

Water Technologies

Performance you can trust

Business Proposal
Prepared for:



Johnson & Johnson

**Raritan & Titusville - New Jersey
Spring House, Malvern & Radnor - Pennsylvania**

**Ashland Hercules Water Technologies
Kevin Pidane
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Delran, New Jersey 08075
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Submitted: October 9, 2009

ASHLAND

Johnson Controls Inc.
Global Workplace Solutions
Milwaukee, Wisconsin, 53209

October 9, 2009

Subject: JCI Global Workplace Solutions RFQ for Johnson & Johnson Services in Spring House, Radnor, Malvern, Titusville and Raritan

Dear Global Workplace Solutions Evaluation Committee:

Thank you for the opportunity to survey your facilities. Please find the attached Ashland Hercules Water Technologies proposal for the Water Treatment Program at Raritan and Titusville, New Jersey and Spring House, Radnor, and Malvern, Pennsylvania.

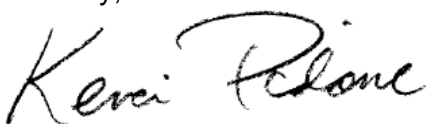
Through our 10 year experience at the Johnson & Johnson Raritan facilities and our 4 year relationship at the Johnson Control's managed Hoffman-La Roche facility in Nutley, New Jersey, Ashland Hercules Water Technologies is confident that we can continue to provide superior results. It is also our goal to provide cost savings to Johnson Controls by acting as a sole source water treatment provider at the Johnson & Johnson locations.

The main goals of the recommended water treatment program are as follows:

- Minimize or eliminate chemical, and/or container handling by, and safety hazards to plant personnel.
- Provide professional, knowledgeable and involved service personnel.
- Comply with local standards for Chemical Storage and discharge.
- Accurately monitor program results and communicate appropriate recommendations with quantifiable business-oriented justifications.
- Reduce overall energy/utility consumption through improved heat transfer efficiency and improved water quality by reducing systems contamination, minimizing scale, corrosion, fouling, and microbiological growth which create deposits on heat transfer surfaces.
- Minimize repair and maintenance costs associated with replacement and cleaning of equipment due to scale, corrosion, fouling, or microbiological activity.
- Provide competitive water treatment program costs.

We thank you for this opportunity and look forward to continuing our successful relationship with Johnson Controls and Johnson & Johnson.

Sincerely,



Kevin Pidane
Account Manager



Ian Gaffney
Account Manager

Company Data

OPPORTUNITIES AND ALTERNATIVES:

Ashland Hercules Water Technologies specializes in chemical water treatment programs. We have a very deep and extensive knowledge of the interactions between chemical compounds and the elements composing the water systems. In developing and applying the best chemical products for our customers' water systems, we have acquired an important understanding of the mechanical, metallurgical and operational elements composing our customers' plants.

Our field personnel are mainly composed of engineers, chemical and mechanical, biologists and chemists. We assist our customers in problems beyond the application of our chemicals. We work with our customers' personnel to optimize the benefits of the use of our chemical products and to maximize the efficiency of these operations.

INNOVATIONS:

- Ashland Hercules Water Technologies is the first and only water treatment company to have ISO 9001 certifications for its field operations.
- Ashland Hercules Water Technologies is the only major water treatment company to have a service center and technical support in Jersey City and manufacturing facilities in Kearny NJ.
- Ashland Hercules Water Technologies was the first water treatment company to use and develop Molybdenum based chemical products to replace Chromate in open recirculating water systems.
- Ashland Hercules Water Technologies is a worldwide leader in oxidative chemistry. (oxidizing biocides)
- Ashland Hercules Water Technologies is the first water treatment company to offer a truly environmentally friendly treatment program utilizing non-chemical alternatives for the control of microbiological growth.

ISO 9001 CERTIFICATION

- ◆ All Ashland Hercules Water Technologies North American Manufacturing locations have ISO 9002 Certification
- ◆ Ashland Hercules Water Technologies Marketing , R & D, Laboratories, Field Sales and Services have ISO 9001 Certification
- ◆ Field Sales and Service will be more procedural including:
 - Service Plans
 - Systems Managers
 - ROI Documentation
 - Formal Customer Input- Review Meeting minutes
 - Field Equipment Calibration Reports/Procedures
- ◆ Only Water Treatment Company in North America with Field Sales and Service ISO 9001 Certification.

ASHLAND HERCULES WATER TECHNOLOGIES- A RESPONSIBLE CARE COMPANY

Ashland Hercules Water Technologies has adopted an environmental policy statement, which recognizes the importance of cooperating with local, state, national and international agencies. It also stresses our need to promote environmental concern among employees and the communities in which we operate.

Industry programs such as the Chemical Manufacturers Association's Responsible Care initiative guide the way we manage our facilities and how we respond to customer needs.

Demonstrating Ashland Hercules Water Technologies value in this area are numerous safety and information programs including Material Safety Data Sheet Database, 24-Hour Emergency Telephone "Hotline" 1-800-ASHLAND, our Experienced Regulatory Compliance Staff, and Chemical Drum Elimination Programs.

VENDOR QUALIFICATIONS

Ashland Hercules Water Technologies was created in 2008 and comprised of the former Chemical Testing Corp., Wright Chemical, Olin Water Services, Drew Industrial Divisions, and Hercules Chemical Company. Ashland Hercules Water Technologies customers enjoy all the benefits of the larger division. Personnel are trained specifically for the commercial and institutional marketplace at our Wilmington, Delaware World Headquarters.

Ashland Hercules Water Technologies is a division of Ashland Inc. and is a leading worldwide manufacturer of industrial chemicals and chemical specialties and North America's largest distributor of industrial chemicals and thermoplastic materials.

Employing more than 33,000 people worldwide, Ashland, Inc. has annual sales of approximately 8 billion and is one of the top 60 US industrial companies. Ashland is internationally known for VALVOLINE motor oils. As part of Ashland, Ashland Hercules Water Technologies has the advantage of tremendous buying power. This enables us to hold the line on raw material costs and pass those savings along to you, the customer.

QUALITY PLUS - THE ASHLAND HERCULES WATER TECHNOLOGIES QUALITY ASSURANCE POLICY

Ashland Hercules Water Technologies is committed to the manufacture of quality chemical products, the first time every time, which will meet or exceed the customer needs. Emphasis is placed upon the prevention of defects rather than the detection of defects. Our goal is to grow through the process of continuous improvement.

This provides the customer with the best value for their money. That value is determined by quality, price, service and delivery, as well as overall satisfaction in the way we do business.

Ashland Hercules Water Technologies programs for continuous improvement have enabled us to achieve many prestigious quality certifications - from Ford Q1 in North America to BS 5750 in the United Kingdom to ISO 9000 in various parts of the world.

Account Service Team

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NEW JERSEY

Primary Account Manager

Kevin Pidane

Customer Account Manager

12 years water treatment experience with AHWT/ NJ/NY/PA area

Resides in Hawthorne, New Jersey

Montclair State University- Montclair NJ

Masters Business Administration- Marketing

Montclair State University- Montclair NJ

Masters of Science- Molecular Biology

Rutgers University -New Brunswick, NJ

Bachelor of Arts- Biological Sciences

Area of Expertise: Core Cooling Water Applications, Wastewater, Boiler Water, Biofilm Formation/Removal, Pathogen Control including Legionella

Secondary Account Manager:

Ian Gaffney

Customer Account Manager

8 years water treatment experience with AHWT/ NJ/NY/PA area

Resides in Morristown, New Jersey

BS Environmental Economics and Management – University of Rhode Island

Area of Expertise: Pharmaceutical/Power Generation/General Manufacturing

PENNSYLVANIA

Primary Account Managers

Janna R. Cohen

Area Manager

15 years water treatment experience with AHWT/ PA – NJ- DE AREA

3 years Mechanical Contractor Systems Engineering, Building Controls, Mechanical Systems- Johnson Controls, Inc.- WASHINGTON DC- VA- PA- NJ AREA- Resides in

Resides in Southern New Jersey

BS – Virginia Commonwealth University, Richmond- Va

Associates degree in Mechanical Engineering

Licensed Pesticide Applicator

Area of Expertise: new construction/ university/ light industrial /commercial market.

Dan Murphy

Customer Account Manager

26 years in water treatment 8 years with AHWT

Resides in Delaware

BS in Engineering, United States Military Academy at West Point

Area of Expertise: HPI/CPI, Power, Food, Auto, C&I

NEW JERSEY & PENNSYLVANIA**Business Team Manager****Vince Marcucci**

Business Team Manager

25 years water treatment experience with AHWT

Resides in Southern New Jersey

BS Business Administration Penn State University

Licensed Pesticide Applicator

Area of Expertise: Food, Chemical, Commercial, Process, Liquid Solid Separation/
Filtration

References**Johnson Controls at Hoffman-La Roche**

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Johnson Controls at Hoffman-La Roche

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Johnson Controls at Agilent Technologies

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Andy Freese
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Bristol Myers-Squibb Mutiple Sites

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PSEG Linden Generating Station

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Ryan Paley
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PSEG Bergen Generating Station

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Dwayne Bent
Performance Engineer
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Dwayne.Bent@pseg.com

Proposed Services

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Thorough technical services are an integral part of any successful water treatment program. Ashland Hercules Water Technologies prides itself on providing a technically oriented water treatment program, which includes the following services.

- Service visits by the Account Manager or Full Service Representative on the boiler, condenser water systems and closed systems (as listed in the specifications). The services provided in these visits are as follows:
 - Testing of all pertinent water samples (Makeup, Active Condenser System)
 - Review of water treatment logs and of equipment operation
 - Inventory Control
 - Written report & oral communication of all findings submitted to facility personnel.
 - Pertinent HVAC equipment inspections
- Corrosion Coupon Testing for pertinent systems on a 90-day basis for mild steel and copper metallurgy using ASTM standards.
- Perform calibration checks and adjustments on all chemical feed pumps and control equipment.
- Provide detailed water treatment program operators manuals, product data sheets, material safety data sheets, and water treatment control logs as needed.
- On-site backup to be provided by Business Team Manager, Consulting and Technical Services Group and Marketing personnel as required.
- Quarterly Progress Reports summarizing projects and their results, changes in the operation of the existing system; new technology and techniques affecting the water treatment program, a graphical summary of corrosion coupon data, quarterly laboratory analysis, and an update of Drew's Systems Manager.
- Laboratory water and deposit analysis to be provided as required if unusual system conditions exist.

MICROBIOLOGICAL GROWTH TESTING

On-site microbiological testing will be performed during each service visit by our representative at the facility for open recirculating systems (while operating) and for closed recirculating water systems (while operating).

START-UP SERVICES

Included in the start-up services will be an initial cooling water operator training seminar, which includes video and classroom training. This training will include basic water chemistry and water treatment principles.

In addition, information specific to the products being used, including feed rate information, test procedures, data logging procedures, and handling of operational

upsets will be provided at each site to the engineering personnel directly involved in the water treatment program.

On going project lists including recommended improvements/ enhancements to the water treatment program will be developed for review and update quarterly.

EQUIPMENT INSPECTION

All major HVAC equipment, including heat exchangers, chillers, cooling towers, and associated piping will be inspected when equipment is off-line and available for inspection. A report documenting the conditions observed will be provided to site personnel. Cooling towers will be externally inspected each visit for extraordinary circumstances, i.e. water losses and algae growth.

LABORATORY SERVICES

Ashland Hercules Water Technologies has adopted an environmental policy statement, which recognizes the importance of cooperating with local, state, national and international agencies. It also stresses our need to promote environmental concern among employees and the communities in which we operate.

Industry programs such as the Chemical Manufacturers Association's Responsible Care initiative guide the way we manage our facilities and how we respond to customer needs. Demonstrating AHWT value in this area are numerous safety and information programs including Material Safety Data Sheet Database, 24-Hour Emergency Telephone "Hotline", our Experienced Regulatory Compliance Staff, and Chemical Drum Elimination Programs.

Ashland Hercules Water Technologies fully computerized laboratory at our world headquarters in Wilmington, Delaware, provides analytical and diagnostic work on the most difficult water and deposit related problems Including:

1. Atomic Absorption Spectroscopy
2. Infrared Analysis
3. Gas Chromatography
4. X-Ray Diffraction
5. Test Cooling Systems
6. Test Steam Generating Systems
7. Comprehensive wet chemical analyses
8. Ion chromatography
9. Atomic absorption spectrophotometry
10. Cold vapor atomic absorption
11. Inductively coupled plasma emission spectrometry (ICP)
12. X-ray powder diffraction (XRD)
13. X-ray fluorescence (XRF)
14. Zeolite resin evaluation

15. Total organic carbon analysis
16. Crystallography
17. Fuel oil analyses
18. Microbiological studies
19. Corrosion and metallographic analyses
20. Infrared spectroscopy
21. Gas chromatography
22. Ion chromatography - inductively coupled plasma spectrometry (IC-ICP)
23. Visual microscopy and photomicrography
24. Metallographic analysis

Routine analytical services are fully computerized. Raw data is fed to a computer, which makes analytical calculations and transmits to the Consulting and Technical Services Department. Their data is checked for accuracy and validity. Each customer location becomes a part of a central database. In seconds, the analytical history of a system can be retrieved and reviewed to determine future technical recommendations.

Systems Overview

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SYSTEM SURVEY All calculations are based on experience at the Raritan Facility and experience with similarly sized facilities. Operational data was calculated based on furnished data, theoretical calculations and estimates based on equipment size during facility surveys.

RARITAN OMP BUILDING, NEW JERSEY

Raritan OMP Cooling Calculations	
<i>Estimated Operational Data</i>	
Days of Operation	180 Days
Total Tower Volume	70,000 Gallons
Cycles of Concentration	6
Annual Blowdown	3,333,333 Gallons
Annual Makeup	20,000,000 Gallons
<i>Estimated Scale & Corrosion Inhibitor Calculations</i>	
Target Enviroplus 2503 in Tower	125 PPM
Enviroplus 2503 Daily Consumption	13.2 Pounds/Day
Enviroplus 2503 Annual Consumption	2367 Pounds/Year
<i>Estimated Oxidizing Biocide Calculations</i>	
Target Drewbrom One L in Tower	75 PPM
Dosages per Week	2 Dosages
Drewbrom One L Weekly Consumption	87.6 Pounds/Week
Drewbrom One L Annual Consumption	2278 Pounds/Year
<i>Estimated Non-Oxidizing Biocide Calculations</i>	
Target Biosperse 250 in Tower	100 PPM
Dosages per Week	1 Dosages
Biosperse 250 Weekly Consumption	58.4 Pounds/Week
Biosperse 250 Annual Consumption	1518 Pounds/Year

Raritan OMP Closed Loop Calculations	
<i>Chilled - Estimated Operational Data</i>	
Days of Operation	365 Days
System Volume	40000 Gallons
Annual Makeup	4000 Gallons
<i>Estimated Corrosion Inhibitor Calculations</i>	
Target Enviroplus CS in System	1250 PPM
Enviroplus CS Annual Consumption	459 Pounds/Year
<i>Hot - Estimated Operational Data</i>	
Days of Operation	365 Days
System Volume	10000 Gallons
Annual Makeup	1000 Gallons
<i>Estimated Corrosion Inhibitor Calculations</i>	
Target Drewgard 315 in System	8000 PPM
Drewgard 315 Annual Consumption	263 Pounds/Year

Raritan OMP Boiler Calculations	
<i>Estimated Operational Data</i>	
Days of Operations	365 Days
Steam	822,000 Pounds/Day
Feedwater	834,000 Pounds/Day
Condensate Returns	75% Estimate
Feedwater Cycles	70 Estimate
<i>Estimated Oxygen Scavenger Calculations</i>	
Dissolved Oxygen in Feedwater	0.007 PPM
Residual Sulfite Target in Boiler	40 PPM
Amersite 11 Daily Consumption	8.1 Pounds/Day
Amersite 11 Annual Consumption	2957 Pounds/Year
<i>Estimated Deposit Control Calculations</i>	
Calcium & Iron in Feedwater	0.05 PPM
Residual Inhibitor Target in Boiler	250 PPM
Advantage Plus 1465 Daily Consumption	1.4 Pounds/Day
Advantage Plus 1465 Annual Consumption	511 Pounds/Year
<i>Estimated Alkalinity Adjustment Calculations</i>	
Alkalinity in Feedwater	10 PPM
Target Alkalinity in Boiler at Cycles	300 PPM
Adjunct HL Daily Consumption	1.1 Pounds/Day
Adjunct HL Annual Consumption	402 Pounds/Year

RARITAN OCD BUILDING, NEW JERSEY

Raritan OCD Boiler Calculations	
<i>Estimated Operational Data</i>	
Days of Operations	365 Days
Steam	380,821 Pounds/Day
Feedwater	386,341 Pounds/Day
Condensate Returns	50% Estimate
Feedwater Cycles	70 Estimate
<i>Estimated Oxygen Scavenger Calculations</i>	
Dissolved Oxygen in Feedwater	0.1 PPM
Residual Sulfite Target in Boiler	40 PPM
Amersite 11 Daily Consumption	6.6 Pounds/Day
Amersite 11 Annual Consumption	2417 Pounds/Year
<i>Estimated Deposit Control Calculations</i>	
Calcium & Iron in Feedwater	0.05 PPM
Residual Inhibitor Target in Boiler	250 PPM
Advantage Plus 1465 Daily Consumption	1.9 Pounds/Day
Advantage Plus 1465 Annual Consumption	681 Pounds/Year
<i>Estimated Alkalinity Adjustment Calculations</i>	
Alkalinity in Feedwater	2 PPM
Target Alkalinity in Boiler at Cycles	300 PPM
Adjunct HL Daily Consumption	0.2 Pounds/Day
Adjunct HL Annual Consumption	73 Pounds/Year

Raritan OCD Closed Loop Calculations	
<i>Chilled - Estimated Operational Data</i>	
Days of Operation	365 Days
System Volume	75000 Gallons
Annual Makeup	37500 Gallons
<i>Estimated Corrosion Inhibitor Calculations</i>	
Target Enviroplus CS in System	1250 PPM
Enviroplus CS Annual Consumption	1173 Pounds/Year
<i>Hot - Estimated Operational Data</i>	
Days of Operation	365 Days
System Volume	10000 Gallons
Annual Makeup	500 Gallons
<i>Estimated Corrosion Inhibitor Calculations</i>	
Target Enviroplus CS in System	2500 PPM
Enviroplus CS Annual Consumption	219 Pounds/Year

Raritan OCD Cooling Calculations	
<i>Estimated Operational Data</i>	
Days of Operation	365 Days
Total Tower Volume	45,000 Gallons
Cycles of Concentration	6
Annual Blowdown	1,981,830 Gallons
Annual Makeup	14,869,360 Gallons
<i>Estimated Scale & Corrosion Inhibitor Calculations</i>	
Target Enviroplus 2503 in Tower	125 PPM
Enviroplus 2503 Daily Consumption	5.7 Pounds/Day
Enviroplus 2503 Annual Consumption	2066 Pounds/Year
<i>Estimated Oxidizing Biocide Calculations</i>	
Target Drewbrom One L in Tower	75 PPM
Dosages per Week	3 Dosages
Drewbrom One L Weekly Consumption	56.3 Pounds/Week
Drewbrom One L Annual Consumption	2927 Pounds/Year
<i>Estimated Non-Oxidizing Biocide Calculations</i>	
Target Biosperse 250 in Tower	100 PPM
Dosages per Week	1 Dosages
Biosperse 250 Weekly Consumption	37.5 Pounds/Week
Biosperse 250 Annual Consumption	1952 Pounds/Year

RARITAN PCC BUILDING, NEW JERSEY

Raritan PCC Cooling Calculations	
<i>Estimated Operational Data</i>	
Days of Operation	210 Days
Total Tower Volume	8,000 Gallons
Cycles of Concentration	6
Annual Blowdown	416,667 Gallons
Annual Makeup	2,500,000 Gallons
<i>Estimated Scale & Corrosion Inhibitor Calculations</i>	
Target Enviroplus 2503 in Tower	125 PPM
Enviroplus 2503 Daily Consumption	2.1 Pounds/Day
Enviroplus 2503 Annual Consumption	434 Pounds/Year
<i>Estimated Oxidizing Biocide Calculations</i>	
Target Drewbrom One L in Tower	75 PPM
Dosages per Week	3 Dosages
Drewbrom One L Weekly Consumption	15 Pounds/Week
Drewbrom One L Annual Consumption	450 Pounds/Year
<i>Estimated Non-Oxidizing Biocide Calculations</i>	
Target Biosperse 550 in Tower	100 PPM
Dosages per Week	1 Dosages
Biosperse 250 Weekly Consumption	6.7 Pounds/Week
Biosperse 250 Annual Consumption	200 Pounds/Year

Raritan PCC Closed Loop Calculations	
<i>Chilled - Estimated Operational Data</i>	
Days of Operation	365 Days
System Volume	12000 Gallons
Annual Makeup	6000 Gallons
<i>Estimated Corrosion Inhibitor Calculations</i>	
Target Enviroplus CS in System	1250 PPM
Enviroplus CS Annual Consumption	188 Pounds/Year
<i>Process - Estimated Operational Data</i>	
Days of Operation	365 Days
System Volume	10000 Gallons
Annual Makeup	5000 Gallons
<i>Estimated Corrosion Inhibitor Calculations</i>	
Target Enviroplus CS in System	1250 PPM
Enviroplus CS Annual Consumption	156 Pounds/Year
<i>Hot - Estimated Operational Data</i>	
Days of Operation	365 Days
System Volume	3000 Gallons
Annual Makeup	300 Gallons
<i>Estimated Corrosion Inhibitor Calculations</i>	
Target Drewgard 2808 in System	8000 PPM
Drewgard 2808 Annual Consumption	220 Pounds/Year

RARITAN BIOTECH BUILDING, NEW JERSEY

Raritan Biotech Closed Loop Calculations	
<i>Closed Loop - Estimated Operational Data</i>	
Days of Operation	365 Days
System Volume	4000 Gallons
Circulation Rate	1400 GPM
Annual Makeup	1000 Gallons
<i>Estimated Corrosion Inhibitor Calculations</i>	
Target Drewgard 2808 in System	4000 PPM
Drewgard 2808 Annual Consumption	167 Pounds/Year

Raritan Biotech Cooling Calculations	
<i>Estimated Operational Data</i>	
Days of Operation	180 Days
Total Tower Volume	2,500 Gallons
Cycles of Concentration	6
Annual Blowdown	208,333 Gallons
Annual Makeup	1,250,000 Gallons
<i>Estimated Scale & Corrosion Inhibitor Calculations</i>	
Target Drew 2215 in Tower	125 PPM
Drew 2215 Daily Consumption	1.2 Pounds/Day
Drew 2215 Annual Consumption	217 Pounds/Year
<i>Estimated Non-Oxidizing Biocide Calculations</i>	
Target Biosperse 3204 in Tower	100 PPM
Dosages per Week	2 Dosages
Biosperse 3204 Weekly Consumption	4.8 Pounds/Week
Biosperse 3204 Annual Consumption	125 Pounds/Year

RARITAN PRD BUILDING, NEW JERSEY

Raritan PRD Cooling Calculations	
<i>Estimated Operational Data</i>	
Days of Operation	210 Days
Total Tower Volume	6,000 Gallons
Cycles of Concentration	6
Annual Blowdown	500,000 Gallons
Annual Makeup	3,000,000 Gallons
<i>Estimated Scale & Corrosion Inhibitor Calculations</i>	
Target Drew 2215 in Tower	125 PPM
Drew 2215 Daily Consumption	2.5 Pounds/Day
Drew 2215 Annual Consumption	521 Pounds/Year
<i>Estimated Non-Oxidizing Biocide Calculations</i>	
Target Biosperse 3204 in Tower	100 PPM
Dosages per Week	2 Dosages
Biosperse 3204 Weekly Consumption	10.0 Pounds/Week
Biosperse 3204 Annual Consumption	300 Pounds/Year

Raritan PRD Closed Loop Calculations	
<i>Chilled - Estimated Operational Data</i>	
Days of Operation	365 Days
System Volume	3000 Gallons
Annual Makeup	750 Gallons
<i>Estimated Corrosion Inhibitor Calculations</i>	
Target Drewgard 2808 in System	4000 PPM
Drewgard 2808 Annual Consumption	125 Pounds/Year

TITUSVILLE, NEW JERSEY

Titusville Boiler Calculations	
<i>Estimated Operational Data</i>	
Days of Operations	180 Days
Steam	82,800 Pounds/Day
Feedwater	86,000 Pounds/Day
Condensate Returns	85% Estimate
Feedwater Cycles	25 Estimate
<i>Estimated Oxygen Scavenger Calculations</i>	
Dissolved Oxygen in Feedwater	0.1 PPM
Residual Sulfite Target in Boiler	40 PPM
Catalyzed Sulfite Daily Consumption	0.3 Pounds/Day
Catalyzed Sulfite Annual Consumption	54 Pounds/Year
<i>Estimated Deposit Control Calculations</i>	
Calcium in Feedwater	0.1 PPM
Residual Phosphate Target in Boiler	50 PPM
Advantage Plus 6445 Daily Consumption	1.9 Pounds/Day
Advantage Plus 6445 Annual Consumption	342 Pounds/Year
<i>Estimated Alkalinity Adjustment Calculations</i>	
Alkalinity in Feedwater	10 PPM
Target Alkalinity in Boiler at Cycles	400 PPM
Adjunct HL Daily Consumption	1.8 Pounds/Day
Adjunct HL Annual Consumption	324 Pounds/Year

Titusville Cooling Calculations	
<i>Estimated Operational Data</i>	
Days of Operation	180 Days
Tower Volume	15000 Gallons
Cycles of Concentration	8
Annual Blowdown	604,306 Gallons
Annual Makeup	5,332,114 Gallons
<i>Estimated Scale & Corrosion Inhibitor Calculations</i>	
Target Drew 2315 in Tower	125 PPM
Drew 2315 Daily Consumption	3.5 Pounds/Day
Drew 2315 Annual Consumption	630 Pounds/Year
<i>Estimated Oxidizing Biocide Calculations</i>	
Target Drewbrom One L in Tower	75 PPM
Dosages per Week	2 Dosages
Drewbrom One L Weekly Consumption	18.8 Pounds/Week
Drewbrom One L Annual Consumption	489 Pounds/Year
<i>Estimated Non-Oxidizing Biocide Calculations</i>	
Target Biosperse 250 in Tower	100 PPM
Dosages per Week	1 Dosages
Biosperse 250 Weekly Consumption	12.5 Pounds/Week
Biosperse 250 Annual Consumption	325 Pounds/Year

Titusville Closed Loop Calculations	
<i>Chilled - Estimated Operational Data</i>	
Days of Operation	365 Days
System Volume	10000 Gallons
Circulation Rate	1400 GPM
Annual Makeup	1000 Gallons
<i>Estimated Corrosion Inhibitor Calculations</i>	
Target Drewgard 2808 in System	4000 PPM
Drewgard 2808 Annual Consumption	367 Pounds/Year
<i>Hot - Estimated Operational Data</i>	
Days of Operation	365 Days
System Volume	10000 Gallons
Annual Makeup	1000 Gallons
<i>Estimated Corrosion Inhibitor Calculations</i>	
Target Drewgard 2808 in System	8000 PPM
Drewgard 2808 Annual Consumption	734 Pounds/Year

SPRING HOUSE, PENNSYLVANIA

Springhouse Boiler Calculations		
<i>Estimated Operational Data</i>		
Days of Operations	365	Days
Steam	293,136	Pounds/Day
Feedwater	305,350	Pounds/Day
Condensate Returns	85%	Estimate
Feedwater Cycles	25	Estimate
<i>Estimated Oxygen Scavenger Calculations</i>		
Dissolved Oxygen in Feedwater	0.05	PPM
Residual Sulfite Target in Boiler	40	PPM
Amersite 11 Daily Consumption	9	Pounds/Day
Amersite 11 Annual Consumption	3285	Pounds/Year
<i>Estimated Deposit Control Calculations</i>		
Calcium in Feedwater	0.1	PPM
Residual Phosphate Target in Boiler	50	PPM
Advantage Plus 6445 Daily Consumption	6.8	Pounds/Day
Advantage Plus 6445 Annual Consumption	2482	Pounds/Year
<i>Estimated Alkalinity Adjustment Calculations</i>		
Alkalinity in Feedwater	10	PPM
Target Alkalinity in Boiler at Cycles	400	PPM
Adjunct HL Daily Consumption	3	Pounds/Day
Adjunct HL Annual Consumption	1095	Pounds/Year

Springhouse Cooling Calculations	
<i>Estimated Operational Data</i>	
Days of Operation	365 Days
Tower Volume	30000 Gallons
Cycles of Concentration	5
Annual Blowdown	2,120,312 Gallons
Annual Makeup	7,486,968 Gallons
<i>Estimated Scale & Corrosion Inhibitor Calculations</i>	
Target Drew 2315 in Tower	125 PPM
Drew 2315 Daily Consumption	6 Pounds/Day
Drew 2315 Annual Consumption	2210 Pounds/Year
<i>Estimated Oxidizing Biocide Calculations</i>	
Target Drewbrom One L in Tower	75 PPM
Dosages per Week	2 Dosages
Drewbrom One L Weekly Consumption	37 Pounds/Week
Drewbrom One L Annual Consumption	1950 Pounds/Year
<i>Estimated Non-Oxidizing Biocide Calculations</i>	
Target Biosperse 250 in Tower	100 PPM
Dosages per Week	1 Dosages
Biosperse 250 Weekly Consumption	25 Pounds/Week
Biosperse 250 Annual Consumption	1300 Pounds/Year

Springhouse Closed Loop Calculations	
<i>Hot and Chilled - Estimated Operational Data</i>	
Days of Operation	365 Days
System Volume	10,000 Gallons
Circulation Rate	GPM
Annual Makeup	5204 Gallons
<i>Estimated Corrosion Inhibitor Calculations</i>	
Target Drewgard 2808 in System	4000 PPM
Drewgard 2808 Annual Consumption	1261 Pounds/Year

MALVERN, PENNSYLVANIA

Malvern Boiler Calculations		
<i>Estimated Operational Data</i>		
Days of Operations	365	Days
Steam	120,724	Pounds/Day
Feedwater	125,755	Pounds/Day
Condensate Returns	90%	Estimate
Feedwater Cycles	25	Estimate
<i>Estimated Oxygen Scavenger Calculations</i>		
Dissolved Oxygen in Feedwater	0.05	PPM
Residual Sulfite Target in Boiler	40	PPM
Amersite 11 Daily Consumption	3.7	Pounds/Day
Amersite 11 Annual Consumption	1351	Pounds/Year
<i>Estimated Deposit Control Calculations</i>		
Calcium in Feedwater	0.1	PPM
Residual Phosphate Target in Boiler	50	PPM
Advantage Plus 6445 Daily Consumption	2.8	Pounds/Day
Advantage Plus 6445 Annual Consumption	1022	Pounds/Year
<i>Estimated Alkalinity Adjustment Calculations</i>		
Alkalinity in Feedwater	10	PPM
Target Alkalinity in Boiler at Cycles	400	PPM
Adjunct HL Daily Consumption	3	Pounds/Day
Adjunct HL Annual Consumption	1095	Pounds/Year

Malvern Closed Loop Calculations		
<i>Hot and Chilled - Estimated Operational Data</i>		
Days of Operation	365	Days
System Volume	10000	Gallons
Circulation Rate		GPM
Annual Makeup	5000	Gallons
<i>Estimated Corrosion Inhibitor Calculations</i>		
Target Drewgard 2808 in System	4000	PPM
Drewgard 2808 Annual Consumption	750	Pounds/Year

RADNOR, PENNSYLVANIA

Radnor Cooling Calculations	
<i>Estimated Operational Data</i>	
Days of Operation	365 Days
Tower Volume	30000 Gallons
Cycles of Concentration	5
Annual Blowdown	2,440,170 Gallons
Annual Makeup	12,179,850 Gallons
<i>Estimated Scale & Corrosion Inhibitor Calculations</i>	
Target Drew 2315 in Tower	125 PPM
Drew 2315 Daily Consumption	6.9 Pounds/Day
Drew 2315 Annual Consumption	2544 Pounds/Year
<i>Estimated Oxidizing Biocide Calculations</i>	
Target Drewbrom One L in Tower	75 PPM
Dosages per Week	2 Dosages
Drewbrom One L Weekly Consumption	37 Pounds/Week
Drewbrom One L Annual Consumption	1950 Pounds/Year
<i>Estimated Non-Oxidizing Biocide Calculations</i>	
Target Biosperse 250 in Tower	100 PPM
Dosages per Week	1 Dosages
Biosperse 250 Weekly Consumption	25 Pounds/Week
Biosperse 250 Annual Consumption	1300 Pounds/Year

Radnor Closed Loop Calculations	
<i>Hot and Chilled - Estimated Operational Data</i>	
Days of Operation	365 Days
System Volume	10,000 Gallons
Circulation Rate	GPM
Annual Makeup	5000 Gallons
<i>Estimated Corrosion Inhibitor Calculations</i>	
Target Drewgard 2808 in System	4000 PPM
Drewgard 2808 Annual Consumption	1261 Pounds/Year

Radnor Boiler Calculations		
<i>Estimated Operational Data</i>		
Days of Operations	365	Days
Steam	317,952	Pounds/Day
Feedwater	331,200	Pounds/Day
Condensate Returns	60%	Estimate
Feedwater Cycles	25	Estimate
<i>Estimated Oxygen Scavenger Calculations</i>		
Dissolved Oxygen in Feedwater	0.05	PPM
Residual Sulfite Target in Boiler	40	PPM
Amersite 11 Daily Consumption	9.8	Pounds/Day
Amersite 11 Annual Consumption	3577	Pounds/Year
<i>Estimated Deposit Control Calculations</i>		
Calcium in Feedwater	0.1	PPM
Residual Phosphate Target in Boiler	50	PPM
Advantage Plus 6445 Daily Consumption	7.4	Pounds/Day
Advantage Plus 6445 Annual Consumption	2700	Pounds/Year
<i>Estimated Alkalinity Adjustment Calculations</i>		
Alkalinity in Feedwater	10	PPM
Target Alkalinity in Boiler at Cycles	400	PPM
Adjunct HL Daily Consumption	3	Pounds/Day
Adjunct HL Annual Consumption	1095	Pounds/Year

Financials

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The following tables were calculated by using Ashland Hercules Water Technologies experience treating systems similar to those at your facility. Chemical and water consumption can vary if system operation differs from the data provided above.

RARITAN OMP BUILDING, NEW JERSEY

Raritan OMP						
Tower	Product	Annual Blowdown Treated in Gallons		Annual Makeup in Gallons	Target ppm	Pounds/Year
Inhibitor	Enviroplus 2503	2,270,907		13,625,440	125	2367
Biocide Type	Product	Volume	Target ppm	Weekly Feed Cycles	Pounds/Week	Pounds/Year
Non-Oxidizing Biocide	Biosperse 250	70000	100	1	58.4	1518
Oxidizing Biocide	Drewbrom One L	70000	75	2	87.6	2277
Chilled Loop	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Enviroplus CS	40000	4000	1250	459	
Hot Loop	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Drewgard 315	12000	600	2500	263	
Boilers	Product	Annual Steam		Condensate Return	Cycles	Pounds/Year
Deposit Inhibitor	Advantage Plus1465					511
Oxygen Scavenger	Amersite 11	300,030,000		75%	70	2957
Alkalinity Adjustment	Adjunct HL					402

Total Annual Investment	\$	37,586.14
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RARITAN OCD BUILDING, NEW JERSEY

Raritan OCD						
Tower	Product	Annual Blowdown Treated in Gallons		Annual Makeup in Gallons	Target ppm	Pounds/Year
Inhibitor	Enviroplus 2503	1,981,830		14,869,360	125	2066
Biocide Type	Product	Volume	Target ppm	Weekly Feed Cycles	Pounds/Week	Pounds/Year
Non-Oxidizing Biocide	Biosperse 250	45000	100	1	37.5	1952
Oxidizing Biocide	Drewbrom One L	45000	75	2	56.3	2927
Chilled Loop	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Enviroplus CS	75000	37500	1250	1173	
Hot Loop	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Enviroplus CS	10000	500	2500	219	
Boilers	Product	Annual Steam		Condensate Return	Cycles	Pounds/Year
Deposit Inhibitor	Advantage Plus 1465					681
Oxygen Scavenger	Amersite 11	138,999,665		50%	70	2417
Alkalinity Adjustment	Adjunct HL					73

Total Annual Investment	\$	40,296.09
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RARITAN PCC BUILDING, NEW JERSEY

Raritan PCC						
Tower	Product	Annual Blowdown Treated in Gallons		Annual Makeup in Gallons	Target ppm	Pounds/Year
Inhibitor	Enviroplus 2503	416,667		2,500,000	125	434
Biocide Type	Product	Volume	Target ppm	Weekly Feed Cycles	Pounds/Week	Pounds/Year
Non-Oxidizing Biocide	Biosperse 550	8000	100	1	6.7	200
Oxidizing Biocide	Drewbrom One L	8000	75	3	15.0	450
Chilled Loop	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Enviroplus CS	12000	6000	1250	188	
Process Loop	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Enviroplus CS	10000	5000	1250	156	
Hot Loop	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Drewgard 2808	3000	300	8000	220	

Total Annual Investment	\$	5,719.53
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RARITAN BIOTECH BUILDING, NEW JERSEY

Raritan Biotech						
Tower	Product	Annual Blowdown Treated in Gallons		Annual Makeup in Gallons	Target ppm	Pounds/Year
Inhibitor	Drew 2215	208,333		1,250,000	125	217
Biocide Type	Product	Volume	Target ppm	Weekly Feed Cycles	Pounds/Week	Pounds/Year
Non-Oxidizing Biocide	Biosperse 3204	2500	100	2	4.2	125
Chilled Loop						
Inhibitor	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Drewgard 2808	4000	1000	4000	167	

Currently, the Cooling Tower at this building employs a non-chemical device. The above treatment program takes the traditional approach. If Johnson Controls prefers to keep this system non-chemical, Ashland Hercules Water Technologies has Sonoxide® Technology which uses low frequency ultrasound for water treatment control. If there is interest in Sonoxide, information can be provided on the technology and a survey will be scheduled.

Total Annual Investment	\$	2,467.16
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RARITAN PRD BUILDING, NEW JERSEY

Raritan PRD						
Tower	Product	Annual Blowdown Treated in Gallons		Annual Makeup in Gallons	Target ppm	Pounds/Year
Inhibitor	Drew 2215	500,000		3,000,000	125	521
Biocide Type	Product	Volume	Target ppm	Weekly Feed Cycles	Pounds/Week	Pounds/Year
Non-Oxidizing Biocide	Biosperse 3204	6000	100	2	10.0	300
Chilled Loop						
Inhibitor	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Drewgard 2808	3000	750	4000	125	

Total Annual Investment	\$	4,276.39
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TITUSVILLE, NEW JERSEY

Titusville						
Tower	Product	Annual Blowdown in Gallons		Annual Makeup in Gallons	Target ppm	Pounds/ Year
Inhibitor	Drew 2315	604,306		5,332,114	125	630
Biocide Type	Product	Volume	Target ppm	Weekly Feed Cycles	Pounds/ Week	Pounds/ Year
Non-Oxidizing Biocide	Biosperse 250	15000	100	1	12.5	325
Oxidizing Biocide	Drewbrom One L	15000	75	2	18.8	488
Chilled Loop						
	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Drewgard 2808	10000	1000	4000	367	
Hot Loop						
	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Drewgard 2808	10000	1000	8000	734	
Boilers						
	Product	Annual Steam		Condensate Return	Cycles	Pounds/ Year
Depost Inhibitor	Advantage Plus 6445					342
Oxygen Scavenger	Catalyzed Sulfite	14,904,000		85%	25	54
Alkalinity Adjustment	Adjunct HL					324

Total Annual Investment	\$	8,349.78
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SPRING HOUSE, PENNSYLVANIA

Spring House						
Tower	Product	Annual Blowdown Treated in Gallons		Annual Makeup in Gallons	Target ppm	Pounds/Year
Inhibitor	Drew 2315	2,120,312		7,486,968	125	2210
Biocide Type	Product	Volume	Target ppm	Weekly Feed Cycles	Pounds/Week	Pounds/Year
Non-Oxidizing Biocide	Biosperse 250	30000	100	1	25.0	1300
Oxidizing Biocide	Drewbrom One L	30000	75	2	37.5	1950
Chilled Loop	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Drewgard 2808	10000	2602	4000	420	
Hot Loop	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Drewgard 2808	10000	2602	8000	841	
Boilers	Product	Annual Steam		Condensate Return	Cycles	Pounds/Year
Depost Inhibitor	Advantage Plus 6445					2482
Oxygen Scavenger	Amersite 11	106,994,640		85%	25	3285
Alkalinity Adjustment	Adjunct HL					1095

The proposed pricing includes the quarterly visits for Inspection and records and semi-annual visits for Mechanical Function Checks on the following equipment:

1. Boiler Feed Reverse Osmosis System:
 - a. Triplex Water Softeners
 - b. Simplex Carbon Filters
 - c. Duplex RO System
 - d. 1000 gallon Storage Tank
 - e. Simplex VFD Pump
 - f. Simplex MMF Condensate Return Polisher
2. Cooling Tower:
 - a. (2) Duplex MMF 24" Diameter Filter
3. Hot Water System
 - a. Simplex Softener

Total Annual Investment	\$	47,247.85
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MALVERN, PENNSYLVANIA

Malvern						
Chilled Loop	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Drewgard 2808	5000	2500	4000	250	
Hot Loop	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Drewgard 2808	5000	2500	8000	500	
Boilers	Product	Annual Steam	Condensate Return	Cycles	Pounds/Year	
Depost Inhibitor	Advantage Plus 6445				1022	
Oxygen Scavenger	Amersite 11	44,064,260	90%	25	1351	
Alkalinity Adjustment	Adjunct HL				1095	
Steam Line Treatment	Amercor 1848				500	

Total Annual Investment	\$	9,483.57
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RADNOR, PENNSYLVANIA

Radnor						
Tower	Product	Annual Blowdown Treated in Gallons	Annual Makeup in Gallons	Target ppm	Pounds/Year	
Inhibitor	Drew 2315	2,440,170	12,179,850	125	2544	
Biocide Type	Product	Volume	Target ppm	Weekly Feed Cycles	Pounds/Week	Pounds/Year
Non-Oxidizing Biocide	Biosperse 250	30000	100	1	25.0	1300
Oxidizing Biocide	Drewbrom One L	30000	75	2	37.5	1950
Chilled Loop	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Drewgard 2808	10000	2602	4000	420	
Hot Loop	Product	Volume	Makeup	Target ppm	Estimated Annual Pounds/Year	
Inhibitor	Drewgard 2808	10000	2602	8000	841	
Boilers	Product	Annual Steam	Condensate Return	Cycles	Pounds/Year	
Depost Inhibitor	Advantage Plus 6445				2700	
Oxygen Scavenger	Amersite 11	116,052,480	60%	25	3577	
Alkalinity Adjustment	Adjunct HL				1095	
Steam Line Treatment	Amercor 1848				500	

Total Annual Investment	\$	40,957.04
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FINANCIAL REVIEW

The following summarizes the tables that were calculated above. All calculations were performed using data collected during the survey period and by using our experience at similar facilities.

Titusville	Annual Investment	
\$		8,349.78
Raritan - OMP	Annual Investment	
\$		37,586.14
Raritan - OCD	Annual Investment	
\$		40,296.09
Raritan - PCC	Annual Investment	
\$		5,719.53
Raritan - PRD	Annual Investment	
\$		4,276.39
Raritan - Biotech	Annual Investment	
\$		2,467.16
Spring House	Annual Investment	
\$		47,247.85
Malvern	Annual Investment	
\$		9,483.57
Radnor	Annual Investment	
\$		40,957.04
Total Annual Investment		\$ 196,383.55

Currently, Ashland Hercules Water Technologies has business with Johnson Controls at the Raritan, New Jersey locations. If we are awarded the additional sites discussed in this proposal, Ashland Hercules Water Technologies, in an effort to reduce overall costs, will offer an additional 10% across the board discount on services listed above.

The following summarizes the potential annual investment contingent upon awarding all business to Ashland Hercules Water Technologies. This could result in an approximate savings of \$20,000 year.

Titusville	Discounted Annual Investment
\$	7,514.80
Raritan - OMP	Discounted Annual Investment
\$	33,827.53
Raritan - OCD	Discounted Annual Investment
\$	36,266.48
Raritan - PCC	Discounted Annual Investment
\$	5,147.58
Raritan - PRD	Discounted Annual Investment
\$	3,848.75
Raritan - Biotech	Discounted Annual Investment
\$	2,220.45
Spring House	Discounted Annual Investment
\$	42,523.06
Malvern	Discounted Annual Investment
\$	8,535.21
Radnor	Discounted Annual Investment
\$	36,861.34
Total Annual Investment after Discount	
	\$ 176,745.19

Product Descriptions & Control Ranges VII

A brief description is provided for each product recommended for use at Johnson Controls at Johnson & Johnson included in this bid document.

COOLING TOWER CORROSION & SCALE TREATMENT

COOLING TOWER TREATMENT PROGRAMS		
Product	Function	Target Range
ENVIROPLUS® 2503	Scale & Corrosion Inhibitor	1.7-2.3 ppm as o-PO ₄
DREW™ 2215	Scale & Corrosion Inhibitor	1.8-2.2 ppm as o-PO ₄
DREW™ 2315	Scale & Corrosion Inhibitor	1.0-1.4 ppm as Mo ₆
BIOSPERSE® 250	Non-Oxidizing Biocide	75-150 ppm
BIOSPERSE® 550	Non-Oxidizing Biocide	75-150 ppm
BIOSPERSE® 3204	Non-Oxidizing Biocide	75-150 ppm
DREWBROM® ONE L	Oxidizing Biocide	50-100 ppm

ENVIROPLUS® 2503 Cooling Water Treatment

ENVIROPLUS 2503 cooling water treatment is part of the environmentally friendly ENVIROPLUS line of cooling water treatment products. This innovative line of products has been designed for high performance in open recirculating water systems with minimal impact on the environment through the use of biodegradable and renewable components. The products exhibit improved effluent toxicity, containing no heavy metals and greatly reduced phosphorus, while providing superior performance.

ENVIROPLUS products help to minimize the degree to which discharged cooling water needs to be treated before encountering the environment. This profile of ENVIROPLUS products enables plants to comply with increasingly stringent discharge regulations.

DREW™ 2215 Cooling Water Treatment

DREW 2215 cooling water treatment is part of the high-performance, revolutionary PERFORMAX MILLENNIUM series of cooling water treatment products. This unique series of products contains patented¹ complex formulations designed to provide outstanding corrosion and deposit control by means of an optimized blend of both anodic and cathodic-based corrosion inhibitors. PERFORMAX MILLENNIUM treatment programs are fully compatible with conventional oxidizing microbiocides, such as chlorine and bromine. In addition to maximizing system performance, DREW 2215 cooling water treatment includes environmentally responsible components to assist plants in complying with increasingly stringent discharge regulations. The environmental profile of the PERFORMAX MILLENNIUM series of treatment products assists in minimizing the environmental impact of treated cooling tower water being discharged.

DREW™ 2315 Cooling Water Treatment

DREW 2315 cooling water treatment is part of the high-performance, revolutionary PERFORMAX MILLENNIUM series of cooling water treatment products. This unique series of products contains patented¹ complex formulations designed to provide outstanding corrosion and deposit control by means of an optimized blend of both anodic and cathodic-based corrosion inhibitors. PERFORMAX MILLENNIUM treatment programs are fully compatible with conventional oxidizing microbiocides, such as chlorine and bromine. In addition to maximizing system performance, DREW 2315 cooling water treatment includes environmentally responsible components to assist plants in complying with increasingly stringent discharge regulations. The environmental profile of the PERFORMAX MILLENNIUM series of treatment products assists in minimizing the environmental impact of treated cooling tower water being discharged.

COOLING TOWER MICROBIOLOGICAL TREATMENT**BIOSPERSE® 250**

BIOSPERSE 250 microbiocide is a broad-spectrum antimicrobial product designed specifically for control of bacteria, fungi and algae in industrial recirculating cooling water systems such as cooling towers, pasteurizers, air washers and evaporative condensers and for use as a preservative in aqueous metalworking fluids. BIOSPERSE 250 is an effective microbiocide for controlling slime forming bacteria, sulfate reducing bacteria, yeast and fungi in oil field injection water and other oil field water systems. For more details, please refer to product data sheet.

BIOSPERSE® 550

BIOSPERSE 550 microbiocide is a highly effective microbiocide for use in controlling bacteria including slime-forming bacteria, sulfate-reducing bacteria, fungi, yeast and algae in air washers and industrial scrubbing systems, recirculating cooling and process water systems including those that contain reverse osmosis membranes and service water and auxiliary systems, heat transfer systems, wastewater systems including wastewater sludge and holding tanks, paper mills and paper mill process water systems. For more details, please refer to product data sheet.

BIOSPERSE® 3204

BIOSPERSE 3204 microbial control agent is a broad-spectrum microbiocide for control of algae, bacteria and fungi in recirculating commercial and recirculating industrial cooling water towers and in fresh water used in industrial processes. BIOSPERSE 3204 macrobial control agent is also used for control of mollusks in recirculating

cooling water and industrial process water systems. For more details, please refer to product data sheet.

DREWBROM® ONE L

DREWBROM ONE L microbiocide is a liquid, single-feed bromine biocide composed of stabilized bromine chloride. This single-component, ready-to-feed bromine technology provides the effectiveness and benefits of oxidative chemistry without the need for multiple chemical components and associated equipment. DREWBROM ONE L microbiocide is registered for use as a disinfectant, fungicide, algicide and/or slimicide for commercial and industrial recirculating cooling water systems, wastewater, industrial once-through cooling water systems, and pulp and paper mills. For more details, please refer to product data sheet.

CLOSED LOOP CORROSION TREATMENT

CHILLED WATER CLOSED LOOP CORROSION TREATMENT		
Product	Function	Target Range
DREWGARD® 2808	Corrosion Inhibitor	450-550 ppm as NO ₂
DREWGARD® 315	Corrosion Inhibitor	60-90 ppm as Mo ₆
ENVIROPLUS® CS	Corrosion Inhibitor	5-7.5 as organo-PO ₄

HOT WATER CLOSED LOOP CORROSION TREATMENT		
Product	Function	Target Range
DREWGARD® 2808	Corrosion Inhibitor	900-1100 ppm as NO ₂
DREWGARD® 315	Corrosion Inhibitor	120-180 ppm as Mo ₆
ENVIROPLUS® CS	Corrosion Inhibitor	10-15 ppm as organo-PO ₄

DREWGARD® 2808 Corrosion Inhibitor

DREWGARD 2808 corrosion inhibitor is an alkaline nitrite borate closed system formulation which includes a specific corrosion inhibitor for non-ferrous metals. DREWGARD 2808 corrosion inhibitor is designed to inhibit acid corrosion, oxygen corrosion and pitting, and is effective in protecting iron, steel, copper, brass, solder and other alloys used for piping, fixtures and valves associated with closed systems. DREWGARD 2808 corrosion inhibitor functions by laying down a passivating, non-porous protective film on the metal surfaces and by maintaining the system pH within the desired alkaline range.

DREWGARD® 315 Corrosion Inhibitor

DREWGARD 315 corrosion inhibitor is a molybdate-based product for corrosion control in closed cooling water systems. This product also contains a specific inhibitor for copper and copper alloys and a polymer for dispersion of hardness salts.

DREWGARD 315 corrosion inhibitor is suitable for use in chilled water systems, copper-bearing cooling systems, engine cooling systems and a variety of other non-evaporative cooling systems. The product provides corrosion protection for mild steel, brasses and cast iron; however, DREWGARD 315 corrosion inhibitor is *not* suitable for use in systems containing aluminum.

ENVIROPLUS® CS Corrosion Inhibitor

ENVIROPLUS CS corrosion inhibitor is a highly effective, environmentally responsible, multi-functional treatment designed to control corrosion in closed and semi-closed recirculating water systems. It utilizes a patent-pending synergistic blend of organic corrosion inhibitors and is designed for superior performance in process cooling systems, hot water and chilled water systems as well as mixed glycol-water systems.

Its chemistry is based upon organic compounds which together provide superior inhibitory performance in a variety of water qualities. Unlike traditional closed system technologies, ENVIROPLUS CS corrosion inhibitor does not rely on nitrites, molybdates, nor phosphates for corrosion control, yet it provides system protection equal to or exceeding today's current inhibitor technology.

BOILER WATER DEPOSIT TREATMENT

<i>BOILER WATER TREATMENT PROGRAM</i>		
<i>Product</i>	<i>Function</i>	<i>Target Range</i>
ADVANTAGE PLUS® 1465	Internal Deposit Control	0.7-1.0 as MoO ₄
ADVANTAGE PLUS® 6445	Internal Deposit Control	15-25 as PO ₄
AMERSITE® 11	Oxygen Scavenger	30-50 ppm as SO ₃
CATALYZED SULFITE	Oxygen Scavenger	30-50 ppm as SO ₃
AMERCOR® 1848	Condensate Treatment	Condensate pH of 8.0-8.5
ADJUNCT® HL	Alkalinity Adjustment	P-Alkalinity of 250-500 ppm as CaCO ₃

ADVANTAGE PLUS® 1465 Deposit Inhibitor

ADVANTAGE Plus 1465 deposit inhibitor is a highly effective, easy to feed and control, liquid treatment for steam generating systems. A polymer-based program, ADVANTAGE Plus 1465 deposit inhibitor advances this approach by combining new, innovative polymers with industry proven antiscalant technology.

ADVANTAGE PLUS® 6445 Deposit Inhibitor

ADVANTAGE Plus 6445 deposit inhibitor is a highly effective, easy to feed and control, liquid treatment for steam generating systems. A polymer-based program,

ADVANTAGE Plus 6445 deposit inhibitor advances this technology by combining new, innovative polymers with proven deposit inhibitors.

ADVANTAGE Plus 6445 deposit inhibitor inhibits the formation of hardness-based scale crystals, provides on-stream cleaning, and prevents the formation of iron insulating deposits.

BOILER WATER OXYGEN SCAVENGER

AMERSITE® 11 Corrosion Inhibitor

AMERSITE 11 corrosion inhibitor is used to prevent corrosion in steam generating systems by removing dissolved oxygen from the feedwater and boiler water. AMERSITE 11 corrosion inhibitor reacts with oxygen in water almost instantaneously even at low temperatures. This rapid rate of reaction provides greater protection to the boiler and preboiler section, especially where mechanical deaeration is not complete.

AMERSITE 11 corrosion inhibitor is a liquid blend of catalyzed sodium sulfite which has been specifically decharacterized in accordance with NSF guidelines for compounds to be used in meat and poultry plants.

CATALYZED SULFITE Corrosion Inhibitor

Catalyzed Sulfite corrosion inhibitor is a specially blended sodium sulfite product containing a catalyst to enhance its reactivity. It is used to prevent corrosion in a steam generating system by removing dissolved oxygen from feedwater and boiler water. Catalyzed Sulfite corrosion inhibitor reacts rapidly with oxygen in water to provide greater protection to the boiler and preboiler sections, particularly where mechanical deaeration is not complete.

BOILER WATER STEAMLINER & CONDENSATE TREATMENT

AMERCOR® 1848 Corrosion Inhibitor

AMERCOR 1848 corrosion inhibitor is a blend of neutralizing amines for use in steam condensate systems. The amines in AMERCOR 1848 corrosion inhibitor volatilize with the steam and neutralize carbon dioxide and other acidic contaminants, protecting the lines against corrosive attack. The selected amines provide effective protection in initial, intermediate, and distant portions of the steam condensate system. By reducing the pickup of iron and copper in the recycled condensate, AMERCOR 1848 corrosion inhibitor minimizes iron and copper deposits in the boiler. Since the amines return to the boiler with the recycled condensate, AMERCOR 1848 corrosion inhibitor provides economical treatment.

AMERCOR 1848 corrosion inhibitor was developed specifically for the needs of food plants. This special blend of amines provides maximum protection in FDA regulated facilities.

BOILER WATER ALKALINITY ADJUSTMENT

ADJUNCT[®] HL Corrosion Inhibitor

ADJUNCT H liquid corrosion inhibitor is a solution of pure alkali. It is used to raise the pH of feedwater and maintain the alkalinity of boiler water. Feedwater pH adjustment is needed to control corrosion. Adequate boiler water alkalinity is required to cause precipitation of calcium and magnesium hardness as the desired sludges and to prevent corrosion.