) - NOTE: You are required to feed sufficient material to meet the biological goals.

1. Provide the minimum/maximum levels in PPM; active ingredients as fed; container size, material, and type; and recommended dosage schedule in days (e.g., Monday and Thursday additions).

D. Biocide #2 (Glutaraldehyde) – Use a 45% product fed at 120 PPM once per week on all towers and full 120 ppm dose to occur in 1 hour.

1. Provide the minimum/maximum levels in PPM; active ingredients as fed; container size, material, and type; and recommended dosage schedule.

E. Documentation – Provide a chart listing the control limits for the above, including but not limited to, the following:

1. Measurable treatment levels
2. Product component concentrations developed
3. Raw Water Cycles
4. pH
5. Contingency plans for lay-ups, water loss, and loss of automatic feed control to ensure continued protection of the system.
6. All tests to be performed by your service personnel.

Note – UCF requires biological counts no greater than 10,000 cells/ml and corrosion rates no greater than **1 MPY** for mild steel and **0.1 MPY** for copper. The tower must also be free of algae, as determined by UCF or their agent.

5.1 CHP HOT LOOP WATER SYSTEM TREATMENT. Respondent must agree to all system treatment requirements listed in this section by initialing in Appendix I, section 5.1

A. Inhibitor (Nitrite/Azole-Based):
1. Provide the treatment levels for all components; recommended feed points; and container size, material, and type. The product should be free of all glycols.
2. The formulation must be quoted to provide both a minimum of 600 PPM of nitrite as nitrite and a minimum of 5-8 PPM of TTA or BZT. A more diluted program can be used, but must be quoted at a feed rate to meet or exceed these minimums. The program must also maintain the system pH within the range of 8.0-10.3. Quote the formulation and recommended feed rate to meet these parameters.

B. Documentation – Provide a chart listing the control limits for the above, including, but not limited to, the following:
1. Measurable treatment levels (e.g. 600-1,000 PPM of nitrite as nitrite, 5-8 PPM of tolytriazole) – Specify treatment level ranges.
2. pH range
3. Conductivity range
4. Contingency plans for lay-ups, water losses, and loss of automatic feed control to ensure continued protection of the system

Note – UCF requires Anaerobic biological counts no greater than 1,000 cells/ml Aerobic 10,000 anaerobic 1,000 cfu and corrosion rates no greater than **0.5 MPY** for mild steel and **0.1 MPY** for copper.

5.2 CHILLED WATER LOOP SYSTEM TREATMENT. Respondent must agree to all system treatment requirements listed in this section by initialing in Appendix I, section 5.2

A. Inhibitor (Silica/Azole-Based):

1. Provide the treatment levels for all components; recommended feed points; and container size, material, and type. The product should be free of all glycols.
2. The formulation must be quoted to provide both a minimum of 70 PPM of silica as silica (over the background) and 10 PPM of TTA or BZT. A more diluted program can be used; however, it must be quoted at a feedrate to meet or exceed these minimums. Quote the formulation and recommended feedrate to meet these parameters.
3. Chemical for pH control must be included in your proposal. This can be automated or shot fed; however, the pH on the system must be maintained within the range of 8.9-10.5 to maintain the silica from dropping out of disposition

B. Dispersant (Liquid):
1. You may propose a one-drum treatment approach.
2. The dispersant information must be detailed as with the inhibitor

C. Biocide
1. UCF owns three H2Tronic 3 precursor generators. These generators utilize 20% sulfuric acid, Sodium Hypochlorite and Sodium Chlorite. The Chlorine dioxide generators are located at DEP-1, DEP-2 and DEP-4.
2. 20% Sulfuric Acid, Sodium Chlorite, Sodium Hypochlorite

General Specifications for a max of 140 Pounds per Day for 3 Chlorine Dioxide

Generators:

1. These generators are rated at a min of 40 pounds per day and max of 150 pounds per day of high-purity chlorine dioxide.
2. Provide a detailed summary of how you plan to use these chlorine dioxide generators to treat the chilled water system during the transition period.
3. The chlorine dioxide production shall be on-demand. No chlorine dioxide solution shall be stored on-site.
4. The Successful Vendor shall ensure remote start and stop. The feed pump shall have the capability to be started and stopped by an external contact.
5. The distribution pump output shall be controllable to maintain process set point via an external 4-20 mA signal.
6. The Successful Vendor shall ensure outputs for alarm and running status via a Form-C dry contact shall be provided.
7. These generators shall have a customer-controlled interlock to shut down the entire system, if necessary.
8. The Successful Vendor shall ensure the generator has an air monitor that will sound if the air quality is above the recommended OSHA levels.
9. The Successful Vendor shall ensure a functional ORP control of the program to maintain the free chlorine dioxide levels within the range of 0.2-0.4 PPM.
10. The Successful Vendor shall ensure the system shall be capable of accepting a 4-20 mA signal-to-flow pace, or to meet a demand from ORP or chlorine dioxide analyzer.

5.3 MAIN HVAC CLOSED LOOP CHILLED & HOT WATER SYSTEMS

A. Fountain

Specifications

- Water feature estimated to be 220,000 gallons of volume
- Equipment requirements – smart chemical feed controller capable of monitoring pH, ORP, free chlorine, flow, and temperature at a minimum. Controller must be capable of wireless communication including 24/7 alarming, data management, and monitoring
- Free chlorine control ranges 2-10 ppm with ORP >750 mv
- pH control ranges 7.2-7.8
- 12.5% sodium hypochlorite and Sulfuric Acid not to exceed 50%
- Double walled chemical containment tanks
- Weekly field service

The vendor is responsible for the following:

1. Interconnecting pipe, fittings, and valves between the customer water supply and the generators.
2. Provide the startup of the generator and production of chlorine dioxide.
3. Training of plant personnel on the operation and safety of the generator operation
4. Calibration of the ORP and air-monitoring equipment.
5. Quarterly maintenance program as per the manufacturer's recommendations.
6. Maintenance and operation of the unit.
7. Water pressure regulator (if needed).
8. Provide 20% Sulfuric Acid, Sodium Chlorite, Sodium Hypochlorite for the generators in the appropriate container and spill containment or mini bulk double-walled tanks. Assume that the system will require 4,000 pounds of chlorine dioxide annually.

As part of your response, please provide:

1. Detailed information on the experience your staff has utilizing chlorine dioxide generators.
2. A statement agreeing to taking full responsibility for all maintenance (including quarterly maintenance as required by the manufacturer, operation of the unit, and management of the dosing of chlorine dioxide to the chilled water system).
3. A one-page bullet point summary of how your firm plans to provide chlorine dioxide to the chilled water system during the transitional period.
4. The minimum/maximum levels in PPM; active ingredients; container size, material, and type; and recommended dosage schedule for a hydraulically-tight system.
5. A chart listing the control limits for the above, including, but not limited to, the following:
    a) Measurable treatment levels (e.g., 70-100 PPM of silica, 5-10 PPM of azole) – Specify treatment level ranges for cold and hot systems.
    b) pH range of 8.5 to 10
    c) Conductivity <4,000
    d) Contingency plans for lay-ups, water loss, and loss of automatic feed control to ensure continued protection of the system
6. Performance standards with a monthly summary demonstrating compliance.

B. Physical Sciences – Program Summary:

Systems: Two (2) closed chilled water systems/ Two (2) closed heating hot water systems. Four (4) Total closed loops systems

Chemistry

- 447- LM (Nitrite – HHW)

- Procorr 1413 (Silica – CHWS)
- Biotrol 102 – Non-Oxidizing Biocide

Feed Equipment - Vendor will utilize equipment currently owned by the property.

C. Biological Science – Program Summary:
Systems: Three (3) 300HP Steam Generation Boilers/One (1) closed heating hot water system
Chemistry:
- BWT 362 – Sulfite, Polymer, Phosphate, Tri-Amine (Boiler)
- 447- LM (Nitrite – HHW)

D. CREOL – Program Summary:
Systems: Two (2) closed chilled water systems/ Two (1) closed heating hot water systems.
Four (4) total closed loops systems.
Chemistry:
- 447- LM (Nitrite – HHW)
- Procorr 1413 (Silica – CHWS)
- Biotrol 102 – Non-Oxidizing Biocide

E. 309 Boiler House – Program Summary:
Systems: One (1) 100HP Steam Generation System
BWT 362 – Sulfite, Polymer, Phosphate, Tri-Amine (Boiler)

F. Downtown Central Energy Plant

Chilled Water loop system treatment:

1. Inhibitor (Silica/Azole-Based):
   a. Provide the treatment levels for all components; recommended feed points; and container size, material, and type. The product should be free of all glycols.
   b. The formulation must be quoted to provide both a minimum of 70 PPM of silica as silica (over the background) and 10 PPM of TTA or BZT. A more diluted program can be used; however, it must be quoted at a feedrate to meet or exceed these minimums. Quote the formulation and recommended feedrate to meet these parameters.
   c. Chemical for pH control must be included in your proposal. This can be automated or shot fed; however, the pH on the system must be maintained within the range of 89.0-10.5 to maintain the silica from dropping out of disposition

2. Dispersant (Liquid):
   a. You may propose a one-drum treatment approach.
   b. The dispersant information must be detailed as with the inhibitor

3. Biocide
   a. UCF owns three chlorine dioxide generators located at DEP-1, DEP-2 and DEP-4. These units are three precursor generators, to be used as needed for biocide control.
   b. 20% Sulfuric Acid, Sodium Chlorite, Sodium Hypochlorite

<u>Cooling Towers</u>:

• Corrosion Rates	<1.0 MPY	Mild Steel
	<0.1 MPY	Copper

- Phosphonate Level/Traced >90% Compliance
- TDS – Cycles of Concentration >90% Compliance
- Aerobic Biological Counts <10,000 cells/ml

Note: Acids will be allowed.

Chilled Water Systems:

- Corrosion Rates <0.5 MPY Mild Steel
  <0.1 MPY Copper
- Silica Levels >95% Compliance
- Azole Levels >95% Compliance
- Biological Levels – Bulk Water <1,000 cells/ml
- Water Usage per Month

UCF MAIN HVAC Closed Loop Chilled & Hot Water Systems										
Location:	Building Name:	System Type	Critical/ Non-Critical	Estimated Volume gals	Make Up Meter	Automated 24/7 Monitoring	Filtration	Shot Feeder	Chemistry	Notes
B0002	LIBRARY	HHW	NC		NO			YES	Nitirte/Azole	Roof
B0005	CHEMISTRY	HHW	CR	2200	NO	Need		YES	Nitirte/Azole	RM 206, Shot Feeder in bad condition
B0006	THEATRE	HHW	NC	<1000	NO			NO	Nitirte/Azole	RM 112
B0012	MSB	HHW	CR	7000	NO	Need		YES	Nitirte/Azole	RM 434
B0012	MSB	CHWS	CR	7000	NO	Need		YES	Nitirte/Azole	RM 434
B0014	Howard Phillips	HHW	NC	< 1000	NO			YES	Nitirte/Azole	Needs new Shot Feeder (2g)
B0020	Bio Science	HHW	CR		NO	Need		YES	Nitirte/Azole	
B0021	Education Complex	HHW	NC	< 1000	YES			YES	Nitirte/Azole	Roof
B0021	Education Complex	HHW	NC		YES			YES	Nitirte/Azole	
B0053	Creol	PCWL	CR		YES	Need		YES	Nitirte/Azole	RM 191
B0053	Creol	CHWS	CR		YES	Need	NO	YES	Molybdenum	Creol Roof
B0053	Creol	CHWS	CR		NO	Need	NO	YES	Nitirte/Azole	A103B
B0053	Creol	HHW	CR	2500	NO	Need	NO	YES	Nitirte/Azole	Creol Roof
B0077	WAYNE DENSCH	HHW	NC	< 1000	NO			NO	Nitirte/Azole	
B0120	RESEARCH 1	HHW	CR	3000	NO	Need		YES	Nitirte/Azole	RM 141
B0120	RESEARCH 1	PCWL	CR	< 1000	NO	Need		NO	N	RM 140
B0121	Phy Science	HHW	CR	2500	NO	Need	Bag Filter	YES	Nitirte/Azole	East
B0121	Phy Science	HHW	CR	2500	YES	Need	Bag Filter	YES	Nitirte/Azole	West
B0121	Phy Science	PCWL	CR	1200	NO	Need	Cartridge (not installed)	YES	Silica/Azole	East-Will switch over to Nitirte/Azole once treamtment for organic growth is completed.
B0121	Phy Science	PCWL	CR	1200	YES	Need	Cartridge (not installed)	YES	Silica/Azole	West-Will switch over to Nitirte/Azole once treamtment for organic growth is completed.
B0150	Police Station	CHWS	CR		NO	Need		YES	Nitirte/Azole	
B0150	Police Station	HHW	CR			Need			Nitirte/Azole	
B0154	MMAE Lab	HHW	CR	4000	YES	Need	YES	NA	Nitirte/Azole	Just cleaned/flushed and treated Nitrite = Nov 2023
B0154	MMAE Lab	CHWS	CR	4000	YES	Need	YES	NA	Nitirte/Azole	Just cleaned/flushed and treated Nitrite = Nov 2023
B0154	MMAE Lab	PCWL	CR		YES	Need	YES	YES	Silica/Azole	
B0330	Boiler -Ferrell Commons	HHW	NC		NO				Nitirte/Azole	Need to locate Make-up Water and Backflow for hot water loop
P-1	Partnership 1	CHWS	NC						Nitirte/Azole	Need to verify make-up water
P-2	Partnership 2	CHWS	NC						Nitirte/Azole	Need to verify make-up water
P-3	Partnership 3	CHWS	NC						Nitirte/Azole	Need to verify make-up water
P- 5	Partnership 5	Cond Wtr Loop	NC						Nitirte/Azole	Need to verify make-up water
P-5	Partnership 5	Open Loop	NC						Nitirte/Azole	Need to verify make-up water
Reflect Pond	Reflection Pond		CR						Chlorine/Acid	

Critical System: System that requires higher quality pretreatment including filtration down to 1 micron, 24/7 monitoring of chemical levels and water usage monthly services are required

Non Critical System: System that requires basic pot feeder and water meter to monitor water loss. Quarterly services are required

6.0 REQUIRED PROGRAMS

OPEN TOWER WATER PROGRAMS

Monitoring Tests – Use generic tests only.

Options	Program 1	REQUIRED

Test For	PBTC	REQUIRED
Method	UV Digestion Method	REQUIRED
Control Range	3-5 PPM	REQUIRED
Test Frequency	Weekly	REQUIRED
Test For	Azole	REQUIRED
Method	UV Digestion Method	REQUIRED
Control Range	0.5-1.0 PPM as Free (Azole-2xCu)	REQUIRED
Test Frequency	Weekly	REQUIRED
Test For	Bacteria Counts	REQUIRED
Method	Dip Slide or Plate Counts	REQUIRED
Control Range	<10,000 Cells/mL	REQUIRED
Test Frequency	Weekly	REQUIRED
Test For	Iron, Copper	REQUIRED
Method	Hach Method	REQUIRED
Control Range		REQUIRED
Test Frequency	Weekly	REQUIRED
Test For	Azole, Free Halogen	REQUIRED
Method	Hach Method	REQUIRED
Control Range		REQUIRED
Test Frequency	Weekly	REQUIRED
Test For	pH, Conductivity, Hardness, Alkalinity	REQUIRED
Method	-	-
Control Range	-	-
Test Frequency	Weekly	REQUIRED

CHP / HOT LOOP WATER PROGRAMS

Monitoring Tests – Use generic tests only.

Options	Program 1	REQUIRED
Test For	Silica	REQUIRED
Method	Hach Method	REQUIRED
Control Range	>50 PPM	REQUIRED
Test Frequency	Weekly	REQUIRED
Test For	Azole	REQUIRED
Method	UV Digestion Method	REQUIRED
Control Range	0.5-1.0 PPM as Free (Azole-2xCu)	REQUIRED
Test Frequency	Weekly	REQUIRED
Test For	Bacteria Counts	REQUIRED
Method	Dip Slide or Plate Counts	REQUIRED
Control Range	<1,000 Cells/mL	REQUIRED

Test Frequency	Weekly	REQUIRED
Test For	Iron, Copper	REQUIRED
Method	Hach Method	REQUIRED
Control Range		REQUIRED
Test Frequency	Weekly	REQUIRED
Test For	Azole, Free Halogen	REQUIRED
Method	Hach Method	REQUIRED
Control Range		REQUIRED
Test Frequency	Weekly	REQUIRED
Test For	pH, Conductivity, Turbidity	REQUIRED
Method	-	-
Control Range	-	-
Test Frequency	Weekly	REQUIRED

CITY WATER TESTS

Monitoring Tests – Use generic tests only.

Options	Program 1	REQUIRED
Test For	Iron	REQUIRED
Method	Hach Method	REQUIRED
Control Range	<0.5 PPM	REQUIRED
Test Frequency	Weekly	REQUIRED
Test For	Copper	REQUIRED
Method	Hach Method	REQUIRED
Control Range	<0.2 PPM	REQUIRED
Test Frequency	Weekly	REQUIRED
Test For	pH, Conductivity, Hardness, Alkalinity	REQUIRED
Method	-	-
Control Range	Record	-
Test Frequency	Weekly	REQUIRED

7.0 PRICE SUMMARY SHEETS

The following section will be used in evaluating the Respondent's cost implications of the comprehensive program. The cost is to be clearly defined with all assumptions, material, labor, units of measure disclosed, price per unit, as well as all applicable adder's and escalator multipliers stated within the calculation. Price is to be on an annual basis.

A. OPEN TOWER WATER SYSTEMS – assume the following values:
   1. Make up water per year (gallons): 125,000,000
   2. Cycles of concentration: 3.0
   3. System Volume in gallons: 76,500 gallons
   4. Unit Cost = Cost/Gallon of make up:

B. UCF currently utilizes reclaim water at two locations, DEP-2/3 and DEP-4 with future usage at DEP-1at a rate of 4 to 4.5 cycles

CALCULATION: calculations can be found in supporting documentation

Total Annual Cost of Open Loop System: $ 213,122.77

Cost for Additional Coupon Racks: $709.00

B. CHP HOOT LOOP WATER SYSTEM - assume the following values:
   1. Total system volume (gallons): 1200
   2. Average make up per year: 100%

CALCULATION: calculations can be found in supporting documentation

Total Annual Cost of Hot Water System: $ 122.88

Cost for Additional Coupon Racks: $1,054.00

C. CHILLED WATER LOOP SYSTEM – assume the following values:
   1. Make up system volume (gallons): 3,378,000
   2. Average make up per year (gallons): 666,000

CALCULATION: calculations can be found in supporting documentation

Total Annual Chilled Water System Cost: $ 33,710.98

Cost for Additional Coupon Racks: $ 709.00

7.1 PRICE SUMMARY

Open Tower Loop System: $213,122.77

Hot Water Loop System: $122.88

Chilled Water Loop System: $33,710.98

Total price for all chemicals: $312,386.27

Total annual water treatment program including all labor and material: $325,922.27

APPENDIX I
SUPPLEMENTAL OFFER SHEET
TERMS AND CONDITIONS

The sections set forth below are to each be initialed as YES for "understood and agreed upon" or NO for "not agreed to." Failure to complete and return this document with your offer could result in rejection of your offer, at UCF's sole discretion. Respondents shall not check sections as "understood and agreed upon" with the intent to negotiate a change to those sections/terms and conditions after tentative award of a contract resulting from this ITN. Respondents disagreeing with any negotiable term or condition of this ITN are to provide a clear and detailed reason for the disagreement and a solution to the disagreement in his/her offer. A Respondent's disagreement with any non-negotiable section of this ITN may be automatically rejected. Failure of the University and the tentative awardee to come to an agreement with respect to terms and conditions within a time frame UCF determines to be reasonable constitutes grounds for rejection of that offer, and the University shall have the right, at its sole discretion, to award the contract to the next favorable respondent.

SECTION	YES	NO	RESPONDENT INITIALS
2.1 **Non-negotiable**	X		
2.2 **Non-negotiable**	X		
2.3 **Non-negotiable**	X		
2.4	X		
2.5	X		
2.6 **Non-negotiable**	X		
2.7 Section Not Used			
2.8 **Non-negotiable**	X		
2.9	X		
2.10	X		
2.11 **Non-negotiable**	X		
2.12	X		
2.13 **Non-negotiable**	X		
2.14 **Non-negotiable**	X		
2.15	X		

SECTION	YES	NO	RESPONDENT INITIALS
2.16	X		
2.17	X		
2.18 **Non-negotiable**	X		
2.19	X		
2.20 **Non-negotiable**	X		
2.21	X		
2.22	X		
2.23	X		
2.24	X		
2.25	X		
2.26	X		
2.27 **Non-negotiable**	X		
2.28 **Non-negotiable**	X		
2.29	X		
2.30 **Non-negotiable**	X		
2.31 **Non-negotiable**	X		
2.32	X		
2.33	X		
2.34	X		
2.35 **Non-negotiable**	X		
2.36	X		
2.37	X		
2.38	X		
2.39 **Non-negotiable**	X		

SECTION	YES	NO	RESPONDENT INITIALS
2.40	X		
2.41	X		
2.42 **Non-negotiable**	X		
2.43	X		
2.44	X		
2.45	X		
2.46	X		
2.47	X		
2.48	X		
2.49 **Non-negotiable**	X		
2.50	X		
2.51	X		
2.52 **Non-negotiable**	X		
2.53 **Non-negotiable**	X		
2.54	X		
2.55	X		
2.56 **Non-negotiable**	X		
2.57 **Non-negotiable**	X		
2.58 **Non-negotiable**	X		
4.2 **Non-negotiable**	X		
5.0 **Non-negotiable**	X		
5.1 **Non-negotiable**	X		
5.2 **Non-negotiable**	X		
Appendix I	X		
Appendix II	X		
Appendix III	X		

Appendix IV X _____ _____

Company: Chem-Aqua, Inc Authorized Representative's Name: Paul Lioce

Authorized Representative's Signature: _____ Date: 9/12/2024

APPENDIX II

CERTIFICATE OF NON-SEGREGATED FACILITIES

We, Type text here Chem-Aqua, Inc certify to the University of Central Florida that we do not and will not maintain or provide for our employees any segregated facilities at any of our establishments, and that we do not and will not permit our employees to perform their services, under our control, where segregated facilities are maintained. We understand and agree that a breach of this certification is a violation of the Equal Opportunity clause required by Executive Order 11246, as amended.

As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash room, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color or national origin, because of habit, local custom or otherwise.

We, further, agree that (except where we have obtained identical certifications from offered subcontractors for specific time periods) we will obtain identical certifications from offered subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause; that we will retain such certification in our files; and that we will forward the following notice to such offered subcontractors (except where the offered subcontractors have submitted certifications for specific time periods):

NOTE TO PROSPECTIVE SUBCONTRACTORS ON REQUIREMENTS FOR CERTIFICATIONS OF NON-SEGREGATED FACILITIES. A Certificate of Non-segregated Facilities, as required by the 9 May 1967 order on Elimination of Segregated Facilities, by the Secretary of Labor (32 Fed. Reg. 7439, 19 May 1967), must be submitted prior to the award of a sub-contract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each sub-contract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

This Contractor/Vendor and any subcontractors shall abide by the requirements of 41 CFR §§ 60-1.4(a), 60-300.5(a), 60- 741.5(a). These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity, national origin and for inquiring about, discussing, or disclosing compensation. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, veteran status, or disability.

NOTE: Whoever knowingly and willfully makes any false, fictitious, or fraudulent representation may be liable to criminal prosecution under 18 U.S.C. 1001.

APPENDIX II

CERTIFICATE OF NON-SEGREGATED FACILITIES
SUBPART - CONTRACTOR'S AGREEMENTS

SEC. 202. Except in contracts exempted in accordance with Section 204 of this Order, all Government contracting agencies shall include in every Government contract hereafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity or national origin. Such action shall include, but not be limited to the following: employment, upgrading demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity or national origin.

(3) The contractor will send to each labor union or representative of workers with which the contractor has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or worker's representative of the contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of notice in conspicuous places available to employees and applicants for employment.

(4) The contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965 and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.

(6) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoiced as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The contractor will include the provision of Paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued

pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or Supplier. The contractor will take such action with respect to any subcontract or purchase orders the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or Supplier as a result of such direction by the contracting agency, the contractor may request the United States to enter into such litigation to protect the interest of the United States.

SEC. 402 Affirmative Action for Disabled Veterans and Veterans of the Vietnam Era:

(1) The contractor agrees to comply with the affirmative action clause and regulation published by the US Department of Labor implementing Section 402 of the Vietnam Era Veteran's Readjustment Assistance Act of 1974, as amended, and Executive Order 11701, which are incorporated in this certificate by reference.

Company: Chem-Aqua, Inc

Authorized Representative's Name: Paul Lioce

Authorized Representative's Signature: 

Date: 9/12/2024

APPENDIX III

COMPLIANCE AND CERTIFICATION OF GOOD STANDINGS

Cm

The parties shall at all times comply with all applicable ordinances, laws, rules and regulations of local, state and federal governments, or any political subdivision or agency, or authority or commission thereof, which may have jurisdiction to pass laws, ordinances, or make and enforce rules and regulations with respect to the parties.

Suppliers shall certify below that they are in good standings to conduct business in the State of Florida. **The awardee of any contract resulting from this solicitation shall forward a certification of good standing, upon request of UCF.** Noncompliance with this provision may constitute rejection of proposal or termination of a contract at UCF's sole discretion.

CERTIFICATION

I certify that the company submitting an offer under this solicitation is in compliance with all applicable laws to conduct business in the State of Florida, is in good standings and will provide a certificate of good standings from the State of residence prior to initiating any performance under any contract resulting from this solicitation.

Company: Chem-Aqua, Inc_____

Authorized Representative's Name: Paul Lioce_____

Authorized Representative's Signature: _____

Date: 9/12/2024_____

APPENDIX IV

BONFIRE SUBMISSION INSTRUCTIONS FOR SUPPLIERS

Please follow these instructions to submit via our Public Portal.

1. Prepare your submission materials:

Requested Information

Name	Type	# Files	Requirement
Proposal	File Type: PDF (.pdf)	Multiple	Required

Requested Documents:

Please note the type and number of files allowed. The maximum upload file size is 1000 MB.

Please do not embed any documents within your uploaded files, as they will not be accessible or evaluated.

2. Upload your submission at:

https://ucfprocurement.bonfirehub.com/opportunities/147136

Your submission must be uploaded, submitted, and finalized prior to the Closing Time of **Sep 06, 2024 3:00 PM EDT.** We strongly recommend that you give yourself sufficient time and **at least ONE (1) day** before Closing Time to begin the uploading process and to finalize your submission.

Important Notes:

Each item of Requested Information will only be visible after the Closing Time.

Uploading large documents may take significant time, depending on the size of the file(s) and your Internet connection speed.

You will receive an email confirmation receipt with a unique confirmation number once you finalize your submission.

Minimum system requirements: Microsoft Edge, Google Chrome, or Mozilla Firefox. Javascript must be enabled. Browser cookies must be enabled.

Need Help?

University of Central Florida Procurement Services uses a Bonfire portal for accepting and evaluating proposals digitally. Please contact Bonfire at Support@GoBonfire.com for technical questions related to your submission. You can also visit their help forum at https://vendorsupport.gobonfire.com/hc/en-us

UNIVERSITY OF CENTRAL FLORIDA

Department of Procurement Services
12424 Research Parkway, Suite 355
Orlando, FL 32826

ADDENDUM

IMPORTANT DOCUMENT – INVITATION TO NEGOTIATE

ITN NUMBER: 2023-17OCSA

ITN TITLE: Chemical Treatment Services Campus Water Loops

OPENING DATE & TIME: September 6, 2024; 3:00 PM

ADDENDUM NUMBER: I ADDENDUM DATE: August 21, 2024

Purpose of this addendum is to answer questions asked during the q/a period.

PLEASE ACKNOWLEDGE RECEIPT OF THIS ADDENDUM AND RETURN IT WITH YOUR OFFER. FAILURE TO SIGN AND RETURN WITH YOUR OFFER COULD RESULT IN REJECTION OF YOUR OFFER.

PROPOSERS SIGNATURE	Paul Lioce PRINT OR TYPE PROPOSER'S NAME
Chem-Aqua, Inc COMPANY NAME	paul.lioce@chemaqua.com EMAIL ADDRESS

1. Vendor Question: Can you reiterate on what equipment is owned by the school and what is owned by current vendor. For the equipment owned by current vendor, would we be responsible for that replacement of that equipment as part of this bid?

   UCF Answer: It will be the responsibility of the water treatment vendor to supply necessary equipment.

2. Vendor Question: The product bid specs are very specific. Is the college open to a bid for alternative methods of treatment? Labeled as an Option B in conjunction with using the same water usages that were given.

   UCF Answer: Alternates can be provided for considerations. Complete list of percent actives must be provided including justification of deviation.

3. Vendor Question: Can we use 50% glutaraldehyde at 108 ppm instead of 45% glutaraldehyde at 120 ppm?

   UCF Answer: Yes.

4. Vendor Question: Is reclaimed water included in the total annual cooling tower makeup provided (125,000,000), and if so what percent of that makeup is reclaimed water?

   UCF Answer: Yes.

5. Vendor Question: Does UCF own the chemical feed pumps?

   UCF Answer: Owned by Kurita America.

6. Vendor Question: Under the HVAC closed loop system chart it states that critical systems should have water meters, coupon racks, filter feeders w/ filters down to 1 micron, and 24/7 monitoring of chemical levels. Do you want us to provide quotes for all of those systems with all new equipment meeting those specifications? If not, what is the specific number of each piece of equipment needed?

   UCF Answer: Yes, if it is listed critical it should have filter feeders w/ filters down to 1 micron.

7. Vendor Question: The bid states that all treated systems are to have corrosion coupon racks provided by the vendor. Do all the closed loops have existing coupon racks that can be used or are new ones needed? If so, how many new coupon racks are needed?

   UCF Answer: Coupon rack will have to be provided by vendor for all closed loops if not already provided. This should have been noted in bid walk.

8. Vendor Question: During the walk through it was stated that the University owns all the controllers and chemical pumps. However, in Section 4.1.U it states that the University wants all new equipment provided. Please clarify.

UCF Answer: Kurita owns controllers/pumps. Vendor would be responsible for providing and maintaining all chemical feed equipment.

9. Vendor Question: Who provides the sulfuric acid for the pH control in the towers?

   UCF Answer: Sulfuric acid is the responsibility of the water treatment provider.

10. Vendor Question: Who owns the control and feed equipment at the decorative fountain?

    UCF Answer: Equipment is owned by the current water treatment vendor.

11. Vendor Question: What is the current spend for this contract?

    UCF Answer: Current spend since 7/1/2022 is $833,687.52.

12. Vendor Question: Who is the current contract supplier?

    UCF Answer: Kurita America.

13. Vendor Question: Can we confirm Section 4.2 A – The water treatment supplier is to provide a minimum of twice per week service (service hours not specified)? Will the hours be based on spend at $ 300/hour service? Will this apply to servicing the Central Plants only?

    *UCF Answer: Yes, UCF requests that the water treatment supplier service all Utility Plants and reflection pond twice per week which includes full testing, equipment calibration and confirming the chemistry is in range. UCF employees will not be doing continuous testing, but spot-checking water results. We are asking the water treatment supplier to provide all the testing and monitoring. UCF expects to receive **at least** $ 300 of spend per hour of service. IF the hours are more than this, please price that into your response. So, service hours will not be based just on the chemical spend, and vendors should price accordingly to meet specifications.*

14. Vendor Question: Section 5.0 A – You mentioned a minimum of 5% Quad Polymer. There are more advanced polymers since the use of Quad Polymers, Will this be allowed?

    UCF Answer: Yes, you may propose as an alternate. Please include product percent actives and feed-rates to achieve necessary actives, and why it's equal to or better.

15. Vendor Question: The chemistry for the Reclaim water will work without the use of acid but the cycles will be lower. Does UCF want to use acid in conjunction to Reclaim water to run high cycles reducing water and inhibitor costs? Noted on section 7.0 of the pricing page you want 4-4.5 cycles for reclaim water. Should we assume that all the main campus will want to use an acid trim program to increase cycles and budget accordingly in our pricing?

    UCF Answer: The utilization of acid is to achieve higher cycles of concentrations. The goal is to utilize reclaim as main source. However, not all systems currently have a reclaim supply.

Currently two utility plants are using reclaim water. Please factor this transition into your pricing. UCF also requests that the automation package has (2) pH probes for redundancy and monitoring of the acid feed. UCF provided the annual water usage and the water treatment supplier should know the current water quality to calculate the acid usage to achieve 4.5 cycles as a minimum. Please show how you came up with the acid usage (no higher than 50% sulfuric acid) in your response.

- *This does not apply to the downtown campus but only the plants at the main campus.*
- *For systems utilizing city makeup, acid will not be allowed until conversion is completed.*

16. Vendor Question: Section 5.0 C – states the use of halogen to meet the biological goals of < 10,000 cfu (documented earlier). You are currently using Bromine as the Halogen of choice. Is Bromine the program everybody should be using? Are we allowed to use stabilized bromine?

    UCF Answer: UCF requires using Bromine to minimize copper corrosion in the system. The use of a stabilized bromine is not allowed. The use of the two part bromine/chlorine program or bromine tablets (Hydantoin) is acceptable.

17. Vendor Question: Section 5.2 – How often does UCF want to apply chlorine dioxide to the Chilled water system so we can budget the amount of chemicals required? Also, what dosage level in PPM of chlorine dioxide do you want in the system when the dosage occurs? Later it states 4000 lbs. of chlorine dioxide. Can we confirm?

    UCF Answer: UCF requires that the chilled (TES) water be tested (4) times per year through the suppliers own internal labs for full microbiological workup. If the levels are higher than outlined earlier, the system will need to be dosed with chlorine dioxide using 1-3 of the Generators on site. Note the purpose of the (3) generators is to maximize distribution of the chlorine dioxide quickly throughout the system. UCF requires a feed rate of 10 ppm chlorine dioxide to achieve a minimum of 1.0 ppm chlorine dioxide throughout campus at the completion of each feed. Feeds will occur as often as is required to achieve microbiological control. The amount of Chlorine Dioxide needed annually is 2200 lbs. Note that the units do not produce 100% Chlorine Dioxide. (1) week after treatment is completed a full set of biological testing at the suppliers internal lab will be done to show that the levels are all close to Non Detect on total aerobic as well as SRB, IRB and Denitrifying bacteria groups. Please budget (2) treatments per year. In your response please show your calculations on how much of the (3) precursors are needed to achieve 2200 lbs. of chlorine dioxide.

18. Vendor Question: With the exception of the (3) Chlorine Dioxide Units, is all the equipment including controllers, pumps, tanks, etc. all belong to the current supplier?

    UCF Answer: Yes, all equipment belongs to the current supplier with exception to the (3) chlorine dioxide units. This includes all the tanks/pumps/controllers and probes.

19. Vendor Question: Section 5.3 F – There is currently a chlorine dioxide generator at this location. Is this owned by the currently supplier and will need to be replaced? How do we budget for chlorine dioxide dosages at the downtown campus?

    UCF Answer: At the downtown campus the current supplier owns the chlorine dioxide unit as well. Yes, please replace the unit. The three Chlorine dioxide generators on the main campus are owned by the University. Chemical calculations should be based off the following system volumes. The main campus chilled water side is 3,378,000 gallons.

20. Vendor Question: Section 4.1 U – States UCF wishes to have all new updated equipment. Can we confirm that all the existing equipment belongs to the current supplier? If yes, then are you asking us to provide all new tanks, chemical pumps and cooling tower controllers? Will the equipment remain the ownership of the supplier through the life of the contract? Will the supplier be required to maintain all equipment including probes, pump parts, etc. through the life of the contract since we own the equipment? Will the cooling tower controllers require the most updated probe technology like Traced Inhibitor Probes? Free bromine/Chlorine probes? Ph? ORP? Conductivity? Corrosion coupon racks? Flow etc.?

    UCF Answer:

    - *Yes, all equipment except the chlorine dioxide generators belongs to the current supplier.*
    - *Yes, the water treatment company is responsible for all new equipment of controllers, pumps, and tanks including installation.*
    - *Yes, the supplier will be required to maintain all equipment including probes, pump parts, etc. through the life of the contract.*
    - *Yes, the cooling tower controllers require updated probe technology. We're seeking new Free bromine/Chlorine probes, Ph, ORP, Conductivity, Corrosion coupon racks and Flow sensors.*
    - *Yes, UCF expects to have the latest equipment present to include all the probes outlined above and any ideas to improve the automation of the system. For the reflection pond we expect probe for flow, ph, ORP, Free Chlorine and Total Chlorine. Please outline this in your response.*
    - *Vendor will be responsible for providing and maintaining all chemical feed equipment including probes. The University will not be responsible for any probe replacements. The University also expects vendor to provide newest controller technology following the completion of three-year term at no cost to the University.*

21. Vendor Question: During the walk through we noticed that gateways for 24/7 monitoring was being used. Is this required and what level of information feedback does UCF require in the form of daily dashboards? Section 1.1D mentioned daily data? Can you confirm. Does this include the fountain as well?

    UCF Answer: UCF expects the latest equipment and monitoring for our systems. This includes the equipment outlined on the previous question as well as 24/7 Monitoring (including alarm capabilities, this includes the water feature), easy to read daily dashboards for UCF Management to review daily. Please outline how this will be done in your response. Any pricing for this service

needs to be a part of your pricing. Vendors shall include capabilities in their submittal to be reviewed by University Committee.

22. Vendor Question: Section 5.0 "D": Is glutaraldehyde the only acceptable non-oxidizing biocide allowed? Can a copper free Isothiazoline be used, as it is being applied today?

    UCF Answer: Isothiazoline is currently being used. Either Non Oxidizing biocide is acceptable. Glutaraldehyde is to be priced per specifications.

23. On the pricing page section 7.0 you listed total makeup of 125MM gallons. Does this include the makeup usage for the downtown campus?

    UCF Answer: Yes.

24. Vendor Question: Section 5.3A fountain treatment program. Since calculating chlorine and acid costs are difficult, do you have an annual usage for chlorine and acid available? Is the company required to have certification to treat this system as it appears you are treating it like a pool. For example, have a CPO or AFO certification?

    UCF Answer: Water feature system volume was provided in the RFP Specifications. Certifications requirements are as stated earlier in the ITN scope of work. Please outline the representative's certifications in your response. UCF realizes this is not a regulated body of water but given the number of students that enter the system we are treating it as such.

25. Vendor Question: 5.3 F – There is a chart of closed loop systems.

    • Are all these systems at the downtown central Energy Plant or the building closed loops?

    • Are there any equipment requirements for these loops that we need to provide? Some systems do not have filtration as an example.

    • Does UCF require remote communication on all systems marked "CR" as stated in the fine print at the bottom of the excel sheet? And outlined in one of the columns?

    • Is Partnership 5 Cooling Tower part of ITN as listed on the Excel document? Do you have estimated system volume and makeup usage rates? Does this require the same controller/pump/Tank capabilities including remote communication?

    • Does UCF require remote communication for the steam boilers?

    UCF Answer:

    - *We provided a listing of all the building closed loop, steam boilers and cooling towers.*
    - *At this time please quote only quarterly services for all the closed loop systems, weekly services for the steam boilers and cooling towers. Chemicals for the boilers and cooling towers should be included as well as automation needed to treat these systems as outlined*

earlier. For the boilers the automatic blowdown controllers are owned by UCF. The cooling tower controller/pumps and tanks are owned by the current supplier. The awarded supplier will be asked to continue this automation of the program where equipment will be purchased as needed.

- *UCF is working on a project to better automate these systems. Please provide recommendation on how you would better automate the Critical Closed Loops identified. DO not include this in your pricing. UCF would like to understand how you would automate these loops.*
- *Yes, the level of automation including remote monitoring and weekly services is the same. The equipment is owned by the current supplier. Currently FO doesn't have the volume and usage rate.*
- *Vendors shall assume any critical system including steam boilers require 24/7 remote monitoring. Yes, please provide a quote on how you would automate the boiler systems but do not add this to your finial price. Please outline how you would automate and pricing in your response.*

26. Vendor Question: The equipment for the chemical feed of the reflection pond it looks like it is not functioning, Will the university be replacing that equipment or will they release the specification for what equipment they would like to include in the solicitation? Do they Expect to us replace the equipment so we can add it on a different price line?

    UCF Answer: Vendor is responsible to provide and maintain chemical feed equipment as part of the submission. Chemical feed for the is located in the basement. If you want to see this equipment, please schedule an additional walk though.

27. Vendor Question: During the walkthrough they specify they are looking for technology, is there a specific controller that they are looking for? so we can bid on it comparing apples to apples. If they are not releasing information about the specification, can it be bid on a separate item line?

    UCF Answer: Vendor shall highlight technology capabilities of all controllers within their submission for review. ***All technology must be non-proprietary.***

28. Vendor Question: Does UCF own the cooling tower equipment?

    UCF Answer: Chemical feed equipment is owned by current provider.

29. Vendor Question: The chemical feed tanks are owned by UCF?

    UCF Answer: Chemical tanks are owned by current provider.

30. Vendor Question: For the Chilled water system there is missing some system volumes can you please provide a complete volume system sheet? So we can compare apples to apples so each company are not making assumptions.

UCF Answer: The UCF chilled water loop system is continuous (only one large loop). The entire system is 3,378,000 gallons.

31. Vendor Question: Are you going to provide the data about the gray water compare with city water, can they provide a baseline usage for each plant?
UCF Answer: See attached excel sheet.

UNIVERSITY OF CENTRAL FLORIDA

Department of Procurement Services
12424 Research Parkway, Suite 355
Orlando, FL 32826

ADDENDUM

IMPORTANT DOCUMENT – INVITATION TO NEGOTIATE

ITN NUMBER: 2023-17OCSA

ITN TITLE: Chemical Treatment Services Campus Water Loops

OPENING DATE & TIME: September 12, 2024; 3:00 PM

ADDENDUM NUMBER: II ADDENDUM DATE: September 5, 2024

Purpose of this addendum is to:

- **Extend the due date to September 12, 2024 at 3:00 PM EST.**
- **Revise section 7.0, C, to read:**

  C. CHILLED WATER LOOP SYSTEM – assume the following values:

  1. Make up system volume (gallons): 3,378,000

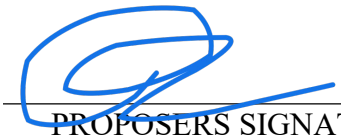
  2. Average make up per year (gallons): 3,500,000
- **Revise section 7.1 Price Summary to also include:**

  Fountain/Reflection Pond: $ 58,235.06

  Steam Boiler Locations: $ 4,517.84

  Hot/Chilled Water Closed Loops: $ 2,676.75
- **To correct the UCF Answer on Addendum 1, question 17: The total amount of chlorine dioxide required is 1,126 lbs., not 2,200 lbs.**

PLEASE ACKNOWLEDGE RECEIPT OF THIS ADDENDUM AND RETURN IT WITH YOUR OFFER. FAILURE TO SIGN AND RETURN WITH YOUR OFFER COULD RESULT IN REJECTION OF YOUR OFFER.



PROPOSERS SIGNATURE

Paul Lioce

PRINT OR TYPE PROPOSER'S NAME

Chem-Aqua, Inc

COMPANY NAME

paul.lioce@chemaqua.com

EMAIL ADDRESS

Water Treatment Submittal

for

University of Central Florida
ITN 2023-17OCSA

Presented by:

CHEM-AQUA™
An NCH Company

September 12, 2024

Chem-Aqua, Inc. • P.O. Box 152170 • Irving, Texas 75015 • 1-866-209-3373 • Fax 972-438-0801 • www.chemaqua.com

September 12, 2024

University of Central Florida
Brandon Orofino
Orlando, FL
United States

Subject: ITN 2023-17OCSA Water Treatment Chemicals, Equipment, and Services

Chem-Aqua is pleased to submit for your consideration a detailed summary of our water treatment proposal to the University of Central Florida.

We are confident you will find our financial offer and commitment to unequalled technical service exciting. Our goals are aligned with yours to provide the very best water management program at a reasonable price. Additionally, our program includes unparalleled selection of equipment with special discounts for the University of Central Florida.

Chem-Aqua's plan offers a very cost effective, service-oriented program that meets or exceeds the specifications. We fully understand the operational importance of your facilities, as we are successfully providing the water treatment programs at many other higher education campuses. We have been extremely successful overall as a company in multiple markets for a reason; Chem-Aqua does what we say we will and collaborates closely with the site personnel to ensure great results.

If you have any questions or need additional information, please reach out to any of the team members below dedicated to the University of Central Florida. Thank you for your time and considerations.

Sincerely,

Paul Lioce
Corporate Account Manager – C&I
C: 904-866-7733
E: paul.lioce@chemaqua.com
Corporate Office: 866-209-3373| www.chemaqua.com
Follow us on LinkedIn | YouTube | Facebook |Twitter | Instagram

CHEM-AQUA
An NCH Company

Table of Contents

0.0 Corporate Profile

Chem-Aqua is the wholly owned water treatment subsidiary of NCH Corporation, a privately held $1 billion specialty chemical and maintenance services company. NCH Corporation was founded in 1919 and has been operating internationally since 1954. Chem-Aqua was formed to provide specialty chemicals, equipment, and application services for water treatment and has consistently been one of fastest growing divisions within NCH.

Chem-Aqua is a solutions provider. We provide our customers with custom designed programs that solve their water treatment problems and make their systems more efficient. Our Corporate Offices are located in Irving, Texas. We have manufacturing plants in Irving, TX, Greenville, TX, Monmouth Junction, NJ, Indianapolis, IN, Macon, GA, and Brampton, ON, as well as 18 other manufacturing and distribution plants serving over 58 countries across the globe.

Chem-Aqua Sustainability

Chem-Aqua is committed to protecting our environment, and carrying out our business activities in a fair, equitable, and environmentally responsible manner. While we do not participate in a Responsible Care program, our commitment to sustainability is reflected in our Code of Conduct, Environmental, Health and Safety (EHS) policy, and Resourcefully Green™ initiative.

Corporate Sustainability
The NCH Global Code of Conduct defines our commitment to conduct business affairs in compliance with the law, in accordance with high ethical standards, and in a work environment free from harassment and discrimination, where all associates are treated with respect.

The NCH Environmental, Health, and Safety (EHS) policy communicates our commitment to implementing best practices to increase the sustainability of our facilities and reduce our overall impact on the environment. Our EHS program establishes the responsibilities, standards, and procedures used to implement this policy and support compliance with governmental regulations and environmental standards. The EHS policy is reviewed and endorsed by management annually.

We are steadily improving sustainability within our own operations. We make systematic investments in reducing, reusing and recycling water at our plants and offices around the world. We focus on reducing our energy consumption, implementing source reduction and waste management programs, and reducing transportation requirements. We also invest in research to develop new products and manufacturing processes to meet evolving safety, regulatory, and environmental standards.

Resourcefully Green Initiative
Chem-Aqua's Resourcefully Green™ initiative describes our commitment to resource management and helping our customers maintain a healthy, sustainable and productive environment. Our vision is to be the most environmentally resourceful company in the water treatment industry and to be recognized as an industry leader in green issues.

We strive for leadership in sustainability by investing in research to develop new products and technologies that enhance water conservation, energy efficiency, and worker safety. Our goal is to provide environmentally responsible and economically profitable water treatment solutions that conserve energy and water while protecting the health and welfare of people and the environment. Our impact on sustainability through customers is exponentially larger than the savings we achieve at our own facilities.

Resourcefully Green® Solutions

Chem-Aqua provides customized programs designed to meet your green goals and objectives

Areas we specialize in include

- Energy Savings
- Water Savings
- Reliable Operation
- Protection of Equipment
- Reducing Workplace Hazards
- Reducing Building Waste
- Reducing Chemical Usage
- Reducing Operational Costs
- Help with LEED®* Certification

Our Resourcefully Green initiative can help facilities meet their green objectives by providing:

- Water treatment solutions that use safer, lower toxicity, and more biodegradable chemicals.
- HandiChem solid water treatment systems that are safer, easier to use and more environmentally friendly than traditional liquid chemicals.
- Effective water treatment solutions that maintain clean, energy efficient heat exchange to reduce energy usage and greenhouse gas emissions.
- Effective online and offline cleaning products and processes that quickly restore heat transfer efficiency to fouled heating and cooling water systems.
- Pre-treatment and automatic control equipment that enable boiler and cooling systems to operate at lower blowdown rates with lower chemical requirements and greatly reduced operating costs.
- Develop additional environmentally responsible water treatment products and technologies.
- Offer programs to identify, analyze, and track green objectives

Chem-Aqua Can Help You Meet Water Conservation Goals

Water is the ultimate sustainable resource. The Hydrologic Cycle always returns water to nature for reuse. The challenge is to find usable water that does not overtax the ability of the hydrologic cycle to recycle water to a point of need. Chem-Aqua's products and services help customers reduce their water consumption footprint by minimizing fresh water usage and allowing the effective use of alternate water sources such rain water, air handler condensate, or reclaimed wastewater.

Cooling Tower Blowdown Reduction Strategies

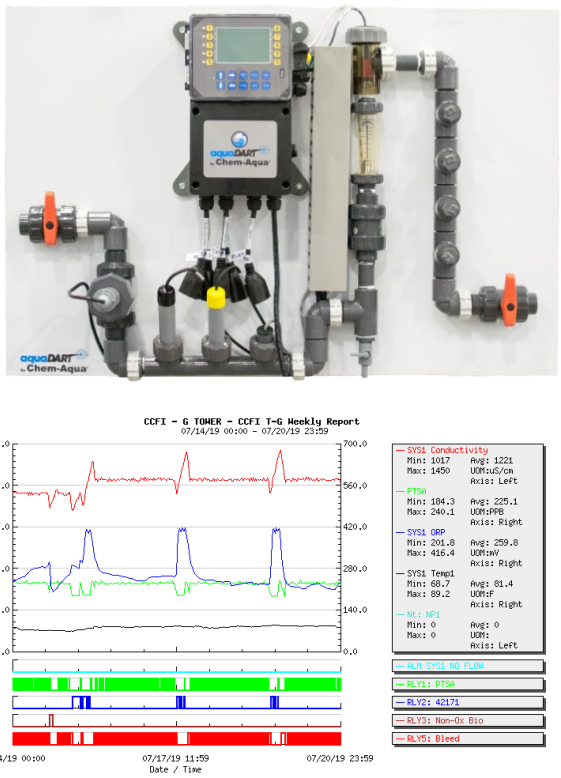
As a large consumer of fresh water, cooling towers are an obvious target for water conservation efforts. Cooling towers should be operated with the minimum blowdown consistent with good control of corrosion, deposits, and microbiological growth. This approach minimizes facility water usage while allowing efficient and reliable equipment operation. Even cooling towers that use a higher quality makeup source can be good candidates for blowdown optimization since they are often not operated efficiently with respect to water conservation. This is especially prevalent where personnel are not available for a rigorous in-plant water treatment testing program.

aquaDART® SMART Control System

Chem-Aqua's aquaDART® SMART Controllers provide state-of-the-art automation for monitoring and controlling water treatment programs. aquaDART SMART controllers employ Direct Analysis and Response Technology (DART) to continuously monitor and control the water treatment program based on changing system demands.

- Real-time sensors directly measure the key parameters determining scale, corrosion, and microbiological control
- Custom controls regulate blowdown and chemical feed, and immediately communicate upset conditions
- Web-enabled monitoring and control software provides performance-based feedback and alerts

aquaDART SMART Controllers enable high performance water treatment programs that reduce water consumption by allowing systems to be safely operated at minimum blowdown rates. Low inhibitor levels, biocide feed problems, and excess water usage can be quickly identified and addressed. Regardless of the specific water conservation strategy used, an aquaDART SMART controller should be a key component of the overall treatment program.



aquaDART SMART Controller and Weekly Graph

Alternate Water Sources

Because of supply and cost pressures, more facilities are considering alternate makeup water sources for cooling tower systems, such as air handler condensate, rain water and reclaim water. In some cases, alternate water sources are being blended with potable water to improve water use efficiency. Using one or more of these alternate water sources for cooling tower makeup conserves freshwater for other uses and can provide significant cost savings. Chem-Aqua has the expertise and experience to help our customer evaluate and use alternate water sources in your cooling water systems.

Chem-Aqua Can Help You Reduce Energy Costs

The return on investment associated with sustainability is closely associated with energy efficiency and energy savings, which conserves resources and reduces greenhouse gas (GHG) emissions. Chem-Aqua's products, services, and innovative solutions enable customers to improve the energy efficiency of their operations and reduce greenhouse gas emissions.

An effective water treatment program that helps maximize the life, efficiency, and reliability of boiler and cooling water systems is integral for the operation of energy and resource efficient facilities. The excess energy costs and greenhouse emissions associated with scale deposits and especially biofilm on heat transfer surfaces is significant.

Table 1 - Excess Energy Costs and Green House Gas (GHG) Emissions Associated with Scale Deposits or Biofilms

Cooling Systems*	Deposit Composition	Efficiency Loss	Increased Energy Usage (kWh/yr)	Increased Energy Costs (per year)	Increased GHG Emission (lb/yr)
1000-Ton Chiller System, Operating 24/7, 365 days/yr at 50% Load	0.2 mm Calcium Scale	4.4%	160,024	$16,002	217,633
	0.2 mm Normal Scale	7.1%	410,795	$41,079	558,681
	0.2 mm Biofilm	17.8%	743,845	$74,385	1,011,629
Boiler Systems**	**Deposit Composition**	**Efficiency Loss**	**Increased Energy Usage (MMBTU/yr)**	**Increased Energy Costs (per year)**	**Increased GHG Emission (lb/yr)**
34,500 lb/hr Steam Boiler, 100 PSIG, Operating 24/7, 365 days/yr at 50% Load	0.8 mm Calcium Scale	2.0%	5,042	$20,168	590,418
	0.8 mm Iron Scale	3.2%	8,184	$32,736	958,346
	0.8 mm Silica Scale	7.0%	18,856	$75,424	2,208,038

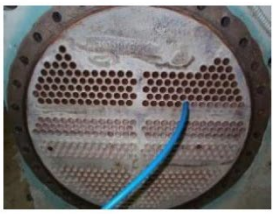
*Chiller efficiency of 0.65 kW/Ton and Electric cost of $0.10/kwh. **85% Condensate Return, FW Temp 180°F and Natural Gas cost of $4.00/MMBTU

Chem-Aqua has innovative solutions to help minimize energy robbing deposits. For example, the aquaDART SMART Controllers enable high performance programs that keep heat transfer surfaces clean and energy efficient. The bioDART Biofouling Monitor is another Chem-Aqua innovation to help our customers maximize the life, efficiency, reliability, and safety of the water systems.

bioDART™ Biofouling Monitor

Biofilms are communities of surface attached microorganisms held together by sticky, protective bacterial secretions. If left unchecked, biofilm cause serious and costly problems. These problems include severe corrosion damage, insulating biofouling deposits, flow restrictions, and Legionnaires' disease.

Microbiologically Induced Corrosion (MIC)



Heat Transfer Loss

Reduced Flow and Blockages

Waterborne Pathogens

To date, there has not been a practical and effective way to continuously monitor microbiological activity in water systems and predict biofilm formation.

Chem-Aqua's bioDART Biofouling Monitor is new, patent-pending technology that provides a system specific measure of the potential to form biofilms and biofouling deposits in recirculating water systems.
bioDART provides valuable information:

- Automatic real-time monitoring of the potential to form biofilm
- Evaluate the potential for biofilm formation and related problems
- Monitor and improve microbiological control measures
- Identify upset conditions so action can be taken now

The bioDART has been validated by extensive trials and Montana State Center for Biofilm Engineering
It can be used as a standalone monitor or connect to an aquaDART controller

Energy Star Partnership

The Energy Star program for buildings and plants is designed to help companies reduce energy costs and emissions and demonstrate environmental leadership. It provides tools and strategies to improve energy efficiency and promotes use of Energy Star Service and Product Providers. Chem-Aqua is an Energy Star Service and Product Provider.

A key part of the Energy Star program is the Energy Star rating system, which assesses how efficiently a building uses energy relative to similar buildings nationwide. Chem-Aqua provides a variety of water treatment solutions that can help a facility increase their Energy Star rating. Energy efficiency is a key to green technology and a good water treatment program ties into that. Effective water treatment keeps HVAC systems operating at maximum efficiency, reduces energy usage, conserves resources and protects the environment.

LEED Leadership

Chem-Aqua is a member of the Canadian and US Green Building Council (USGBC Gold Level member since 2007) and BOMA (for 10 years). Chem-Aqua also employs a full time LEED accredited manager (qualifications include LEED AP BD+C, O+M, ID+C, ND, Homes.). As a member of USGBC®, Chem-Aqua has publicly connected to the core purpose of transforming the way buildings are operated to enable an environmentally and socially responsible, and healthy environment.

1.0 Treatment Representative Information

Doug Kreitner
2693 Sugar Pine Run
Oviedo, Florida 32765
(618)806-0760
Doug.kreitner@chemaqua.com

Education

2001; University of Missouri
Major: Education; Minor: History/Chemistry

Current Position

Regional Manager – Southeast Division

My responsibilities include managing the day-to-day operations of 17 reps in Central Florida from Tampa to Daytona Beach and down through the Caribbean Islands.

Employment History

2005 – Present	Chem-Aqua
2001 – 2005	Ecolab

Joined Chem-Aqua as Water Treatment Specialist and Area Representative. My primary responsibility is the field service and management of accounts in St. Louis and Southern Illinois. After moving to Orlando in January 2013, I assumed the responsibility to area manager and district manager.

Consultant Job Duties

- Provides technical services and water treatment to a diverse array of industries including healthcare, hospitality, food processing, casinos, commercial properties, and general manufacturing facilities. Some of the services provided include:
- On-site chemical testing and analysis of treated system waters
- On-site interpretation of analysis including written recommendations for correcting any potential problems
- Troubleshooting and calibration of water treatment equipment including controllers, pumps, meters, softeners, blow down equipment, etc.
- Technical audits of critical operating systems to minimize plant-operating costs like water, energy, and labor
- Working with third party mechanical contractors to facilitate seamless integration of water treatment equipment
- On-site training of plant operating personnel as required to ensure effective day to day application of the water treatment program
- On-site for all equipment inspections (day, night, holidays, or weekends) to document results and make program recommendations
- Management of chemical inventory

Past Noted Accomplishments and Abilities

- Chem-Aqua Hall of Fame-2011
- Chem-Aqua Advanced Water Treatment Training 2011
- Training Manager-2011-2013 (St. Louis, Chicago, and Indianapolis)
- Chem-Aqua Management Training-2011, 2012
- Chem-Aqua SCORE Training-2010
- Chem-Aqua Awards Trip-2007, 2009, 2011, 2012, 2014, 2015

Kevin D. Gajewski
Saint Johns, FL. 32259
(954) 605.1413
kevin.gajewski@nch.com

Education

1984 - High School Graduate- Temperance, Michigan
1988 – Florida Law Enforcement Certification, FCCJ, Jacksonville, Florida
1986 – Florida Corrections Certification, FCCJ, Jacksonville, Florida

Current Position

District Manager – Chem-Aqua Florida

Employment History

2006 – Present: Chem-Aqua, Inc.
2000 – 2006: Premier Water & Energy Technologies

- Sales/Service lead manager for Chem-Aqua. I am a Water Treatment Consultant for the Florida market, based in Saint Johns, FL. My primary responsibilities include leading sales, striving for excellent service, and account management of a diverse book of businesses requiring water treatment.

Consultant Job Duties

- Provide technical services to a diverse array of industries including healthcare, food processing, textiles, commercial properties and general manufacturing facilities.
- On-site chemical testing and analysis of treated system waters.
- On-site interpretation of analysis including written recommendations for correcting any potential problems.
- Troubleshooting and calibration of water treatment equipment including controllers, pumps, meters, softeners, blow down equipment, etc.
- Technical audits of critical operating systems to minimize plant-operating costs such as water, energy and labor.
- Working with third party mechanical contractors to facilitate seamless integration of water treatment equipment.
- On-site training of plant operating personnel as required to ensure effective day to day application of the water treatment program.
- On-site equipment inspections to document results and make program recommendations.
- Management of chemical inventory and corrosion coupon monitoring.

Past Noted Accomplishments and Abilities

- Honorable Discharge from the United States Marine Corps (1983 – 1989)

Mark Prozzi
1236 1ST Street N. Unit 503
Jacksonville Beach, FL 32250
(904)333-6782
mark.prozzi@nch.com

Personal:
Place of Birth: Hartsville, S.C.
Date of Birth: September 8,1964
Marital Status: Married, 3 Sons, 1 daughter

Education:
University of South Carolina
Major: Marketing

Current Position
Divisional Vice President

Employment History
2000 – Present Chem-Aqua

Consultant Job Duties
- Over the past 22 years of water treatment for Boilers, Cooling Towers and Closed Loops I have been active in many roles from Consultant to Division Manager.
- As a Water Treatment Consultant and Manger, I have been involved in many industries including food processing, plastics, commercial properties management, healthcare facilities, Colleges and Universities and general manufacturing facilities.
- Tasked with hiring, training and developing new and established Water Treatment Consultants
- Charged with driving business growth in Division.
- Involved in account reviews and audits to maintained proper relationships and results in current water treatment account base.
- I enjoy solving customer's water related problems and other business issues.

Past Noted Accomplishments and Abilities
- Division Manager of the year 2020
- I was inducted in Inner Circle in 2007 for successfully selling and servicing over $500,000 in business.
- Regional Manager of the Year in 2009 and 2011
- Successfully completed Advanced Cooling and Advanced Boiler Training Seminars.
- Successfully completed Intermediate Technical Training
- Full safety training and certification classes taken and completed.
- Extensive knowledge and training completed in advanced water treatment chemistries and engineering for boilers and cooling systems

2.0 References

Chem-Aqua National References

Harvard University
Cooling System Utilities Overview:

Company Name:	Harvard University
Company Address:	Cambridge, MA
Contact Name:	Bernard DelGuidice
Contact Telephone Number:	617-496-5608
Contact Email Address:	Bernard.delguidice@harvard.edu
Date Work Undertaken:	Chem-Aqua has supplied the water treatment for 6 years.
Nature of Assignment:	The Harvard University HVAC plants include: • 30,000 tons of HVAC (2 central plants cooling loops) • 1 – 2,500,000 chill water system • 20 cooling towers with total capacity of 40,000 tons • 15 closed loops (chilled and hot)
Chem-Aqua Completed Projects:	• Developed a water saving program on cooling reducing water consumption in all operating cooling towers.

University of Georgia
Central Utilities Overview:

Company Name:	University of Georgia
Company Address:	Athens, GA
Contact Name:	Fred Reman, Director, O&M
Contact Telephone Number:	706-542-7453
Contact Email Address:	fwremen@uga.edu
Date Work Undertaken:	Chem-Aqua has supplied the water treatment for 32 years.
Nature of Assignment:	The University of Georgia plant includes: • 30,000 tons of HVAC (5 central plants cooling loops) • 4 – 200,000 chill water systems • 1 – 50,000 gallon HTHW System • 75 cooling towers • 180 closed loops (chilled and hot) • 1 – Central Steam Plant • 3 – 100,000 lb/hr package watertube boilers operating at 100 PSI • 1 – 50,000 lb/hr electrode boiler operating at 100 PSI • 10 small firetube boilers for humidification and sterilization operating at 15 – 50 PSI • Softeners, condensate polishers, and RO used for pretreatment
Chem-Aqua Completed Projects:	• Initiated program of steam condensate polishing • Initiated program for reduction of CT blowdown utilizing RO recovery • Completed POF chemical system for main boiler plant • Initiated and completed installation of Aquadart Controllers with communication to BAS for 2 newest Central Cooling Plants

University of Tennessee
Steam System Utilities Overview:

Company Name:	University of Tennessee
Company Address:	Knoxville, TN
Contact Name:	Tommy Oakley
Contact Telephone Number:	865-974-1558 toakley@utk.edu
Date Work Undertaken:	Chem-Aqua has supplied the water treatment for 21 years.
Nature of Assignment:	The University of Tennessee Steam Plant includes: • 5 – 90,000 lb/hr Watertube Boilers • 7 total miles of steam distribution piping • Satelite steam plant on Ag Campus with 2 15,000 lb/hr watertube boilers • 4,500 kw/hr turbine generator
Chem-Aqua Completed Projects	• Evaluated and installed steam distribution satellite feed system • Designed and built brine maker for steam softening system • Rebuilt and rebed softener systems • Engineered condensate polishing system

Chem-Aqua Additional References

Experience with University Steam, Electric and Chilled Water Production Systems and Large Distribution Systems

	Steam Above 600 psig	Contact Name	Phone Detail
1	Red Hills Power	Ray Burrell	(662) 387-41756
2	Texas Tech	Joey Anderson	(915) 920-4441
3	Wasatch Energy (Univ of Utah)	John Watson	(801) 726-3586
4	LES (University of Nebraska, Lincoln)	Clay Kelly	Clay.kelly@unl.edu

Chilled Water greater than 500,000 gallons

1	Florida Atlantic University	Jeffrey Modlin	jmodlin@fau.edu
2	Harvard University	Bob Manning	robert_manning@harvard.edu
3	University of Alabama, Birmingham	John Glowacki	john.glowacki@nch.com
4	University of Miami	James Sprinkle	jsprinkle@miami.edu
5	Princeton University	Ted Borer	etborer@princeton.edu

Campuses larger than 3,000,000 sq. ft.

1	Boise State University	Steve Black	(208)880-0658
2	Florida Atlantic University	Jeffrey Modlin	jmodlin@fau.edu
3	Mississippi State	Lee Collins	Lcollins@physplant.msstate.edu
4	University of Arkansas	Doyet Moore	(501) 912-3944
5	University of Miami	James Sprinkle	jsprinkle@miami.edu
6	University of Delaware	David Krygier	(302) 831-4153
7	University of Nebraska, Lincoln)	Clay Kelly	Clay.kelly@unl.edu

Medical Research Facility	Contact Name	Phone Number
1. Covance	David Courtwright	317-694-6905
2. Harvard University	Bob Manning	robert_manning@harvard.edu
3. Cook, Inc/ Cook Pharmica	Matt Gootee	317-439-5837
4. University of Alabama, Birmingham	Billy Griffin	bgriffin@uab.edu

Additional References

Saint Gobain (700 psi boilers)
1 New Bond St.
Worecester, MA 01615
Contact: Mitch Thompson
Mobile: 774-222-1408
Email: MThompson@nrgserv.com

Old Hickory Industrial District Energy Plant (250 psi boilers)
70 Old Hickory Blvd., Old Hickory, TN
Managed by: Constellation Energy
Contact: Craig Jolly – Director of Plant Operations
Mobile: 615-512-9680
Email: William.Jolly@constellation.com

Nashville Downtown District Energy Plant (175 psi boilers)
90 Peabody St., Nashville, TN
Managed by: Constellation Energy
Contact: Tim Hestle – Director of Plant Operations
Mobile: 615-207-1083
Email: Tim.Hestle@constellation.com

3.0 Statement of Compliance

Chem-Aqua agrees to all terms and conditions, program specifications and service requirements outlined in the ITN for Water Treatment Chemicals, Equipment, and Services.

Chem-Aqua was in attendance for the mandatory pre-bid meeting

Chem-Aqua does not take exceptions to the items outlined in the General Instructions.

4.0 Guaranteed Service

Chem-Aqua Representatives

Service is one of the most important aspects of a water treatment program. The economics and technical success of your program depends not only on the chemical and equipment selection, but also how well it is managed. Chem-Aqua is proud to offer one of the most comprehensive service programs available in the industry.

Chem-Aqua has over 450 Technical Representatives and managers in the United States. Our representatives will take personal involvement with your systems. They will take ownership in the treatment program implementation, and problem solving. They will involve all aspects of their experience and expertise to reduce energy and fuel costs, protect equipment, reduce chemical and water consumption, and become a dedicated partner.

The following table summarizes the service team's responsibilities. The facility will have additional support and oversight from Chem-Aqua Corporate Accounts, Corporate Engineering, Regional Managers, Senior Vice Presidents, and Business Development Managers.

Title	Service Month/Year
Team Leaders	Weekly
Regional Manager	2-3 times per year
Corporate Account Manager	1-2 times per month
Corporate Engineer	1-2 times per year

Due to the service requirements and technical demands of the systems at The University of Central Florida, we are recommending putting a team into place to meet the needs of the specification with one primary point of contact.

Our service is summarized below:

- One (1) primary representative (lives <1 mile from UCF) and one (1) back up representative responsible for the account
- Commitment to providing weekly physical service with continuous remote monitoring
- A Regional Manager who will be on-site 2-3 times per year
- A Corporate Engineer who will be on-site 1-2 times per year
- A team of Corporate Account Managers who will be on-site 1-2 times per month and provide continuous over-site on the account by making routine checks of AquaDART graphs, service reports, and quarterly review preparation and involvement

Chem-Aqua will provide service for all towers, closed loops, boilers and make-up water per specifications.

Services Provided Periodically:

Particle Size Analysis – Will be performed annually on systems that have side stream filtration present or as needed if suspended solids are a concern.

Biological Profile – Dip slides will be performed as outlined in the bid package and full microbiological analyses/profiles will be performed by our in-house lab on tower and closed loop systems quarterly.

System Volume/Leak Tests – Initially system volumes will be confirmed on all treated systems. Follow up volume studies will be performed if systems are modified or expanded. Leak tests will be performed as needed if signs of water loss are seen in closed loop systems.

System Audits – All treatment equipment and system equipment will be inspected during regular service visits. A Chem-Aqua representative will be present for any equipment openings and will provide full documentation/report on all inspections/findings. The direct manager/supervisor will be on site monthly and will be reviewing all service reports to confirm program performance.

Elution Studies – Elution studies will be performed on all water softeners annually or as needed due to breakthrough concerns. Please see the Water Softener Monitoring and Resin Maintenance section of this proposal.

Dissolved Oxygen Studies – Dissolved oxygen studies will be performed on all DA's annually or as need if concerns arise with DA performance. A full report will be submitted any time a DO study is performed.

Borescope Inspections – Chem-Aqua will have a borescope present for all chiller and boiler inspections. If video/pictures are required, we do have access to borescopes equipped with these capabilities at no charge.

Deposit Analysis – Chem-Aqua maintains an in-house deposit lab that can be utilized at no cost. Samples can be sent to the lab as needed to ensure we are addressing any system issues.

Corrosion Studies – Chem-Aqua will maintain quarterly coupon studies on all systems that have corrosion coupon racks present. If the corrosion rates fall out of spec the corrosion coupon frequency will increase to every 30 days. We do have corrators available for further instantaneous corrosion readings.

Total and Dissolved Iron- Chem-Aqua will perform total and dissolved iron tests on the process condensate, feedwater, and boiler water monthly. They will be targeting a total iron residual of <2 ppb in the feedwater and <5 ppb in the boilers

Please see the Chemical Containerization & Delivery Service section of this proposal for double walled tank details.

Chem-Aqua representatives or Engineering staff will be on site for all equipment openings. There will be a borescope on site for inspection of chillers, boilers, etc. Pictures will be taken each year to maintain a digital library of ongoing success of the treatment program and reports will be submitted for all inspections. Chem-Aqua has full lab resources for deposit, microbiology and failure analysis at no charge as well as resources for resin analyses if there are issues with a water softener.

Chem-Aqua will be available for quarterly meetings and will outline a quarterly report to address every aspect of the treatment program. We will review problem areas, areas of improvement and completed/on-going projects. Our quarterly review meetings will utilize our Chem-Aqua Dashboards where both The Ohio State University and Chem Aqua personnel can quickly trend service data, monitor lab reports, view chemical usage, and monitor KPI's. All quarterly reviews and reports will include a review of chemistry results, data trends, corrosion coupon summaries, and chemical usage. Chem-Aqua will provide six copies of the written report.

Chem-Aqua will provide a full water analysis on each water system on a quarterly basis or as requested.

4.1 Service Call from Chem-Aqua

A. This starts with staying in touch with your facilities 24 hrs./day, 365 days/year via use of the aquaDART™/Advantage Miniwave controller on line.
   - Print any graphs or logs which we may want to discuss on the next visit to the campus.

B. Visit the web site to look at all parameters prior to our visit.

C. Advise plant contacts that we are in the plant. Visit with plant personnel to see how things have been running and if they have any questions or items they want us to specifically check on.

D. Inspection of feed stations
   1. chemical spills/leaks
   2. flow through side stream
   3. alarms on controller
   4. controller conductivity
   5. feed pumps are primed/working properly
   6. Inspect corrosion coupon rack/change
   7. chemical inventory
   8. organization

E. General walk around plant
   1. odd noises
   2. leaks
   3. visual check of towers
   4. check approach temperatures
   5. visual check of chill water system and side stream filtration

F. Inspection of testing station
   1. inspect test kits
   2. check daily logs
   3. discuss testing with plant testing personnel
   4. schedule side by side testing once per quarter minimum
   5. check dip slides for cooling water and chill water
   6. maintain up to date SDS/Testing procedures
   7. clean and organize testing station when done testing
   8. leave clear written instructions for all tasks that are to be completed by Centrio Energy

G. Conduct water testing/Pull Coupons (every 30-90 days)
   1. Testing outlined on following page
   2. Perform/Analyze MB Dip Slides

4.2 Transition Plan

This is a general transition plan and will be modified as needed to ensure a smooth transition.

Action Item	Timeframe
Chem-Aqua will be on-site 1 day a week to start our chemical treatment program.	Immediately upon award of the contract
Meeting with Management Team to outline all concerns, needs, and objectives	First day after contract award
Bring in complete Chem-Aqua team to introduce to all personnel, to familiarize the team with all plant operations, and to assist with transition of treatment program	Within 1 week after contract award
Comprehensive sampling of all systems to be treated to assess current operating conditions of all boiler systems, closed loops, and tower systems.	Beginning immediately upon award of the contract
Record readings of all operating equipment to determine current operating condition. Provide report on findings.	First week after award of the contract
Establish daily transition progress review updates	Weekly after contract award
We will bring in a corporate engineer to audit the facility to ensure all possible cost savings opportunities are being met for UC Merced cooling systems	Within first month after contract award
Determine current inventory and furnish inventory report to facility personnel	First day after contract award
Order chemical containments	First week after contract award
Obtain Environmental Health and Safety Approval to bring Chem-Aqua products on site	First week after contract award
Order chemical treatment products	Immediately after chemicals are approved
Furnish 48 hours prior notice of chemical delivery via email and telephone	48 hours prior to delivery
Introduce UC Merced personnel to dedicated site chemical delivery drivers	When chemicals are delivered
Primary account representative will accompany chemical delivery driver on-site during deliveries	When chemicals are delivered

Action Item	Timeframe
Determine all plant personnel to be trained	First week after contract award
Establish training schedule and scope of training. Include at least two days of in-depth training.	First week after contract award
Furnish operating control manuals	Within 2 weeks after contract award
Install chemical tanks/containments	Before the first chemical delivery
Transition to Chem-Aqua products as competitor product inventories are depleted	Depending on inventory analysis and agreement between UC Merced and the current vendor
Plan follow-up training sessions	TBD
We will perform volume studies on the cooling towers to ensure accurate dosage rates through the use of PTSA tablet method.	First week after contract award
We will perform volume studies on the closed loops through the use of the recommended treatment products.	In the first 3 months after contract award

5.0 Chemical Containment and Delivery Services

SMARTLink℠
Delivering Solutions

Chemical Handling, Storage, and Delivery

SMARTLink™ Delivery Services
In 1992, our SMARTLink Delivery Services was launched in order to provide our customers with chemical delivery services tailored to their specific needs.

If drum placement and empty drum pickup are important, our SMARTLink Point-of-Use Delivery may be right for you. With this service, your treatment chemicals will be delivered on a lift gate equipped SMARTLink truck by a trained delivery specialist who is familiar with your site's unique requirements. Your chemicals will be transported where you want them and empty drums will be picked up for recycling or disposal. The following services are available on point-of-use shipments:

- Delivery by safety trained personnel
- Placement of chemicals at the point of use
- Pick up of empty Chem-Aqua drums
- All trucks lift-gate equipped
-

Another valuable service is our SMARTLink Hands-Free Delivery. With Hands-Free Delivery, a delivery specialist will transport your treatment chemicals to the point of use, pump transfer them into properly sized SMARTFeed tanks, and promptly remove the empty shipping containers from your site. Along with feed equipment that adds chemical directly from the storage tanks into the treated systems, SMARTLink provides a hands-free feed system that virtually eliminates direct contact with treatment chemicals. Hands-free delivery from Chem-Aqua provides many cost saving benefits over drums including:

- Simplified Chemical Handling
- More reliable Chemical Feed
- Better labor Utilization
- Improved Workplace Safety
- Reduced Environmental Concerns
- Reduced Chemical Storage Requirements

Our SMARTLink Delivery Services offer many valuable benefits over common carrier delivery that will help lower your total cost of operation and save you money.

Your Facility

A primary objective is to minimize/eliminate chemical handling and safety hazards to your personnel. We are proud to offer the following chemical handling, storage, and delivery services for your facilities:

- Chemical deliveries will generally be made via a site familiar Chem-Aqua delivery specialist using our SMARTLink Service.
- With the exception of sulfuric acid, all chemicals will be delivered to point of use and transferred into
- Appropriately sized SMARTFeed tanks with spill containment using our Hands-Free Delivery Service. The chemicals will then be fed “neat” from the SMARTFeed tanks into the systems being treated.
- Because of the significant hazards and safety issues involved in transporting and pump transferring sulfuric acid, it will be provided in 30- or 55-gallon carboys that are delivered to the point of use and stored on a 2 or 4 drum in-line spill pallet. When one carboy is near empty, the operator will merely have to lift the suction wand out of the empty carboy and place it in the full one. Chem-Aqua partners with commodity suppliers to meet point of use delivery regarding sulfuric acid.
- All empty chemical containers will be promptly removed.
- Chemicals, parts, and test equipment to be stored on University of Central Florida by Chem-Aqua shall be stored only in locations previously agreed to by University of Central Florida.
- All tank replacements or new tanks will meet University of Central Florida specifications.

Tank Specifications

SMARTFeed Tanks are available in a wide variety of sizes and configurations to meet any need. For this particular application, we are recommending top feed heavy duty poly tanks with rectangular spill containment. Tanks can be in 40, 75, and 100-gallon and up. Following you will find drawings showing the foot print of the particular SMARTFeed tanks that we are initially recommending for your facility.

6.0 Equipment Offering

University of Central Florida - Leased Equipment					
System	Qty. Needed	Code	Equipment Description	Monthly Lease	Annual Lease
Towers/Closed Loops	12	12092430	AQUADART TOUCH PLUS W/2-PL COUPON, COND, ORP, PH, PTSA	No Cost	$ 13,536.00
	24		Chemical Injection Pumps	No Cost	
	12	12088854	AQUADART ENCLOSURE OPTION. INCLUDES QUBE ENCLOSURE, NEMA 4X, OVERAL LDIMENSIONS 41"L X 32"W X 12"D. BACKPLATE INCLUDED, HINGED COVER, AND CLEAR POLY WINDOW WELDED IN. INCLUDES MOUNTING FEED, AQUADART WINDOW LABEL, AND ELECTRICAL RECEPTACLES	No Cost	
	12	12092965	MODEM, CELLULAR, DIGI, IX10-00G4-CA, VERIZON, W/ENCLOSURE	$ 288.00	
	12	12078367	MONTHLY SUBSCRIPTION DATA PLAN, 250 MB, CHEM-AQUA	$ 480.00	
	20	12097370	LEVEL, ULTRASONIC, PYXIS LS-200, GENERIC, SPECIFY TANK DIM	$ 360.00	
	TBD	12088840	TANK, 160 GAL, CYLINDRICAL PEABODY	No Cost	
Total (Not included: Tax or Installation)				$ 1,128.00	$ 13,536.00

1 Testing Equipment Set will be provided at no charge for each facility. Chem-Aqua is offering to provide all chemical feed equipment at no cost to UCF. This equipment offering totals more than $241,559 in savings for UCF. AquaDART controllers and other equipment will be owned and maintained by Chem-Aqua for the life of the agreement.

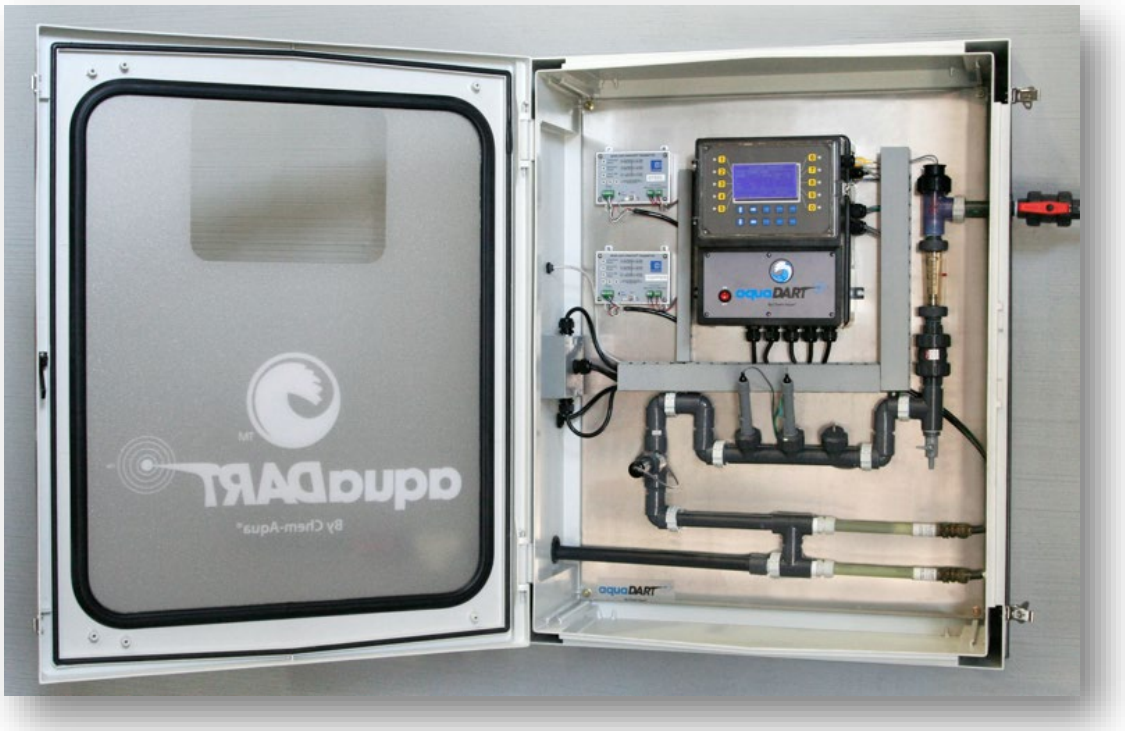
Chem-Aqua is offering to provide all chemical feed equipment including double walled chemical containment tanks at no cost to the University of Central Florida. This totals $241,559 in savings for the University!

This also includes an automated chemical feed system for the TES Closed Chilled Water System!

Controller Package

Tower controllers include:

- ✓ Continuous conductivity monitoring for cycle control
- ✓ Continuous fluorescence/inhibitor monitoring
- ✓ Continuous ORP monitoring for biocide feed verification and control
- ✓ Selectable feed timers
- ✓ Tank Level Monitors
- ✓ Water usage monitoring
- ✓ On Line Access
- ✓ Board mounted controller and flow assembly for easy installation
- ✓ NEMA Enclosure
- ✓ aquaDART are Universal Access – No Protected/Proprietary Software like some other companies employ.



6.1 Equipment Capabilities and Reporting

The chemical feed and control equipment used is just as important as the treatment chemicals. Even the "best" chemical program available cannot provide good results if the treatment chemicals are not added properly. We are recommending the following feed and control equipment for your cooling water system(s):

Cooling Tower Conductivity Controllers & Pumps
Chem-Aqua will provide smart conductivity controllers to meet the water treatment specifications. There are some options to consider. Chem-Aqua wishes to suggest the use of the Chem-Aqua MegaWave conductivity controller.

aquaDART™ By Chem-Aqua®

The aquaDART controller is the most advanced, user friendly, powerful and flexible controller available within the industry. The "system" approach means a single Megawave can have 1 to 4 independent systems. Each system can be configured differently (i.e. 1 tower and 2 closed water system for Tower 1 and 1 tower and 1 closed water system for Tower 2).

Data Collection
One of our goals with the management of the water treatment program for the Centrio Energy facilities is to improve the data management. Chem-Aqua will utilize software for the management of all data collected from the water flow signals, conductivity meters, chemical test results to name a few and will be managed using this statistical control software. This software package manufactured by Advantage exclusively for Chem-Aqua Inc. will allow for the wireless cellular modem to be accessed anytime by the facility or Chem-Aqua.

Chemical Feed Pumps
Chemical feed pumps are available in a wide range of sizes, applications and delivery methods. Chem-Aqua has a wide range of suppliers and chemical feed pumps available.

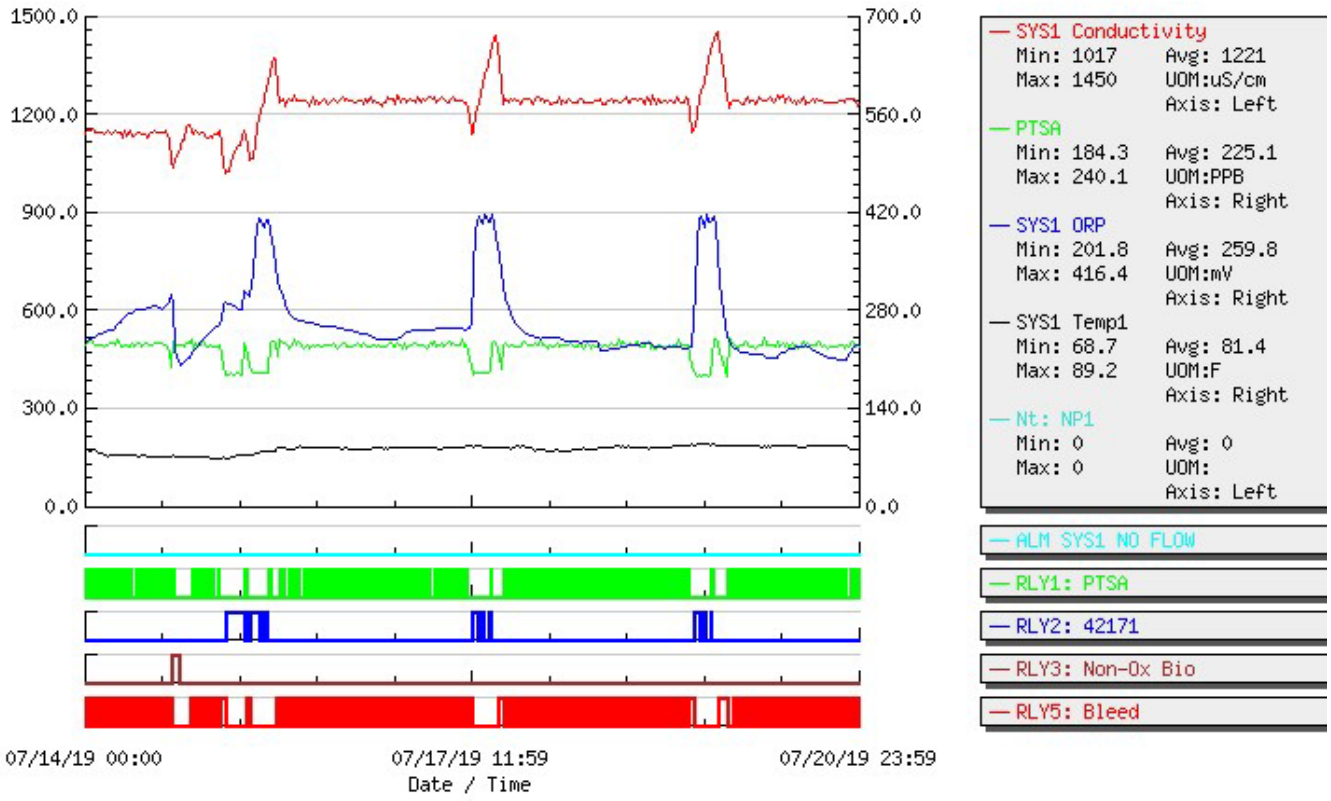
Corrosion Coupon Racks

Four position coupon racks can be used to monitor steel, copper and aluminum corrosion rates. The use of coupon racks is critical in providing data to ensure that system corrosion rates are within defined limits as established by the specification.

Testing Equipment (Included)

- The Myron model 6P unit is capable of providing instant readings for conductivity, total dissolved solids, pH, ORP, and temperature.
- The Hach DR890 colorimeter can be used for the testing of aluminum, copper, iron, molybdenum, turbidity, free halogen, and suspended solids. There is a total of 90 specific tests this unit is capable of analyzing depending on the type of reagents consumed. Easy-to-use software offers push-button method selection, automatic wavelength selection and a preprogrammed method timer. Results are displayed immediately.
- Chem-Aqua will provide all necessary glassware, reagents, and dip slides necessary to perform on-site tests.

aquaDART SMART Controllers Track and Control Many Aspects of Cooling Tower Chemical Program (Included)



1. ORP goes down about 75 mV during non-oxidizer feed. This we refer to the glute bump or depression. This assures non-oxidizer has been fed.
2. ORP rises about 100 – 150 mV during each 3 weekly oxidizer feeds. This assures oxidizer has been fed.
3. Oxidizer rises quickly to the pre-set 150 mV increase above background level of ORP and held at this 400 mV level during the 4 hours of oxidizer feed.
4. Inhibitor PTSA drops during the oxidizer and non-oxidizer feeds and stays depressed during oxidizer feeds. This confirms the lock out cooling water inhibitor during oxidizer and non-oxidizer feeds. Inhibitor feed re-established after oxidizer and non-oxidizer feeds

5. Conductivity increase during oxidizer feed and stays increased during oxidizer feeds. This confirms the conductivity is locked during oxidizer feeds.
6. Conductivity increase during non-oxidizer feed and stays increased during non-oxidizer feed time of 1 hour. This confirms the conductivity is locked during non-oxidizer feed.
7. There are pre-bleeds that initiate before the oxidizer feeds on M, W, F.
8. There is a pre-bleed that initiate before the non-oxidizer feeds on Sunday.

Smart Site and Example Reports

Our goal is to be one of your most valuable business partners.

The recommended water treatment programs are designed to help management optimize plant processes, improve productivity, and realize bottom line cost savings.

Our proposals include a wide range of value-added services designed to enhance the results you receive from your water treatment programs and to help your facilities realize Operational Cost Savings (OCS). Upon close examination, we believe you will find that we are offering one of the most comprehensive service packages available in the industry. The following services are included with your Chem-Aqua treatment program:

1. Service Report Generation

A written report will be submitted during every service visit. An electronic service report will be sent to you before leaving the facilities. We will have an Excel file to track our services.

Chem-Aqua will make all service reports available to you via our online SmartSite report portal. Depending on the level of access, reports can be viewed, printed and saved for all or selected service reports.

Chem-Aqua Engineering will review each system for product choice, feed rates, and technical applications. Control charts and a Control Manuals will be maintained at each facility containing:

- Service reports generated on our online SMART Service Report system.
- Servicing standards to ensure each site receives quality service and good results.
- Comprehensive onsite testing of system waters, immediate interpretation of test results, and accurate written recommendations.
- Routine monitoring of your pretreatment (softener, filters, etc.), and application equipment with troubleshooting and repair services provided as necessary.
- Inventory management.
- Results of each visit discussed with appropriate plant personnel.

2. Operator Training

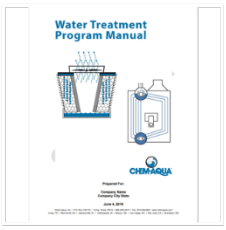
We will provide “one on one” operator training as needed, as well as site-specific training and seminars. We’re especially excited about our ability to provide internet-based multimedia training.

Chem-Aqua e-Learning allows us to provide effective “just in time” learning with proficiency testing and results tracking on all types of relevant topics. Chem-Aqua e-Learning is the wave of the future that’s available today.

3. Program Control Manuals (Included)

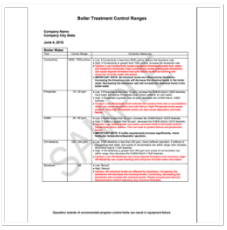
We will provide detailed Control Manuals for your treatment programs including the control ranges, corrective measures, test procedures, and troubleshooting guidelines. and other requested material specific to your facility. Example of the contents in a Chem-Aqua Program Manual:

Program Manual



Contact Information

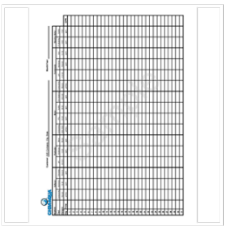
System Control Ranges



Test Procedure

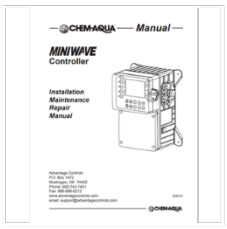
Troubleshooting

Test Logs

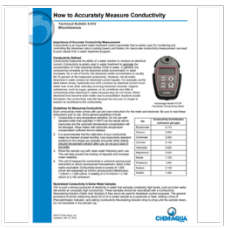


SDS

Equipment Manual



Technical Bulletin



4. Special Services

1. Professional laboratory analyses will be provided as needed to help prevent and diagnose problems. We have full service analytical and research laboratories with modern instrumentation and over 25 scientists dedicated to water treatment.

2. Specialty inspection and monitoring equipment available when needed – borescope, dissolved oxygen monitor, ultrasonic flow sensor, condensate monitors, corrators, and much more

3. Start-up service visits will be provided as necessary to ensure a smooth transition to the new program and that all water treatments systems are functioning properly. A site-specific transition plan will also be provided to guide the transition process.

4. Engineering Support Specialists available as needed to assist with technical audits, surveys, equipment inspections and provide troubleshooting assistance. Our customers are supported by some of the best and most experienced professionals in the business.

5. Call-out service is also available should you need us anytime outside of our normal visits. Our goal is to be there when you need us.

5. Example Reports

1. Field Service Report (FSR)

CHEM-AQUA

SMARTFSR

Representative: John Smith | **ABC COMPANY INC (123456)** | Service Date: 1/21/2019

ABC COMPANY INC
123 SOMEWHERE DR
DALLAS, TX 75238

Submitted To: John Doe (jdoe@abcco.com)
John Smith (john.smith@chemaqua.com)

Cooling Towers

Test	Hydration Source Cooling System 1			Hydration Source Cooling System 2		
	Makeup Water	Cooling Tower	Closed System	Cooling Tower	Closed System	Makeup Water
Conductivity	446	2436	3280		2235	
Control Range		1300-1700			0-3000	
Ph	7.80	8.74	8.20		11.24	
Control Range		8.00-9.00	7.50-8.20		8.50-10.50	
M Alkalinity	96	340				
Control Range		200-500				
Calcium Hardness	120	680				
Control Range		300-600				
Iron	0.04	0.02	0.29		0.18	
Control Range		0.00-1.00	0.00-1.00		0.00-1.00	
Copper	0.14	0.18	0.18		0.09	
Control Range		0.00-0.50	0.00-0.50		0.00-0.50	
Molybdenum		0.47			120	
Control Range		0.25-0.50			100-150	
Glycol Percent			31.00			
Control Range			25.00-30.00			
Skin Temperature		115				
Control Range						
LSI		2.49				
Control Range						
COC		5.46				
Control Range						

Cooling Towers System Status And Corrective Actions

** WARNING: Operation outside of Control Range may cause system damage or failure. Test results only reflect conditions at the time of testing. **

Hydration Source Cooling System 1 - Cooling Tower

- Conductivity is above control range.High Conductivity can lead to scale formation within system. The electric bleed valve is not operating, not allowing the tower to bleed. I opened the bypass to allow the tower to bleed slowly until the valve can be checked out.
- pH is within proper control range demonstrating good system control and minimizing chemical and water consumption.
- Calcium Hardness is above control range.High Calcium Hardness can lead to scale deposition within heat exchange equipment. This can result in excessive energy costs and possible under deposit corrosion. Calcium hardness high due to no tower bleed.
- Molybdenum is within proper control range demonstrating good system control and minimizing chemical consumption.

Hydration Source Cooling System 1 - Closed System

- pH is within proper control range demonstrating good system control and minimizing system corrosion rates.

Chem-Aqua, Inc. • United States • P.O. Box 152170 • Irving, Texas 75015 • 1-800-527-9921 • Fax 972-438-0634 • www.chemaqua.com
Chem-Aqua, Inc. • Canada • 253 Orenda Rd. • Brampton, ON L6T 1E6 • 877-902-6095 • Fax 800-795-4755 • www.chemaqua.com
Irving, TX • Monmouth Junction, NJ • Jacksonville, FL • Indianapolis, IN • Macon, GA • Las Vegas, NV • Sunnyvale, CA • Brampton, ON
Page 1 of 2

CHEM-AQUA SMARTFSR

Representative: John Smith **ABC COMPANY INC (123456)** Service Date: 1/21/2015

Hydration Source Cooling System 2 - Closed System

- Conductivity is within proper control range demonstrating good system control.
- pH is above control range.High pH can lead to accelerated yellow metal corrosion rates. We will sample for microbiological growth, which can contribute to high pH. If needed, we will add biocide to the loop. I would recommend keeping the loop circulating.
- Molybdenum is within proper control range demonstrating good system control and minimizing corrosion within system.

Inventory

System	Product	Container Size	Inventory on Hand	Usage	Secondary Contained
Next to systems	15000MT	35	17	0	N
Next to systems	42171	35	18	0	N
Next to systems	Bacticide 45	35	18	0	N
Next to systems	Glycol	55	10	0	Y
Next to systems	52800	5	1	0	N

Comments

As noted in the other email I sent, the bleed valve for the cooling tower isn't working, so I opened the bypass slightly to allow the tower to bleed.

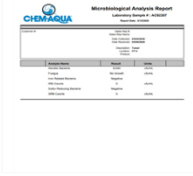
Please let me know if you can have your guys check this out, and what they find, also, let me know if I can help in any way.

Customer Signature

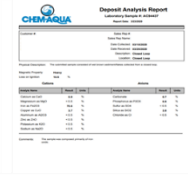
Rep. Signature

Chem-Aqua, Inc. • United States • P.O. Box 152170 • Irving, Texas 75015 • 1-800-527-9921 • Fax 972-438-0634 • www.chemaqua.com
Chem-Aqua, Inc. • Canada • 253 Orenda Rd. • Brampton, ON L6T 1E6 • 877-902-6095 • Fax 800-795-4755 • www.chemaqua.com
Irving, TX • Monmouth Junction, NJ • Jacksonville, FL • Indianapolis, IN • Macon, GA • Las Vegas, NV • Sunnyvale, CA • Brampton, ON Page 2 of 2

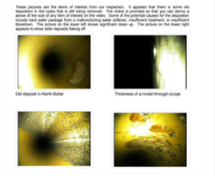
Additional Reporting



Microbio Analysis



Deposit Analysis

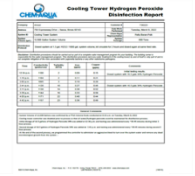


Borescope

Coupon Analysis

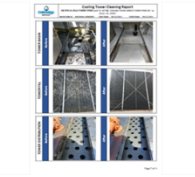
Water Analysis

Resin Analysis



H_2O_2 Cleaning

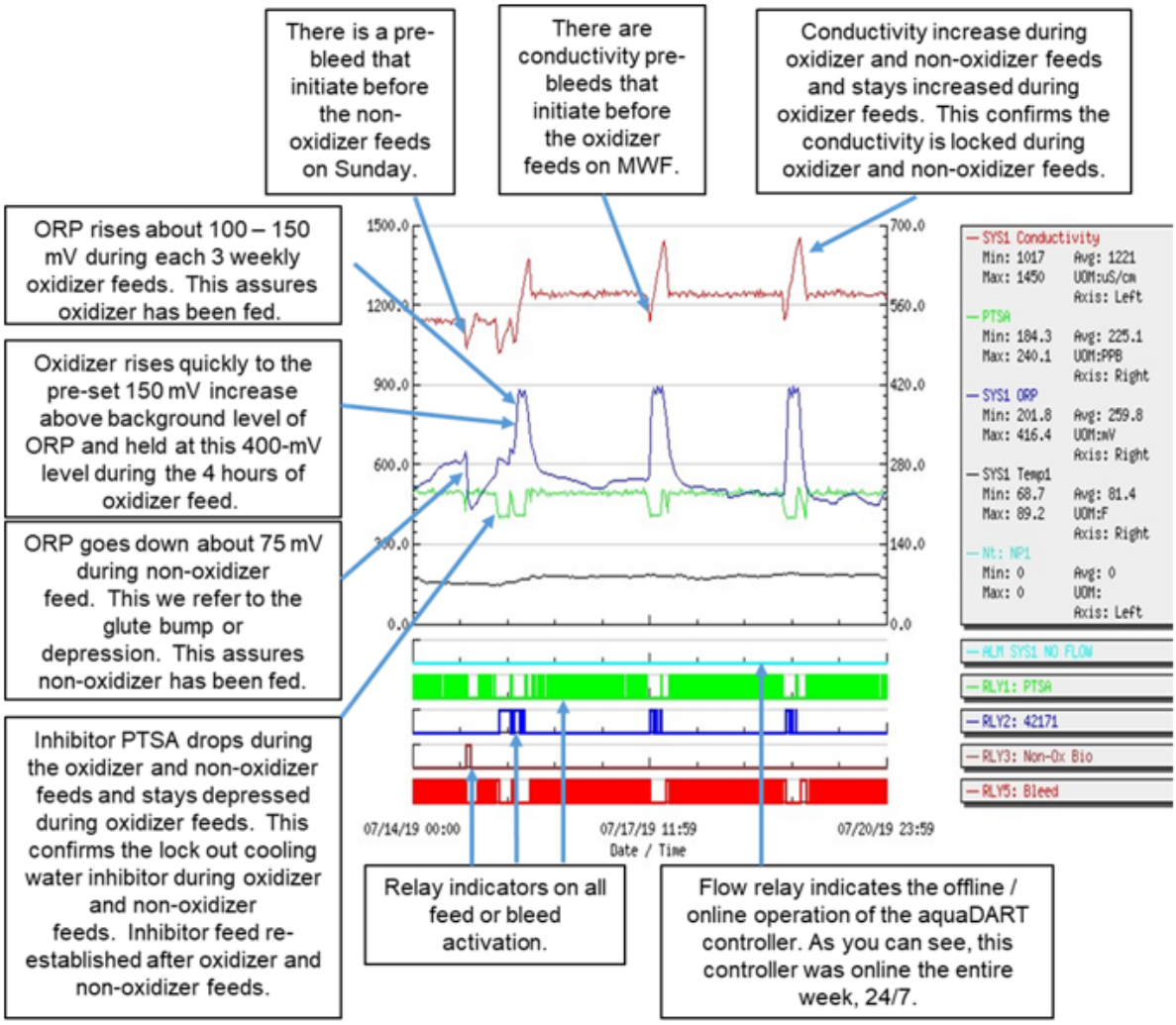
Disinfection



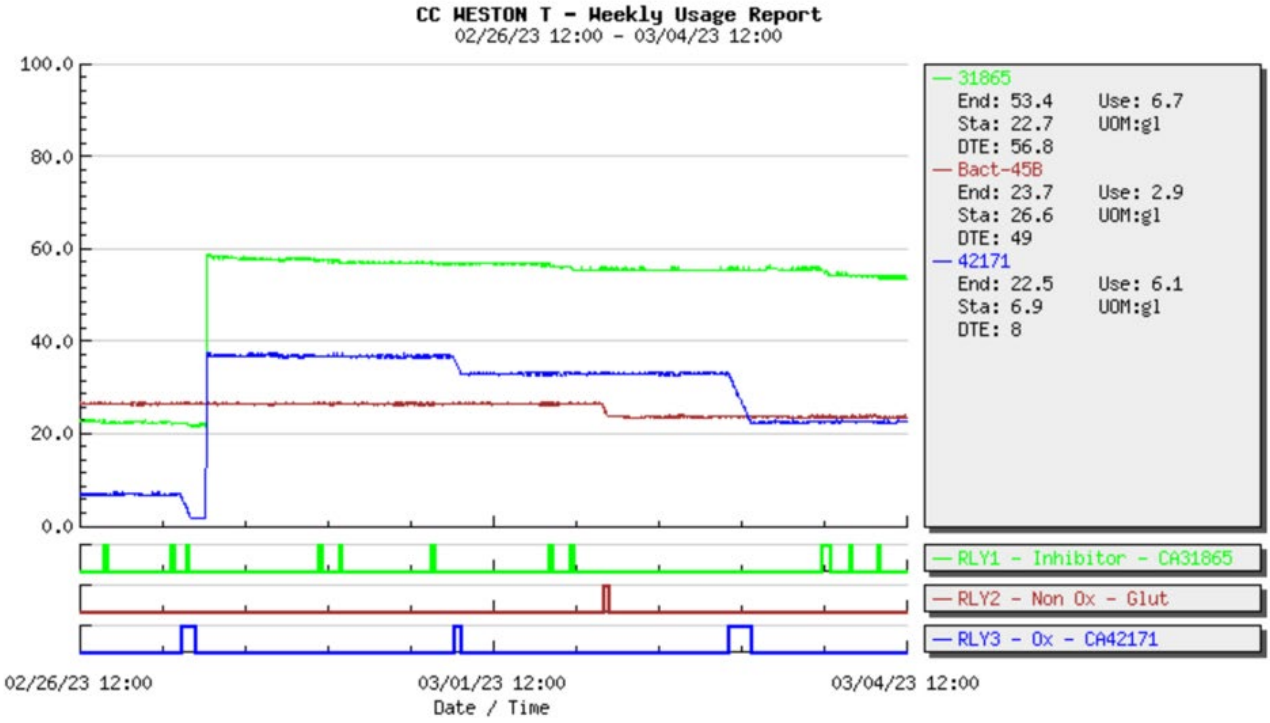
Physical Cleaning

Additional Remote Communication Capabilities (included)

Smart Controller Daily Graphs



Smart Controller Tank Level Monitoring



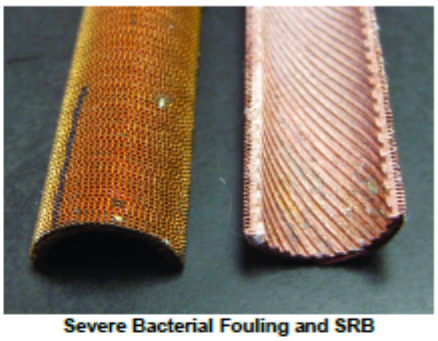
The Importance of Proper Cooling System Lay-Up

Technical Bulletin 2-033
Cooling Systems

Problems in Idle and Standby Systems

Many cooling systems are seasonally taken out of service or put on standby in lead-lag configurations. When these systems are idle microbiological growth and corrosion problems can develop and cause:

- Reduced equipment life from corrosion
- Increased operational and production costs
- Increased maintenance and utility costs



Severe Bacterial Fouling and SRB Corrosion in an Offline Chiller Condenser

Corrosion in Offline or Standby Systems

Unless continuously replenished, the protective films formed by cooling water corrosion inhibitors tend to degrade over time, leaving chiller condensers, piping, and heat exchangers vulnerable to pitting and accelerated corrosion.

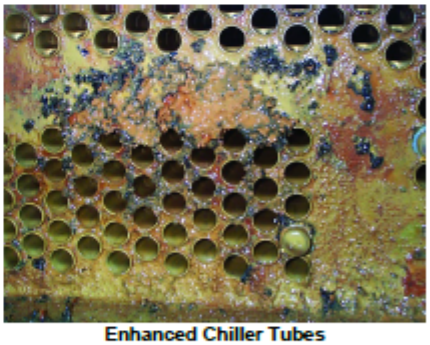
Offline corrosion can cause exfoliation or iron chip scale: flakes or pieces of iron oxide break loose and clog tower distribution deck nozzles, pump strainers, and condenser tubes after spring startup. Iron chip scale tends to occur in partially drained systems where sections of piping have water and air exposure, but can occur in idle systems containing water. If there is significant pre-existing corrosion in the piping, there may not be an easy solution.

Microbiological Growth in Offline or Standby Systems

Idled systems with no water circulation or flow provide ideal conditions for problem-causing anaerobic, sulfate reducing, and iron related bacteria to grow and cause corrosion and fouling concerns. Slime-forming bacteria can also cause severe fouling in unprotected offline systems. The problems can lead to high condenser head pressures, high electricity costs, and/or chiller shutdown when the systems are put back in service.

Concerns with Enhanced Tubes

Enhanced chiller tubes have spiral grooves or "rifling" to increase surface area, which permits greater heat transfer. They are particularly vulnerable to pitting damage and tube fouling from biofilms. Improper lay-up can significantly shorten their life.



Enhanced Chiller Tubes

Guidelines for Cooling System Lay-up

- *The best option for idle or offline chillers and cooling systems is to drain them completely and store dry*. If that is not feasible, maintain water circulation through the chiller tubes and piping. Water circulation should be continuous, but periodic flow may suffice (duration and frequency may vary depending on design, controls present, and propensity for microbiological growth).
  - For chillers with enhanced tubes, a minimum of one to two hours per day may be satisfactory
  - At a minimum, chillers with conventional tubes should have water circulation several times per week
  - It may be desirable to install small bypass lines at chiller inlets and outlets and use small capacity re-circulating pumps to maintain continuous flow through the unit
- *If offline or standby conditions cannot be avoided, implement proper lay-up procedures.*
  - Provide proper microbiological control and inhibitor feed
  - Higher dosages of microbiocides, dispersants, and corrosion inhibitors may be needed for protecting offline chillers with intermittent or reduced flow
  - The treatment program for standby equipment needs to be monitored by facility
  - personnel and corrective actions taken as needed to avoid problems

Procedures for Lay-up of Idled Equipment

Tower Side Pre-shutdown

1. Approximately one week before shutdown, gradually reduce system conductivity to below the recommended limit. This will help reduce scaling potential, levels of dead microorganisms, and contaminants. Maintain inhibitor levels.
2. Within two days before shutdown, if high levels of dirt, suspended solids, or microbial growth exist, feed a polymer dispersant and a bio-surfactant at normal dosages. If side stream filtration is present, backwash as needed.
3. Wait several hours after dispersant feeds and add sufficient oxidizing biocide to achieve desired total and free halogen residuals*.
4. Flush and/or drain drip legs and dead spots that could harbor iron and anaerobic bacteria, such as SRB.
5. Follow test procedures (ampoule or growth strip) to check aerobic or anaerobic bacterial activity. If microbiological counts are high or SRB are present, re-treat with oxidizing and/or non-oxidizing biocides at a high dosage*.
6. Ideally, maintain corrosion inhibitor levels at the upper control limit during the pre-shutdown time.

Tower Side Dry Storage Shutdown

1. Shutdown the system, drain, and inspect. Clean and flush the tower, removing accumulated debris. Remove deposits from deck, louvers, fill, and spray heads. Refill condenser or tower side with fresh water.
2. Add passivation treatment and copper corrosion inhibitor at high dosages.
3. Add the non-oxidizing biocide at the maximum labeled dosage for the system volume. Circulate for 8-24 hours and drain the system completely, including all dead legs.
4. Inspect chillers at earliest opportunity to allow for drying of equipment. Use warm air to dry both condenser and evaporator sections. After inspection, close and seal tightly.

Tower Side Wet Lay-up Shutdown

1. Follow shutdown steps one and two.
2. Treat chiller condensers or cooling heat exchangers with compatible closed-system inhibitors and a non-oxidizing biocide for the system metallurgies present, volumes, and duration of storage.
   - Add closed-system inhibitor to maintain a minimum of 1,000 ppm as sodium nitrite or 200 ppm as molybdenum.
   - Add glutaraldehyde according to label directions.
   - If the system contains aluminum, contact Chem-Aqua Engineering for best recommendations.
   - Feed supplemental copper corrosion inhibitor in systems containing a large amount of copper or enhanced condenser tubes.
3. Bypass galvanized towers or evaporative condensers to minimize potential for white rust formation.
4. Maintain <1,000 microorganisms per mL bacteria count and negative testing for SRB and other anaerobes.
5. Provide water circulation.

Chilled Water Side Wet Lay-up Shutdown

1. Flush and/or drain drip legs and dead spots that could harbor iron and anaerobic bacteria.
2. Add closed-system inhibitor to obtain a minimum of 1,000 ppm as sodium nitrite or 200 ppm as molybdenum.
3. Add glutaraldehyde according to label directions.
4. Check microbiological activity with recommended test procedures. If microbiological counts are high and/or SRB exists, re-treat with non-oxidizing biocides.
5. Maintain <1,000 microorganisms per mL bacteria count and negative testing for SRB and other anaerobes.
6. Provide water circulation.

Cortec® Cooling Loop Gator™**

This VpCI is added to a cooling system at a rate of one Gator per 250 gallons system volume. After addition, the water must be circulated 10-12 hours. The water can remain in the system or be flushed, as long as it is tightly sealed immediately afterward. See product label for more details.

8.0 Laboratory Capabilities

CHEM-AQUA
An NCH Company

Laboratory Capabilities



ISO 9001 Certified Laboratories

Chem-Aqua's in-house ISO 9001 certified laboratories perform analysis in several areas.

Instrumentation / Equipment

- Inductively Coupled Plasma Spectrometer
- Ion and High-Performance Liquid Chromatographs
- Gas Chromatograph - Mass Spectrometer
- Potentiometric and Reaction Auto-Titrators
- Phase Contrast and Fluorescence Microscopes; Colony Counters
- Atomic Absorption and Fourier Transform Infra Red Spectrometers
- UV-Vis Spectrometers, Colorimeters, Fluorometers, and Electrochemical Meters

Testing Capabilities

- Water and Wastewater Analysis
- Deposit Analysis
- Corrosion Coupon Analysis
- Failure Analysis
- Ion Exchange Resin Analysis
- Microbiological Assays

Water Lab

The Chem-Aqua water lab is housed in the corporate Research and Development complex along with the other industrial groups supporting the sales team, including the engineering development and microbiological sciences groups. Access to all equipment, resources, and staff is available as needed to assist with technical support

Mohawk Laboratory Quality Assurance Overview

Mohawk Laboratories is under the NCH umbrella of companies and therefore is included in the NCH-North American Chemical ISO 9001:2008 Quality Management System. The Analytical and Research and Development laboratories support the family of business units within NCH Corporation, which includes Chem Aqua Corporation.

Laboratory Quality Control parameters include the analysis of Certified Third Party reference Quality Standards with each set of analytes tested. Instrumentation and test methods are calibrated daily before use and calibration checks are performed every 10 samples analyzed to insure reproducibility within specified tolerances. Additional QC measures include analysis of blind samples, spiked samples, duplicate analysis and blanks.

Quality Assurance is accomplished by separate and independent monitoring of laboratory procedures and QC activities. Also included in QA activity is the NCH internal audit program, non-conformance reviews and annual management review of Quality data.

All laboratory procedures are controlled by the Document Control process as outlined in the NAC Quality Manual. Test Methods and other laboratory procedures (SOPs), instrument manuals, and published test methods are referenced when used. The SOPs are reviewed annually and revised when needed.

The laboratory has procedures for identification, collection, access, storage and maintenance of test results and quality Records. Laboratory Analytical test results are stored electronically within the LIMS system indefinitely and are backed up within the corporate archive system. All hard copy records related to Research and Development laboratory notebooks and GLP Analytical results are stored in locked vaults.

All training of Laboratory Analytical and research personnel is documented to ensure all testing is performed by trained personnel. Management controls and authorizes personnel to perform specific test procedures, operate specific instrumentation, and to issue reports.

The laboratory does not perform sample collection. Sampling recommendations are provided in the sample submission guidelines. Samples are submitted with labels specific to the sample type along with submission forms where applicable. All samples are logged within the LIMS system with a unique ID number for ease of reference within the laboratory workflow.

9.0 Renewal Price Section

Chem-Aqua is excited about the opportunity to work and partner with the University of Central Florida. We have instituted our Corporate Account discount across the portfolio. This price will remain firm for the first year (not including any system or tonnage alterations) and then an annual price increase will be considered based on Commodity PPI (Chemicals and Allied Products), not to exceed 3%.

This price is inclusive of:

- All chemical for the facility
- A minimum of weekly service
- All corrosion coupon analysis, and basic microbiological testing
- Yearly audits by our Corporate Engineering team

More detailed pricing information can be found in the pricing sheets on the attached pages.

10.0 Pricing Summary

University of Central Florida	
ChemAqua - Annual Pricing Agreement - Based on 365 days of Treatment	
System To Be Treated	**Calculated Chemical Costs For Cooling Tower, Boilers and Closed loop (Towers With Continuous NaCl & NaBr) Weekly Service**
Tower Water System One	$205,467.52
TES CHWS	$33,710.98
Partnership V	$7,655.25
CHP Hot Loop Water System	$122.88
Biological Science Steam Boilers	$3,663.11
309 Boiler House Steam Boiler	$854.73
Reflection Pond	$58,235.06
Closed Chilled Water Systems	$821.55
Closed Hot Water Systems	$1,855.20
Leased Equipment	$13,536.00
Applicable Freight/Labor	Included
Total	**$325,922.27**

Tower Water Systems

Cooling Costs - Cooling Towers on Hard Water MU

Chemical and System	Cooling Towers on Soft Water MU	Cooling Towers on City Water MU Chemical Costs With Stabilized Bromine	Annual lbs of product
Tower Make Up Per Year Gallons	125,000,000		
Tower System Volume Gallons	76,500		
Tower Cycles	3		
Tower Inhibitor - Chem-Aqua 31185			
Tower Inhibitor Cost/Lb.	$4.62		
Tower Inhibitor Feedrate - PPM	100		
Tower Inhibitor Cost/1000 Gallons MU	$1.283	$ 160,416.67	34722
Liquid Sodium Hypochlorite Costs/LB	$1.00		
Liquid Sodium Hypochlorite Costs/1000 gal	$0.75	$ 8,950.50	8951
Liquid Sodium Bromide Cost/LB	$3.10		
Liquid Sodium Bromide Costs/1000 gal	$0.78	$ 9,248.85	2984
Bact 45 Glut Cost/LB	$6.75		
Glut Costs/1000 Gallons	$6.75	$ 26,851.50	3978
Total Cooling Chemical Costs Using Bromine			
Total Bid		**$ 205,467.52**	**50,634**

Closed Loop Costs - Silica/Azole Program

Chemical and System	Closed Loops	Closed Loop Chemical Costs	Lbs of Product
Chill Water System Volume	3,375,000		
Chill Water Make Up Per Year Gallons	3,500,000		
Sio2 Chilled Water Cost /Lb. - Chem-Aqua 53505	$2.97		
Chill Water Inhibitor Feedrate - PPM	300		
Chill Water Inhibitor Cost/1000 Gallons MU	$7.43	$ 25,987.50	8750
ClO2 - Price per dose	$7,723.48		
Lbs/Dose	281		
		$ 7,723.48	3372
Total Bid		**$ 33,710.98**	**12,122**

Closed Loop Costs - Silica/Azole Program

Chemical and System	Closed Loops	Closed Loop Chemical Costs	Lbs of Product
Chill Water System Volume	60,000		
Chill Water Make Up Per Year Gallons	6,000		
Sio2 Chilled Water Cost /Lb. - Chem-Aqua 53505	$2.97		
Chill Water Inhibitor Feedrate - PPM	300		
Chill Water Inhibitor Cost/1000 Gallons MU	$7.43	$ 44.55	15
Closed Loop Isothiazolin Feed Costs/LB - Chem-Aqua 40215	$3.10		
Closed Loop Isothiazolin Costs/1000 Gallons - Chem-Aqua 40215	$6.20	$ 372.00	120
45% Glut Cost/LB Bacticide 45	$6.75		
45% Glut Costs/1000 Gallons - Bacticide 45	$6.75	$ 405.00	60
Total Bid		**$ 821.55**	**195**

Closed Loop Costs - Nitrite/Azole Program

Chemical and System	Closed Loops	Closed Loop Chemical Costs	Lbs of Product
Hot Water System Volume	1,200		
Hot Water Make Up Per Year Gallons	1,200		
Nitrite Hot Water Cost /Lb. - Chem-Aqua 51999	$3.84		
Hot Water Inhibitor Feedrate - PPM	3200		
Hot Water Inhibitor Cost/1000 Gallons MU	$102.40	$ 122.88	32
Total Bid		**$ 122.88**	**32**

Closed Loop Costs - Nitrite/Azole Program

Chemical and System	Closed Loops	Closed Loop Chemical Costs	Lbs of Product
Hot Water System Volume	80,000		
Hot Water Make Up Per Year Gallons	8,000		
Nitrite Hot Water Cost /Lb. - Chem-Aqua 51999	$3.84		
Hot Water Inhibitor Feedrate - PPM	3200		
Hot Water Inhibitor Cost/1000 Gallons MU	$102.40	$ 819.20	213
Closed Loop Isothiazolin Feed Costs/LB - Chem-Aqua 40215	$3.10		
Closed Loop Isothiazolin Costs/1000 Gallons - Chem-Aqua 40215	$6.20	$ 496.00	160
45% Glut Cost/LB Bacticide 45	$6.75		
45% Glut Costs/1000 Gallons - Bacticide 45	$6.75	$ 540.00	80
Total Bid		**$ 1,855.20**	**453**

11.0 Cooling Tower Cleanings and Chem-Aqua Services

Cooling Tower Hydrogen Peroxide Cleaning Procedure

The hydrogen peroxide cleaning will be completed immediately prior to a physical tower cleaning and will be documented.

1. Isolate all chemical feed points at least four hours prior to the procedure.
2. Ensure that any sand filters are operating properly.
3. Ensure that personnel have been trained on the usage of hydrogen peroxide and are outfitted with the necessary Personal Protective Equipment (PPE).
4. Ensure that an adequate supply of fresh water (hose) is available for rapid dilution in case of an accidental spill of the concentrated product.
5. Isolate the cooling tower blowdown and ensure that all of the piping and equipment is open to flow (no dead legs, etc.).
6. Product must be added to the sump – NEVER use a pot feeder.
7. Record the system turbidity prior to adding chemical.
    a. Samples should be drawn every 30 minutes during the cleaning and kept for the duration of the cleaning for evaluation.
    b. If the maximum turbidity increase exceeds 100 NTU from the baseline, then a second peroxide cleaning will need to be performed within 90 days.
8. Add one gallon of 35% hydrogen peroxide per 1,000 gallons of system volume or equivalent applied concentration.
9. Circulate for two hours through the entire system.
    a. Ensure that all piping and equipment is open to flow (no dead legs, etc.).
    b. Small strainers may need to be periodically cleaned during the procedure.
10. Add a second application (one gallon of 35% hydrogen peroxide per 1,000 gallons of system volume).
11. Circulate for two hours through the entire system.
12. At the conclusion of the four-hour cleaning procedure, the system should be blown down to remove the fouled water prior to sterilization.

    Disinfect the system by increasing the condenser water free halogen level to 5 PPM for six hours to prepare for the physical cleaning step.
13. Pull and clean all strainers on the condenser system.
14. Note that if the turbidity increase is more than 100 NTU from the baseline, then this triggers a second peroxide cleaning to be performed within 90 days. This is an indication that the system is excessively fouled and a second cleaning is needed to remove any remaining biofilm.

Cooling Tower Physical Cleaning Procedure

1. Coordinate the shutdown and lockout of the system.
2. Confirm that the appropriate Personal Protection Equipment (PPE) is available.
3. Photograph and document the condition of the equipment prior to beginning the cleaning process (fill, hot deck, internals, etc.).
4. Determine the total volume of the sump.
    a. Total volume (gallons) = length X width X height (in feet) X 7.5
    b. Divide the total volume by two if the system is a BAC unit or has a v-shaped sump.
5. Chlorinate the cooling tower sump.
    a. Test for free chlorine (which should be 5 PPM or greater).
    b. Add more product, if necessary, to reach the residual. Hypochlorite must be used, NOT liquid bromine.
6. Drain the system after the setup of the necessary equipment.
7. Plug the intake pipe openings and equalizer valves to prevent debris from entering the system during the cleaning process.
8. Clean the tower from the top down.
    a. Inspect the hot decks.
    b. Use a pressure washer to clean out distribution holes and free any blockages.
9. Use a descaler (refer to the treatment supplier for the proper ratio of product to city water) on the hot deck to dissolve existing scale (for 30 minutes), rinse tower with a pressure washer, and send the rinse byproduct to the sanitary sewer.
10. Clean the fan shroud and all working parts that can be accessed from the hot deck.
11. Clean the fill.
    a. Begin by spraying the fill with a pressure washer to remove loose sediment. A descaler may be necessary to dissolve remaining deposits.
12. Clean the inside of the tower.
    a. A descaler may be necessary.
13. When the fill is clean, use a descaler (refer to the treatment supplier for the proper ratio of product to city water) to complete the process.
14. Flush the sump from the outside in, washing all sediment to the center of the tower. Use a screen over the drain to prevent debris from clogging the drain. Use a shop vacuum to remove remaining debris from the sump.
15. The pump and system strainers **MUST** be cleaned after the tower cleaning is complete, prior to startup and again once the system has operated for several hours.
16. Fill the system with water and feed hypochlorite before putting the system back online.
17. Test for free chlorine (minimum of 5 PPM).
18. Coordinate the removal of lockout/tagout before putting the system back online.
19. Document the condition of the cleaned cooling tower (take pictures).
20. Return the system to normal treatment residuals; however, increase the azole level to 10 PPM.
21. Plan for the next cleaning.
    a. It is strongly recommended that your water treatment supplier be contracted to provide the cleaning services for the cooling towers and chillers.

Chem-Aqua Services

Chem-Aqua Services is a division of Chem-Aqua that provides value added specialty maintenance services including:

- Cooling tower cleaning and chlorination
- Coil cleaning and sanitizing
- Chlorine dioxide application using portable generators
- Pretreatment equipment service including water softeners, reverse osmosis, dealkalizers, and filtration
- Closed loop cleaning, passivation, filtration, and inhibitor replacement
- Domestic water chlorination

Chem-Aqua Delivers Value Several Ways

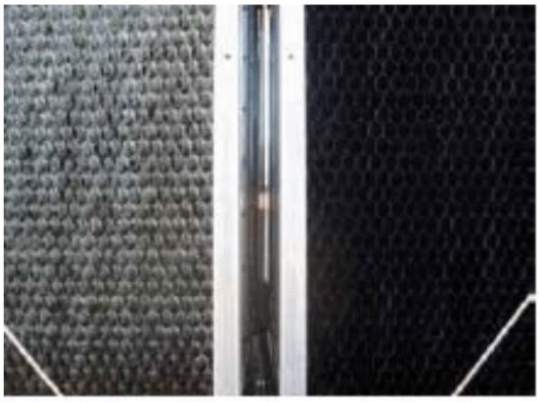
Chem-Aqua Service Technicians are trained professionals that understand the work to be performed:

- Proper use of Personal Protection Equipment (PPE)
- Follow industry recognized procedures
- Proper tools and equipment
- Documentation is provided for your records

These services provide bottom line benefits to your operation including:

- Improved equipment efficiency
- Maintained tenant comfort
- Freeing up valuable employee time
- Reduced employee exposure to hazards
- Extended equipment life

Cooling Tower Fill Cleaning


Cooling Tower Fill: Before and After Cleaning

Professional Chill Water Coil Cleaning

Professional Steam Cleaning

Programs Provided

Service Technicians

- Our Technicians are trained professionals
- Service is performed by company employees
- Proper use of Personal Protection Equipment (PPE)
- Follow industry recognized procedures
- Proper tools and equipment
- Documentation is provided for your records

Benefits of Chem-Aqua Services - Our services will take the STRESS out of your facility's operations

- Improved equipment efficiency
- Maintained tenant comfort
- Freeing up valuable employee time
- Reduced employee exposure to hazards
- Extended equipment life

12.0 Supplemental Cleaning & Disinfection Procedures

Supplemental Cleaning

Cleaning and Sterilization

The degree of corrosion and biological fouling would determine the course of action. Pricing is estimated at $60/1000 gallons of system volume.

Corrosion Byproducts-We would determine the amount of corrosion byproducts of likely iron oxide and determine if we would pursue one of the following:

Heavy Iron Tuberculation

1. Apply HEDP and sulfite to such a level to move and dislodge iron oxide from piping walls and equipment. Cost would vary depending upon size of application but cost would be in the general area of $600-$900/1000 gallons of system volume.
2. This would be done with circulation for at least 24 hours, followed by a series of drains and flushes.
3. A Chem-Aqua service person would be on-site.

Medium Iron Tuberculation

1. Apply Iron Surfactant of 100-200 PPM to move and dislodge iron oxide from piping walls and equipment. Cost would vary depending upon size of application but cost would be in the general area of $125-$200/1000 gallons of system volume.
2. This would be done with circulation for at least 24 hours, followed by a series of drains and flushes.
3. A Chem-Aqua service person would be on-site.

Heavy Biological Fouling

1. Cooling Tower Bio Fouling-Apply Hydrogen Peroxide at a rate of 1500 PPM and circulate for 2-3 hours. Add an additional 1500 PPM and continue to circulate. Attached is the procedure for Perasan A applications. Cost would vary depending upon size of application but cost would be in the general area of $100-$135/1000 gallons of system volume.
2. This would be done with circulation for at least 24 hours, followed by a series of drains and flushes.
3. A Chem-Aqua service person would be on-site.

Medium Biological Fouling

1. Cooling Tower Bio Fouling-Apply Sodium Hypochlorite to the level of 5 PPM and circulate for 24 hours. Continue to monitor free chlorine levels and add additional sodium hypochlorite if levels drop below 5 PPM. Cost would vary depending upon size of application but cost would be in the general area of $10-$15/1000 gallons of system volume.
2. This would be done with circulation for at least 24 hours, followed by a series of drains and flushes.
3. A Chem-Aqua service person would be on-site.

New Piping Clean Out Procedure and Costs

Pricing is estimated at $80/1000 Gallons of system volume.

1. Cleaning out of mill scale, oils of manufacturing of new piping
2. We recommend Chem-Aqua 61503 to passivate your new system piping and heat exchange equipment. Chem-Aqua 61503 is a blend of ortho and polyphosphate, dispersants and cleaning agents, that will effectively pre-clean and passivate metal surfaces in cooling water systems. It can't be used in systems operating under a heat load. A minimum of 50 PPM of calcium hardness as CaCO3 is required for good film formation. We also recommend the addition of Chem-Aqua 34120 (43% TTA) for the passivation of copper metallurgy and Bacticide 45B (45% Glutaraldehyde) for disinfection.
3. Directions: Flush and drain system to remove all loose debris. It is critical that wood towers be thoroughly flushed to remove preservatives that can leach out of the wood and interfere with film formation. Isolate all critical process equipment with small diameter piping (injection and blow molding machines) from the system during the cleaning process. Install by-pass loops to insure good flow through system piping and heat exchange equipment.
4. Add Chem-Aqua 61503 at the rate of 3 gallons per 1000 gallons of the system volume, and BACTICIDE 45 at 1 pint per 1000 gallons of system volume.
5. For optimum film formation, maintain the system pH in the 7.0 to 7.5 range throughout this procedure. If the tower contains new galvanized wetted parts, the system pH should be maintained in the range of 7.0 to 8.2 during the initial 60 to 90 days of operation to minimize the potential for white rust formation.
6. Circulate with full flow through all piping for 48 to 72 hours. Flush low point drains frequently during procedure.
7. If the system foams excessively, add FC 101 at 2 - 4 fl. oz. per 1000 gallons of system volume.
8. If the system is to be immediately placed in service, it should be flushed heavily until the phosphate and iron levels are reduced to within 1 ppm of the makeup levels and the turbidity is reduced to within 3 NTU of makeup levels. The phosphate level should not be allowed to reach zero before beginning the routine inhibitor program. If the system is left on stand-by, add a suitable non-oxidizing biocide at maximum label dosage 1 hour before discontinuing circulation. When the system is started up, begin flushing the system as outlined above before resuming normal treatment.
9. A Chem-Aqua service person would be on-site for the initial chemical application and final flushing.

Polymer Flush Procedure and Costs

Pricing is estimated at $40/1000 Gallons of system volume.

1. Apply Iron Dispersant at 100-200 PPM to move and dislodge iron oxide from piping walls and equipment
2. This would need circulation for at least 24 hours, followed by a series of drains and flushes.
3. A Chem-Aqua Service person would be on site.

Alternative Chlorine Dioxide TES Treatment

Mobile CLO_2 Feed Program – No storage of hazardous chemicals and no equipment required!!!

A site survey to confirm pricing would be required.

bioSTOP Has Special Designed Delivery Trucks to apply a chlorine dioxide requirement for a full turnkey and hands fee application.

33,000 lb. GVW box truck that can deliver or directly apply up to 24,000 gallons of ClO2 3000 PPM solutions. bioSTOPL makes the 3000 PPM ClO2 solutions on site

Delivers into storage tank or direct application for:
1. Water system slug treatments for biofilm control
2. High volume facility sanitation
3. Cooling tower slug treatment

1. Scrubber and Tank Vent line storage
2. Acid Stinger Storage
3. HCl (secondary Steel containment) scrubber solution and Spill Kit storage


CHEM-AQUA
An NCH Company
EXCLUSIVELY FROM CHEM-AQUA
BIOSTOP
A CHEM-AQUA COMPANY
Untreated water harbors microbes within biofilm that can impact system efficiency and cause illness.
Safetly Utilizing the Full Potential of Chlorine Dioxide
WORLD CLASS, INDUSTRY-CHANGING TECHNOLOGY FOR THE CONTROL OF MICROORGANISMS
SAFE
Highly trained Chem-Aqua/bioSTOP employees handle every application. Your employees never have to touch any of the chemicals or equipment. Additionally. No on-site storage of hazardous chemicals.
EFFECTIVE
bioSTOPs high purity chlorine dioxide is proven to be the most effective answer for biological or other organic contamination in closed water systems of any size.
ECONOMICAL
No capital cost for expensive ClO2 generation equipment. No maintenance or repair costs. No need for dedicated, secure storage space. No waste, no disposal costs, and significant labor savings: bioSTOP generates and doses 5-10 times faster, reducing application times by as much as 80%.
CONTACT US TODAY
+ 1-866-209-3373
info@chemaqua.com
www.chemaqua.com
BIOSTOP
A CHEM-AQUA COMPANY
BECOME A PARTNER TODAY

Cooling Tower Emergency Disinfection Procedures

Technical Bulletin 2-056
Cooling Systems

Emergency Disinfection
The following emergency disinfection procedure is based on established industry guidelines and other governmental recommendations. This procedure may be specified where

Very high Legionella counts exist (>1,000 CFU/mL).
In cases where Legionnaires' disease is known or suspected and may be associated with the cooling tower.

Precautions
1. Personnel performing work should use appropriate Personal Protective Equipment (PPE). Consult corporate Environmental, Health, and Safety (EHS) rules and regulations.
2. Cooling tower fans should remain off during online disinfection procedures.
3. Disinfection procedures may present foam problems. Have antifoam available if needed.

Procedure
1. Keep all non-essential personnel away from the cooling tower and adjacent areas during procedure.
2. If possible, remove heat load from the cooling system before beginning the procedure.
3. Shut off cooling tower fans associated with the cooling equipment.
4. Shut off the system blowdown, but keep the makeup valves open and operating.
5. Close building air intake louvers within the vicinity of the cooling tower (especially those downwind) until the procedure is complete.
6. Continue to operate the pumps to circulate water through cooling tower system.
7. A dispersant may be used to aid in cleaning and the penetration of biofilms.
8. Feed an EPA registered chlorine or bromine based biocide according to label directions to achieve an initial free chlorine residual of 25-50 ppm.
9. Maintain a minimum of 10 ppm free chlorine residual for 24 hours. Add additional chlorine or bromine biocide as needed to maintain the target free chlorine residual.
10. Use a Disinfection Log to record free chlorine levels and verify the minimum level is maintained throughout the disinfection procedure. Recommend monitoring more frequently initially.
11. Drain the system completely and flush all low points. If this is not practical, blowdown heavily and flush system low points.
12. Refill the system and repeat steps 8 through 11.
13. Examine the cooling tower. If biofilm is present, refill the system and repeat steps 8-11 until no biofilm is present. Then proceed to step 14.
14. Mechanically clean the tower fill, tower supports, cell partitions, and sump. Wear appropriate PPE while engaging in this tower cleaning.
15. Refill the system with fresh water. Add chlorine or bromine biocide to achieve and maintain 10 ppm of free chlorine residual for a minimum of one hour. Flush the system until it is free of turbidity.
16. When flushing is complete, adjust the system blowdown controller for normal operation, charge with appropriate corrosion and deposit control chemicals, and re-establish normal biocide program.

Notes

a. Follow up microbiological (bacteria or Legionella) testing may be specified following procedure to confirm effective disinfection.

b. With chlorine based biocides, the pH of the system should preferably be between 7.0-7.6 during disinfection. The pH can be reduced either by pre-bleeding the system or adding a pH reducer. Bromine based biocides are preferred where the pH is greater than 8.0. Chem-Aqua MB-60B can be used over a wide range of pH values because it contains chlorine and bromine based halogens.

c. Ensure sufficient chlorine or bromine biocide is on-hand to completely perform the procedure.

d. Test strips, drop tests, and colorimetric methods may be used for free chlorine testing.

References

- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), ASHRAE Guideline 12-2000: Minimizing the Risk of Legionellosis Associated with Building Water Systems
- Cooling Technology Institute (CTI), Legionellosis Guideline: Best Practices for Control of Legionella (CTI Guidelines WTB-148[08])
- Association of Water Technologies (AWT), Legionella 2003: An Update and Statement by the Association of Water Technologies

The above disinfection procedure recommendations meet or exceed compliance requirements from both the New York City Department of Health (DOH) and New York State DOH. (Effective 8/17/2015).

Disclaimer: *Disinfection procedures should be carried out as part of a complete water management program for your building. The building owner is responsible for the water management program. This disinfection procedure (and any water treatment of the cooling tower) by and of itself is only part of and is not complete mitigation of the risks associated with Legionella bacteria or any other waterborne pathogens.*

Cooling Tower *Legionella* Testing Response Protocol

Technical Bulletin 2-049
Cooling Systems

Routine *Legionella* Testing
Whenever cooling tower water samples are tested for the presence of *Legionella* bacteria, a well-defined Response Protocol should be available for instances where positive Legionella test results are reported. In the absence of federal, state, or local regulations, or an alternate response plan, cooling tower owners may wish to adopt the following protocol for positive *Legionella* test results. This protocol is based on industry guidelines, and meets or exceeds the guidelines in the New York State and New York City Department of Health *Legionella* Regulations.

Personnel performing procedures must use the appropriate personal protective equipment (PPE) for the tasks performed. Consult company and site safety policies for specific PPE requirements. Specific procedures should be consulted for details on required steps.

Response Protocol for Cooling Tower *Legionella* Test Results

Test Result	Recommended Action
< 10 cfu/mL	1. Double the feed of oxidizing biocide for the next feed cycle. 2. Maintain current treatment and *Legionella* monitoring program.
10 to 99 cfu/mL	1. With blowdown valve closed, tower pumps running, and fans off[2], add an EPA registered oxidizing biocide per label instructions to maintain a minimum of 5 ppm Free Chlorine Residual for 6 hours or a minimum of 15 ppm Free Chlorine Residual for 2 hours. Bleed or flush system heavily following disinfection procedure. 2. Evaluate cooling tower for presence of sediment, biofilm, or algae, and schedule cooling tower cleaning and disinfection procedure if indicated. 3. Add chemicals as recommended for startup after disinfection then resume normal program. 4. Retest for *Legionella* after 3 - 7 day.
100.0 to 999.0 cfu/mL	*Disinfection Option 1:* 1. With blowdown valve closed, tower pumps running, and fans off[2], add an EPA registered oxidizing biocide per label instructions to maintain a minimum of 5 ppm Free Chlorine Residual for 6 hours or a minimum of 15 ppm Free Chlorine Residual for 2 hours. Bleed or flush system heavily following disinfection procedure. 2. Clean and disinfect cooling tower within 7 days. 3. Add chemicals as recommended for startup after disinfection then resume normal program. 4. Retest for *Legionella* after 3 - 7 days.
	Disinfection Option 2: 1. With blowdown valve closed, tower pumps running, and fans off[2], add an EPA registered oxidizing biocide per label instructions to maintain a minimum 5 ppm Free Chlorine Residual for 24 hours. Bleed or flush system heavily following disinfection procedure. 2. Evaluate cooling tower for presence of sediment, biofilm, or algae, and schedule cooling tower cleaning and disinfection procedure if indicated. 3. Add chemicals as recommended for startup after disinfection then resume normal program. 4. Retest for *Legionella* after 3 - 7 days.

Test Result	Recommended Action
≥ 1,000.0 cfu/mL	1. Keep non-essential personnel away from the cooling tower and adjacent areas. 2. Secure indoor air returns in vicinity of the cooling tower so any vapors or odors from the disinfection process are not drawn into the building ventilation system. 3. With blowdown valve closed, tower pumps running, and fans off[2], add an EPA registered oxidizing biocide per label instructions to achieve 25 to 50 ppm of Free Chlorine Residual. 4. Maintain a minimum 10 ppm Free Chlorine Residual for 24 hours. 5. Drain the system. 6. Mechanically clean the tower fill, tower supports, cell partitions, and sump. 7. Rinse the cleaning solution and drain the system. 8. Refill with fresh water. 9. Add an EPA registered oxidizing biocide per label instructions to maintain a minimum 15 ppm Free Chlorine Residual for 2 hours. 10. Drain the system and refill with fresh water. 11. Add chemicals as recommended for startup after disinfection then resume normal program. 12. Retest for *Legionella* after 3 - 7 days

Notes

1. Coordinate operation and shutdown of cooling tower pumps, fans, chillers, and other heat exchange equipment with plant personnel. Tower pumps must be running and fans should be off during procedures.
2. The presence of other risk factors may dictate stricter control levels and response protocols.
3. Any specified remedial procedures should be performed within 7 days of receiving test results.
4. Free Chlorine Residuals should be documented during disinfection procedures. For procedures less than 6 hours, recommend recording level every 15 minutes for the first hour, and then approximately hourly thereafter. For longer procedures, less frequent monitoring may be acceptable. The final reading must be above the minimum.
5. *Legionella* culture testing should be performed by laboratories that are certified by the CDC ELITE program. The CDC does not certify other *Legionella* testing methodologies (PCR, DFA, Rapid Analytical Tests) as a primary test to environmental samples.

References

1. American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), ASHRAE Guideline 12-2020
2. ANSI/ASHRAE Standard 188-2018: Minimizing the Risk of Legionellosis Associated with Building Water Systems
3. Cooling Technology Institute (CTI), Legionellosis Guideline: Practices for Control of Legionella (CTI Guideline GDL-159)
4. Public Works and Government Services Canada, Standard MD 15161 – 2013: Control of Legionella in Mechanical Systems.
5. NYSDOH State Sanitary Code: 10 NYCRR Part 4: *Protection against Legionella* (Enacted July 2016), *Appendix 4-A -Interpretation of Legionella Culture Results from Cooling Towers.*

***Disclaimer:** Disinfection procedures should be carried out as part of a complete water management program for your building. The building owner is responsible for the water management program. This disinfection procedure (and any water treatment of the cooling tower) by and of itself is only part of and is not complete mitigation of the risks associated with Legionella bacteria or any other waterborne pathogens.*

Disinfection Procedures for Cooling Systems

Technical Bulletin 2-041
Cooling Systems

Introduction
According to the Cooling Tower Institute (CTI) Guidelines, WTB-148(08), Best Practices for the Control of Legionella, there are routine and emergency disinfection procedures used to regain control of cooling systems that are suffering from biological problems. These problems may include bacterial slime that interferes with heat exchange and/or heavy algae growth in the hot deck that can cause plugging and fouling problems.

Routine Online Disinfection
The recommended online disinfection procedure is based on hyper-halogenation with a halogen donor according to labeled directions for use*. This is the practice of maintaining a free halogen residual of five ppm for at least six hours. Routine online disinfection helps inhibit the development of large populations of bacteria including *Legionella* and associated higher life forms, such as protozoa. When performed as part of scheduled maintenance, it can reduce or eliminate the need for more complicated and higher risk offline emergency disinfection procedures.

Routine online disinfection may be necessary for systems that

- Experience process leaks
- Use reclaimed wastewater as makeup
- Have been stagnant for a long time
- Regularly have total aerobic bacteria counts >100,000 CFU/mL
- Where *Legionella* test results >100 CFU/mL

When performing an online disinfection, the following key points must be kept in mind

1. Halogen donors such as liquid sodium hypochlorite solutions should be used. *Note that chlorine-based halogen donors are generally better for overcoming a high organic demand while being more cost effective than other halogen donors. Stabilized bromine donors should not be used because they can become over-stabilized, and thus ineffective, when fed at high levels.*
2. Ensure sufficient liquid sodium hypochlorite solution is on-hand to completely perform the procedure.
3. Ideally, if the pH of the system is higher than 8.4 it should be reduced to <8.2. High pH values (>8.4) reduce the effectiveness of chlorine-based halogens. It may be possible to reduce the pH by heavily pre-bleeding the system.
4. Free chlorine levels should be measured and recorded every hour.
5. When testing for free chlorine, dilutions using chlorine-free deionized (DI) water may be required.

Emergency Disinfection Procedure
The following emergency disinfection procedure is based on OSHA and other governmental recommendations. Emergency disinfection should be conducted when

- Very high *Legionella* counts exist (>1,000 CFU/mL)
- In cases where Legionnaires' disease is known or suspected and may be associated with the cooling tower
- Very high total microbial counts (>100,000 CFU/mL) reappear within 24 hours of routine online disinfection (hyper-halogenation)

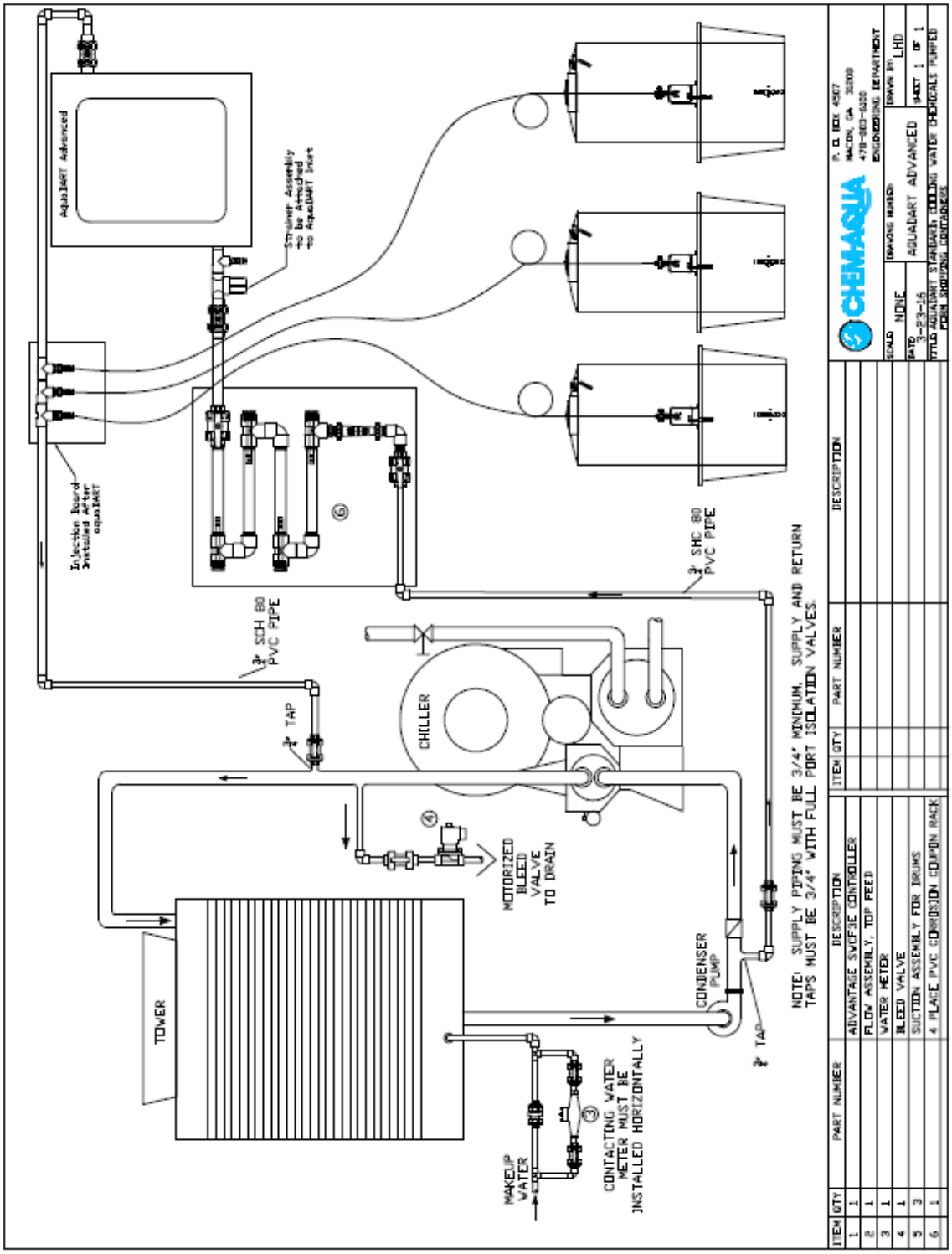
1. Before beginning the procedure, remove the heat load from the cooling system if possible.
2. Shut off all tower fans associated with the cooling equipment.
3. Shut off the system blowdown, but keep the makeup valves open and operating.

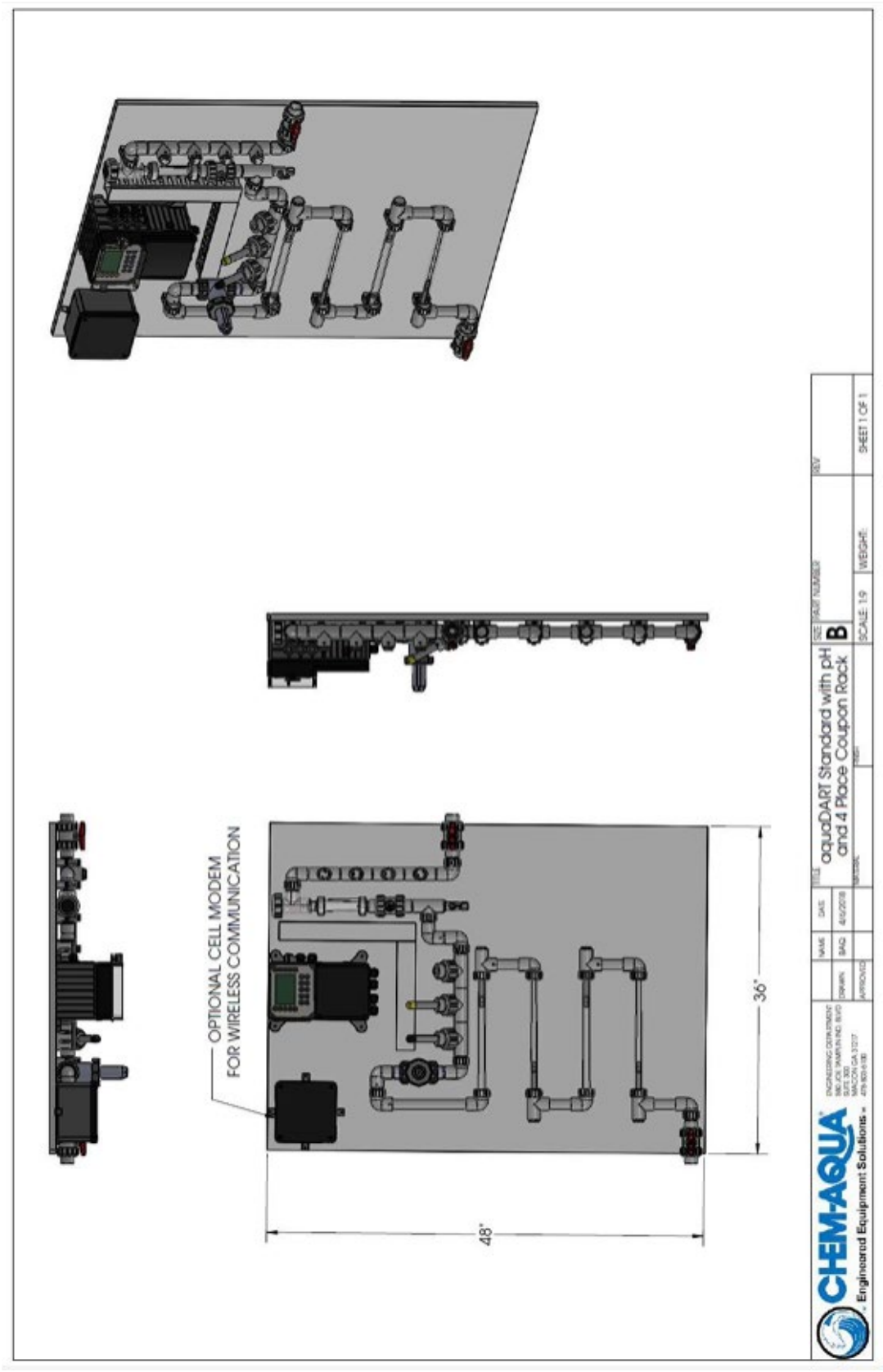
4. Close building air intake valves in the vicinity of the cooling tower (especially those downwind) until the procedure is complete.
5. Continue to operate the recirculating water pumps.
6. Maintain desired inhibitor levels throughout procedure.
7. Feed sufficient liquid sodium hypochlorite solution, according to label directions, to achieve a free chlorine residual of 25-50 ppm.
8. The use of a bio-dispersant is recommended to aid in the penetration, removal, and dispersion of biofilms.
9. Have an effective antifoam product readily available to add when using bio-dispersant or quat-based biocide as part of the procedure. Both can produce foam that builds up and can exit the tower or cause other problems.
10. Maintain a minimum of 10 ppm free chlorine residual for 24 hours. Add more biocide as needed to maintain this free chlorine residual.
11. Monitor the system pH regularly. If the pH of the system is higher than 8.4, it should be reduced to <8.2. High pH values (>8.4) reduce the effectiveness of chlorine-based halogens.
12. At the end of the procedure, but before the fans are turned on, bleed the system heavily to help flush loosened biological matter and other debris from the system. Also, flush system low points.
13. Refill the system and repeat steps one through 10.
14. When no biofilm is present, mechanically clean the tower fill, tower supports, cell partitions, and sump. Wear appropriate PPE while engaging in this tower cleaning.
15. Refill and recharge the system to achieve 10 ppm of free chlorine residual for a minimum of one hour. Drain the system until it is free of turbidity.
16. When flushing is complete, adjust the system bleed controller for normal operation, charge with appropriate corrosion and deposit control chemicals, and re-establish normal halogen residuals.

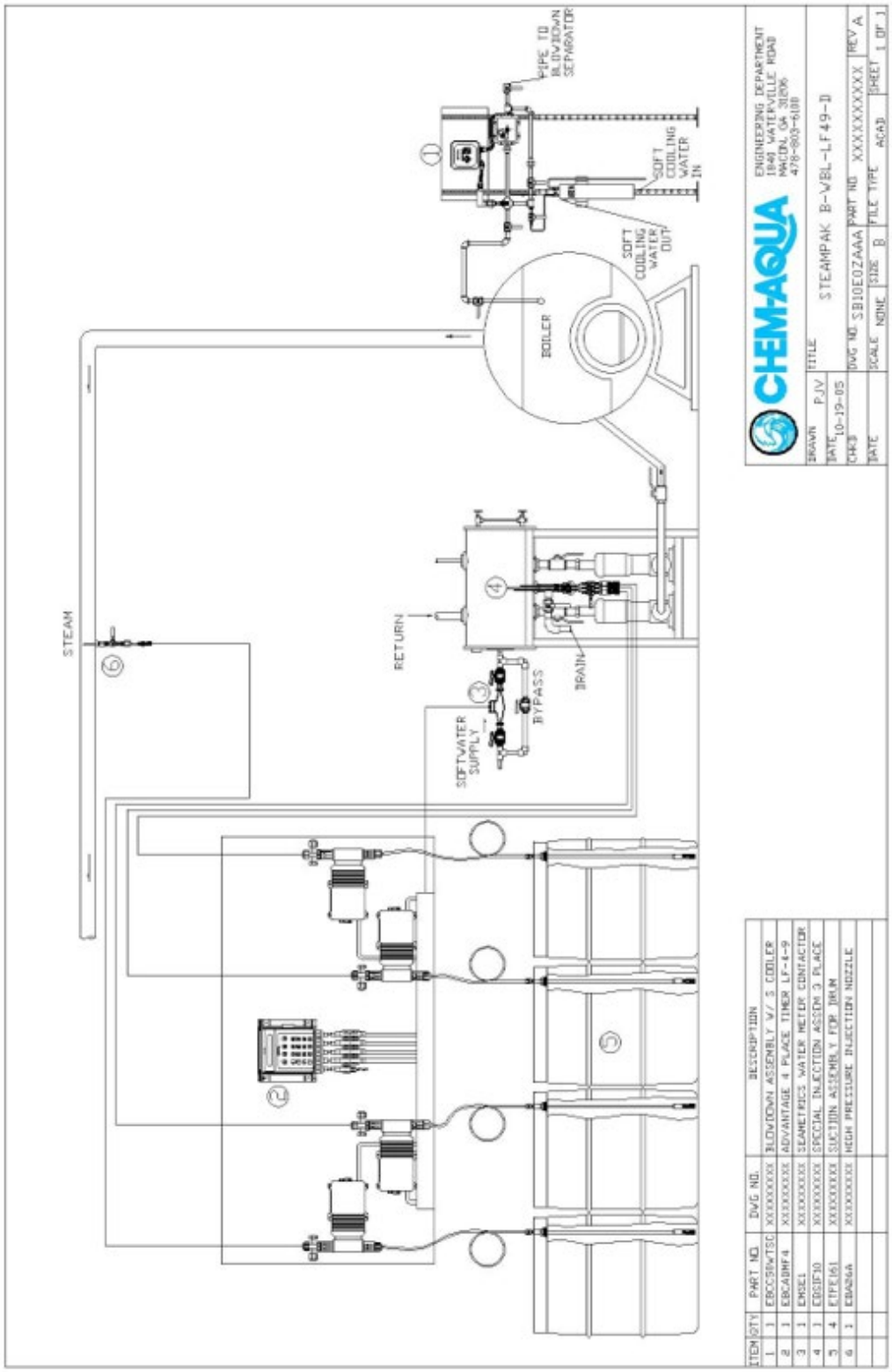
Follow-up Considerations

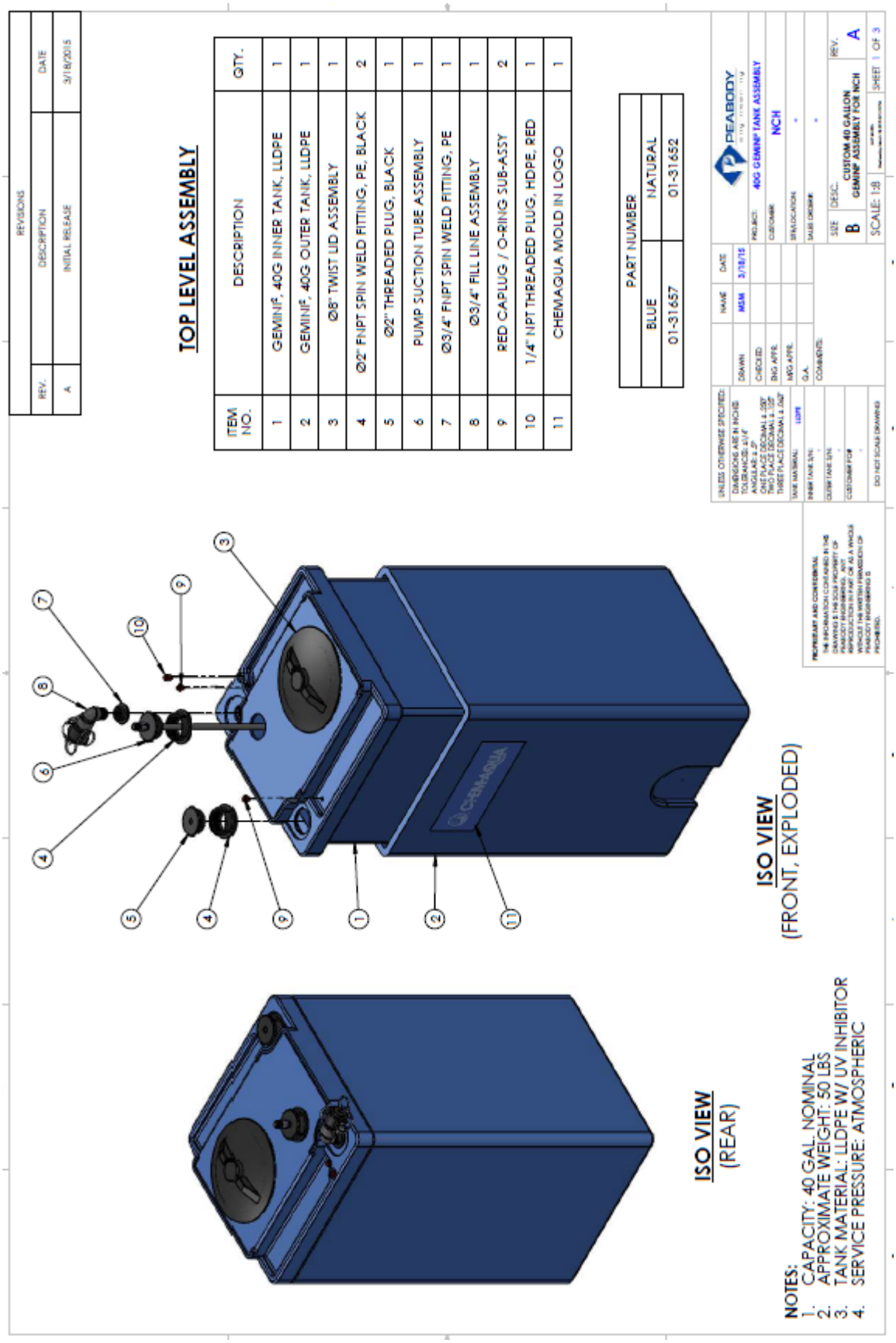
After the system has been cleaned and disinfected, it is important to add a proper corrosion inhibitor to passivate the system. During the cleaning process the inhibitor in the system may have been stripped away leaving the system metal vulnerable to attack and corrosion. The passivation chemicals added after disinfection react with the cleaned system metals to quickly establish a uniform corrosion resistant barrier and protect the system.

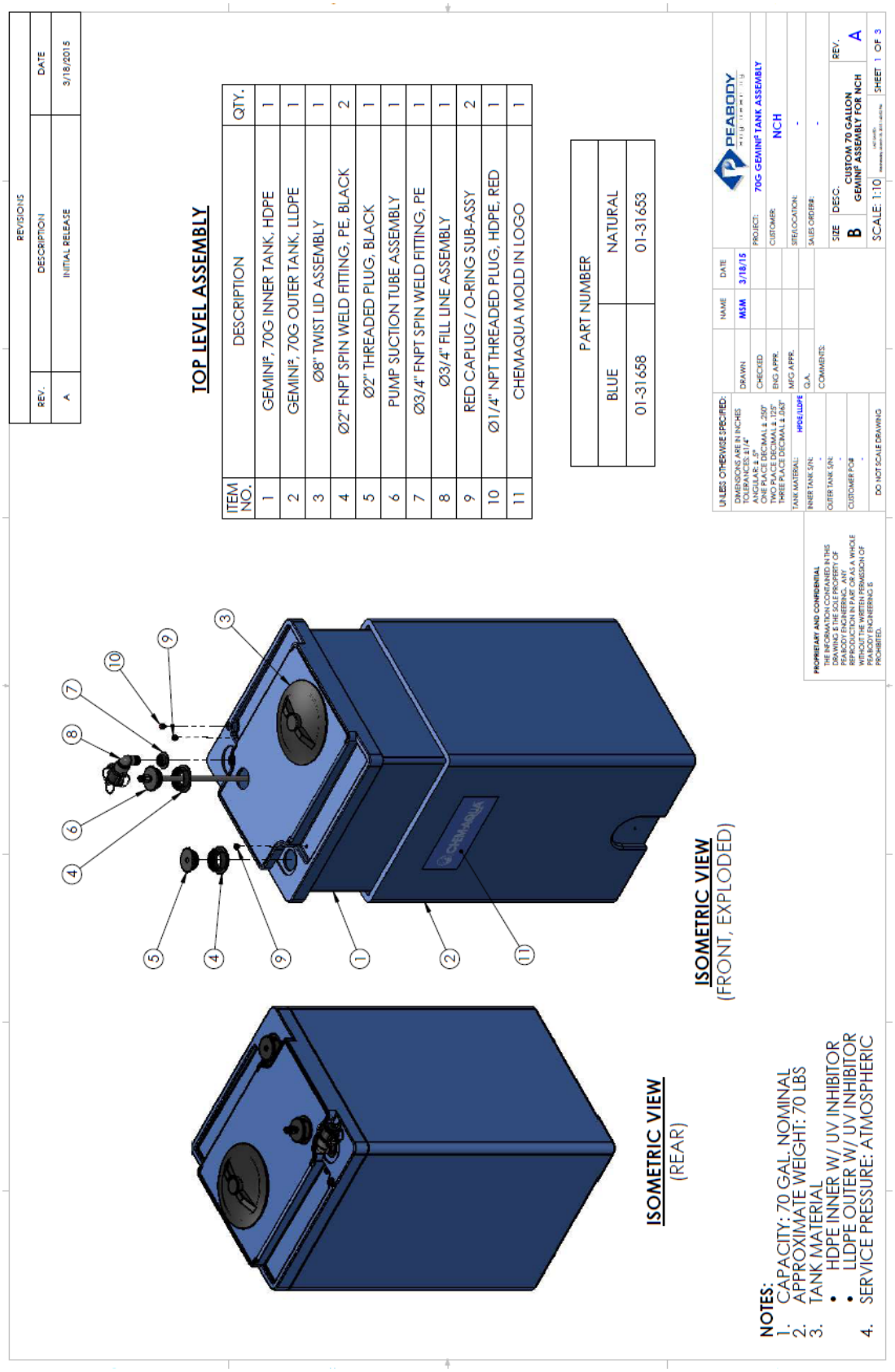
13.0 Equipment Drawings

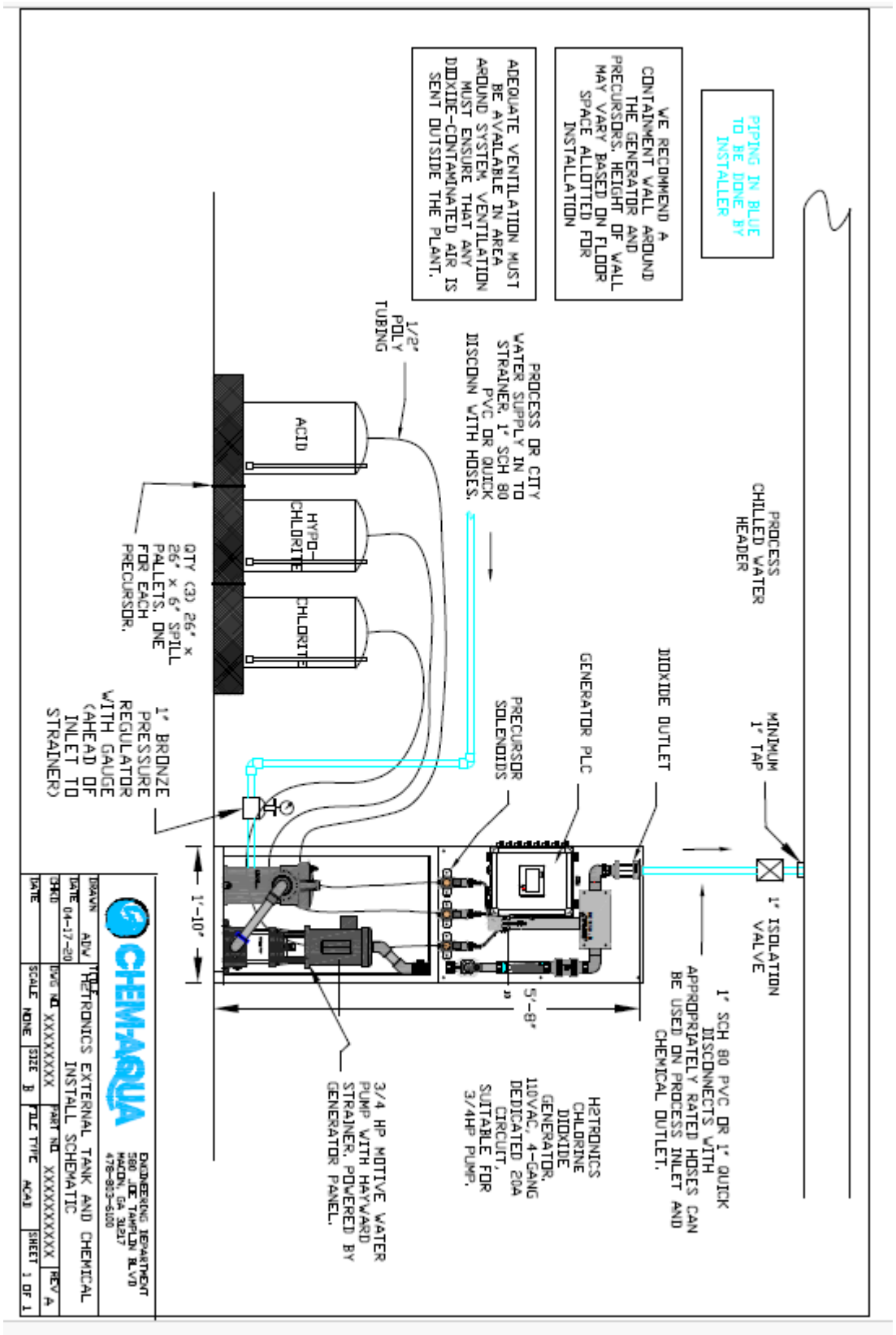



OPTIONAL CELL MODEM
FOR WIRELESS COMMUNICATION
36"
48"
aquaDART Standard with pH
and 4 Place Coupon Rack
B
SCALE: 1:9
SHEET 1 OF 1
CHEM-AQUA
Engineered Equipment Solutions


PIPE TO BLOWDOWN SEPARATOR
SOFT COOLING WATER IN
SOFT COOLING WATER OUT
BOILER
STEAM
RETURN
BRAIN
BYPASS
SOFTWATER SUPPLY
CHEMAQUA
ENGINEERING DEPARTMENT
1946 WATERVILLE ROAD
MACON, GA 31206
478-803-4188
DRAWN PJV
DATE 10-19-05
CHK'D
DATE
TITLE STEAMPAK B-WBL-LF49-D
DWG NO SB10E02AAA
PART NO XXXXXXXXX
REV A
SCALE NONE
SIZE B
FILE TYPE ACAD
SHEET 1 OF 1
ITEM QTY PART NO. DWG NO. DESCRIPTION
1 1 EBCCSWTSC XXXXXXXX BLOWDOWN ASSEMBLY W/ S COOLER
2 1 EBCADMF4 XXXXXXXX ADVANTAGE 4 PLACE TIMER LF-6-9
3 1 EMSE1 XXXXXXXX SEAMETRICS WATER METER CONTACTOR
4 1 EBSIP30 XXXXXXXX SPECIAL INJECTION ASSEM 3 PLACE
5 4 PIPE161 XXXXXXXX SUCTION ASSEMBLY FOR TANK
6 1 EBANGA XXXXXXXX HIGH PRESSURE INJECTION NOZZLE


REVISIONS
REV. DESCRIPTION DATE
A INITIAL RELEASE 3/18/2015
TOP LEVEL ASSEMBLY
ITEM NO. DESCRIPTION QTY.
1 GEMINI², 40G INNER TANK, LLDPE 1
2 GEMINI², 40G OUTER TANK, LLDPE 1
3 Ø8" TWIST LID ASSEMBLY 1
4 Ø2" FNPT SPIN WELD FITTING, PE, BLACK 2
5 Ø2" THREADED PLUG, BLACK 1
6 PUMP SUCTION TUBE ASSEMBLY 1
7 Ø3/4" FNPT SPIN WELD FITTING, PE 1
8 Ø3/4" FILL LINE ASSEMBLY 1
9 RED CAPLUG / O-RING SUB-ASSY 2
10 1/4" NPT THREADED PLUG, HDPE, RED 1
11 CHEMAQUA MOLD IN LOGO 1
PART NUMBER
BLUE NATURAL
01-31657 01-31652
ISO VIEW (FRONT, EXPLODED)
ISO VIEW (REAR)
NOTES:
1. CAPACITY: 40 GAL. NOMINAL
2. APPROXIMATE WEIGHT: 50 LBS
3. TANK MATERIAL: LLDPE W/ UV INHIBITOR
4. SERVICE PRESSURE: ATMOSPHERIC
PEABODY
40G GEMINI² TANK ASSEMBLY
NCH
CUSTOM 40 GALLON GEMINI² ASSEMBLY FOR NCH
SIZE B
REV. A
SCALE: 1:8
SHEET 1 OF 3


REVISIONS
REV. DESCRIPTION DATE
A INITIAL RELEASE 3/18/2015
TOP LEVEL ASSEMBLY
ITEM NO. DESCRIPTION QTY.
1 GEMINI², 70G INNER TANK, HDPE 1
2 GEMINI², 70G OUTER TANK, LLDPE 1
3 Ø8" TWIST LID ASSEMBLY 1
4 Ø2" FNPT SPIN WELD FITTING, PE, BLACK 2
5 Ø2" THREADED PLUG, BLACK 1
6 PUMP SUCTION TUBE ASSEMBLY 1
7 Ø3/4" FNPT SPIN WELD FITTING, PE 1
8 Ø3/4" FILL LINE ASSEMBLY 1
9 RED CAPLUG / O-RING SUB-ASSY 2
10 Ø1/4" NPT THREADED PLUG, HDPE, RED 1
11 CHEMAQUA MOLD IN LOGO 1
PART NUMBER
BLUE NATURAL
01-31658 01-31653
PEABODY
PROJECT: 70G GEMINI² TANK ASSEMBLY
CUSTOMER: NCH
SIZE B DESC. CUSTOM 70 GALLON GEMINI² ASSEMBLY FOR NCH REV. A
SCALE: 1:10 SHEET 1 OF 3
ISOMETRIC VIEW (FRONT, EXPLODED)
ISOMETRIC VIEW (REAR)
NOTES:
1. CAPACITY: 70 GAL. NOMINAL
2. APPROXIMATE WEIGHT: 70 LBS
3. TANK MATERIAL
• HDPE INNER W/ UV INHIBITOR
• LLDPE OUTER W/ UV INHIBITOR
4. SERVICE PRESSURE: ATMOSPHERIC

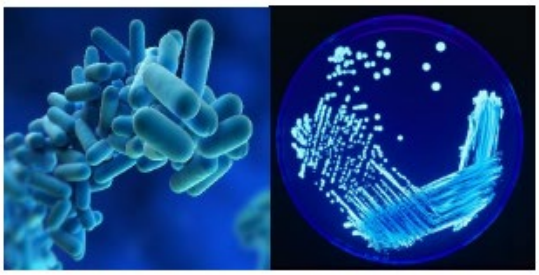

PIPING IN BLUE TO BE DONE BY INSTALLER
WE RECOMMEND A CONTAINMENT WALL AROUND THE GENERATOR AND PRECURSORS. HEIGHT OF WALL MAY VARY BASED ON FLOOR SPACE ALLOTTED FOR INSTALLATION
ADEQUATE VENTILATION MUST BE AVAILABLE IN AREA AROUND SYSTEM. VENTILATION MUST ENSURE THAT ANY DIOXIDE-CONTAMINATED AIR IS SENT OUTSIDE THE PLANT.
1/2" POLY TUBING
PROCESS OR CITY WATER SUPPLY IN TO STRAINER, 1" SCH 80 PVC OR QUICK DISCONN WITH HOSES.
PROCESS CHILLED WATER HEADER
MINIMUM 1" TAP
1" ISOLATION VALVE
1" SCH 80 PVC OR 1" QUICK DISCONNECTS WITH APPROPRIATELY RATED HOSES CAN BE USED ON PROCESS INLET AND CHEMICAL OUTLET.
DIOXIDE OUTLET
GENERATOR PLC
PRECURSOR SOLENOIDS
ACID
HYPO-CHLORITE
CHLORITE
QTY (3) 26" x 26" x 6" SPILL PALLETS, ONE FOR EACH PRECURSOR.
1" BRONZE PRESSURE REGULATOR WITH GAUGE (AHEAD OF INLET TO STRAINER)
1'-10"
5'-8"
3/4 HP MOTIVE WATER PUMP WITH HAYWARD STRAINER, POWERED BY GENERATOR PANEL.
H2TRONICS CHLORINE DIOXIDE GENERATOR, 110VAC, 4-GANG DEDICATED 20A CIRCUIT, SUITABLE FOR 3/4HP PUMP.
CHEMAQUA
ENGINEERING DEPARTMENT
380 JIE THAMPLIN BLVD
MACON, GA 31217
478-803-6100
DRAWN ADW
DATE 04-17-20
CHKD
DWG NO XXXXXXXX
SCALE NONE
SIZE B
FILE TYPE ACAD
REV A
SHEET 1 OF 1
TITLE H2TRONICS EXTERNAL TANK AND CHEMICAL INSTALL SCHEMATIC
PART NO XXXXXXXXXX

14.0 ASHRAE 188 Water Management Plan

CHEM-AQUA™ An NCH Company

ASHRAE 188

Building Water Management Plan Development Process



STEPS

SIGN

SURVEY

TEAM

PLAN & PROGRAM

REVIEW

IMPLEMENT

1. Building Owner Representative Signs Water Management Plan Agreement to ensure understanding of process, responsibilities, and deliverables.
2. Chem-Aqua performs Building Water Systems Survey to evaluate Legionella risks and document current maintenance practices.
3. Building Owner Representative Identifies Program Team responsible for developing and implementing the Water Management Plan and Program. Chem-Aqua will be represented as a consultant, but not on the program team.
4. Chem-Aqua generates *Draft Water Management Plan* including control measures for designated water systems. Program Team to review, correct, and finalize control measure and compliance verification frequencies.
5. Chem-Aqua reviews Building Water System Information with customer and demonstrates cloud server platform functionality.
6. Program Team Implements Water Management Plan and Program using the program processes, procedures and documentation.