



BACK IN PERSON

Welcome to the 95th Annual Meeting  
of the Central States Water Environment Association

WISCONSIN | MINNESOTA | ILLINOIS



95TH ANNUAL MEETING

*Stronger Together*

MAY 17-19, 2022

MONONA TERRACE, MADISON, WISCONSIN

DAILY PLANNER

Download the CSWEA's  
95th Annual Meeting App





## Welcome to the 95th Annual Meeting



Jane Carlson,  
CSWEA President  
2021-2022

The Local Arrangements Committee is pleased to welcome you to CSWEA's 95th Annual Meeting at the Monona Terrace in beautiful downtown Madison, WI. Our theme this year is Stronger Together, which reflects the hope that we will be meeting again in person this year. The theme also reminds us that we are stronger when we work together instead of individually. It celebrates that we are stronger when we are together in all our diversity – race, ethnicity, age, technical background, gender and more. We are stronger when we work together on our core business of clean water and resource recovery, and when we work together on really big problems like climate change and environmental justice.

We have been working hard to provide a great annual meeting to disseminate technical and regulatory information, provide networking opportunities, conduct section and association business, honor award recipients, and provide time for our members to reconnect with friends and colleagues. The Annual Meeting starts on Tuesday with golf; a service project, and concurrent tours of stormwater practices and a waste treatment facility. The stormwater tour will be done by bike and e-bike (weather permitting) again this year. The day concludes with our social event at Monona Terrace. New this year, attendees will have access to the exhibit hall during the social event period, including starting the bidding for the silent auction which will raise funds for Global Water Stewardship.

Wednesday starts with a 5k fun run or walk before our opening keynote session. The opening session will include an inspirational discussion on being Stronger Together in our "new normal." We will then transition into technical sessions and the exhibit hall. We have a couple time periods reserved for 'exhibition only', and lunch will take place in the exhibit hall. In the afternoon, there are additional technical sessions followed by the exhibitor reception and meetings for the 7S Society, Golden Manhole Society, Young Professionals, and Global Water Stewardship groups. We will recognize outstanding members who do great things every day to support the water environment on Wednesday evening during the awards event.

The State Section Breakfast kicks off activities on Thursday, followed by technical sessions and the exhibit hall. Special tracks will include operator training in the morning and ethics in the afternoon. The Association Meeting and Luncheon will take place at mid-day.

Thanks to all who have worked to plan for this Annual Meeting, and a special thanks to Lindsey Busch for her leadership and expertise as chair of the local arrangements committee. We are Stronger Together, and we look forward to visiting with you at the conference!

*Win a **FREE** Yeti Cooler package!*

Make sure to take part in CSWEA's Annual Scavenger Hunt! Complete an entry form for a chance to win. The winner will be announced at the Annual Association Meeting Luncheon on Thursday, May 19th at 12:00 pm.

## Conference at a Glance

TUESDAY MAY 17		LOCATION	ROOM
10:00 am-3:00 pm	Golf Outing	Pleasantview Golf Course	---
1:00-4:00 pm	YP Service Project	Monona Terrace	---
12:30-3:45 pm	Stormwater Tour	Monona Terrace	---
2:00-4:00 pm	Plant Tour	Springfield Biogas Facility	---
4:00-5:30 pm	Tours Meet-up at Brewery	Great Dane Pub & Brewing Co. (Doty St.)	---
6:00-6:30 pm	Global Water Stewardship Annual Meeting	Monona Terrace	Meeting Room K
6:30-9:00 pm	Social / Meet & Greet	Monona Terrace	Grand Terrace

WEDNESDAY MAY 18		LOCATION	ROOM
6:30-7:45 am	5k Run/Walk	Lake Monona Bike Path	---
9:00 am-6:00 pm	Exhibits	Monona Terrace	Ballroom ABCD
8:00-9:00 am	Opening Session and Keynote	Monona Terrace	Grand Terrace
9:00-9:15 am	Morning Break	Monona Terrace	Hall of Ideas
9:15-10:15 am	Technical Sessions	Monona Terrace	Hall of Ideas EFGHIJ
10:15-11:00 am	Exhibits Only	Monona Terrace	Ballroom ABCD
11:00 am-12:00 pm	Technical Sessions	Monona Terrace	Hall of Ideas EFGHIJ
12:00-1:00 pm	Exhibitor Lunch	Monona Terrace	Ballroom ABCD
1:00-2:00 pm	Technical Sessions	Monona Terrace	Hall of Ideas EFGHIJ
2:00-2:30 pm	Poster Session I, Afternoon Break	Monona Terrace	Hall of Ideas
2:30-3:30 pm	Technical Sessions	Monona Terrace	Hall of Ideas EFGHIJ
3:30-6:00 pm	Exhibitor Reception	Monona Terrace	Ballroom ABCD
3:30-4:00 pm	7S Meeting	Monona Terrace	Hall of Ideas EH
4:00-4:30 pm	Golden Manhole Society	Monona Terrace	Hall of Ideas FI
4:30-5:00 pm	YP Gathering	Monona Terrace	Hall of Ideas G
5:00-6:00 pm	Annual Business Meeting	Monona Terrace	Hall of Ideas EH
6:30-7:00 pm	Awards Reception	Monona Terrace	Grand Terrace
7:00-9:00 pm	Annual CSWEA Awards Event	Monona Terrace	Grand Terrace

THURSDAY MAY 19		LOCATION	ROOM
7:30-8:30 am	State Section Business Meetings	Monona Terrace	Meeting Rooms K-R
9:00-11:30 am	Exhibits	Monona Terrace	Ballroom ABCD
9:00-10:00 am	Technical Sessions	Monona Terrace	Hall of Ideas GJFI
9:00-11:30 am	Ops Training	Monona Terrace	Hall of Ideas EH
10:00-10:30 am	Poster Session II, Morning Break	Monona Terrace	Hall of Ideas
10:30-11:30 am	Technical Sessions	Monona Terrace	Hall of Ideas GJFI
11:40 am	Silent Auction Bids Due	Monona Terrace	Ballroom ABCD
11:30 am-1:30 pm	Annual CSWEA Association Meeting	Monona Terrace	Grand Terrace
1:30-3:30 pm	Technical Sessions / Ethics	Monona Terrace	Hall of Ideas EFGHIJ

REGISTRATION HOURS		LOCATION
11:00 am-5:00 pm	Tuesday, May 17	Monona Terrace
8:00 am-5:00 pm	Wednesday, May 18	Monona Terrace
8:00 am-4:00 pm	Thursday, May 19	Monona Terrace

EXHIBIT HALL HOURS		LOCATION
2:00-6:00 pm	Tuesday, May 17	Exhibitor Set-Up
8:00 am-6:00 pm	Wednesday, May 18	Exhibit Hall Open
8:00-11:30 am	Thursday, May 19	Exhibit Hall Open
11:30 am-3:00 pm	Thursday, May 19	Exhibitor Move Out



# Technical Program

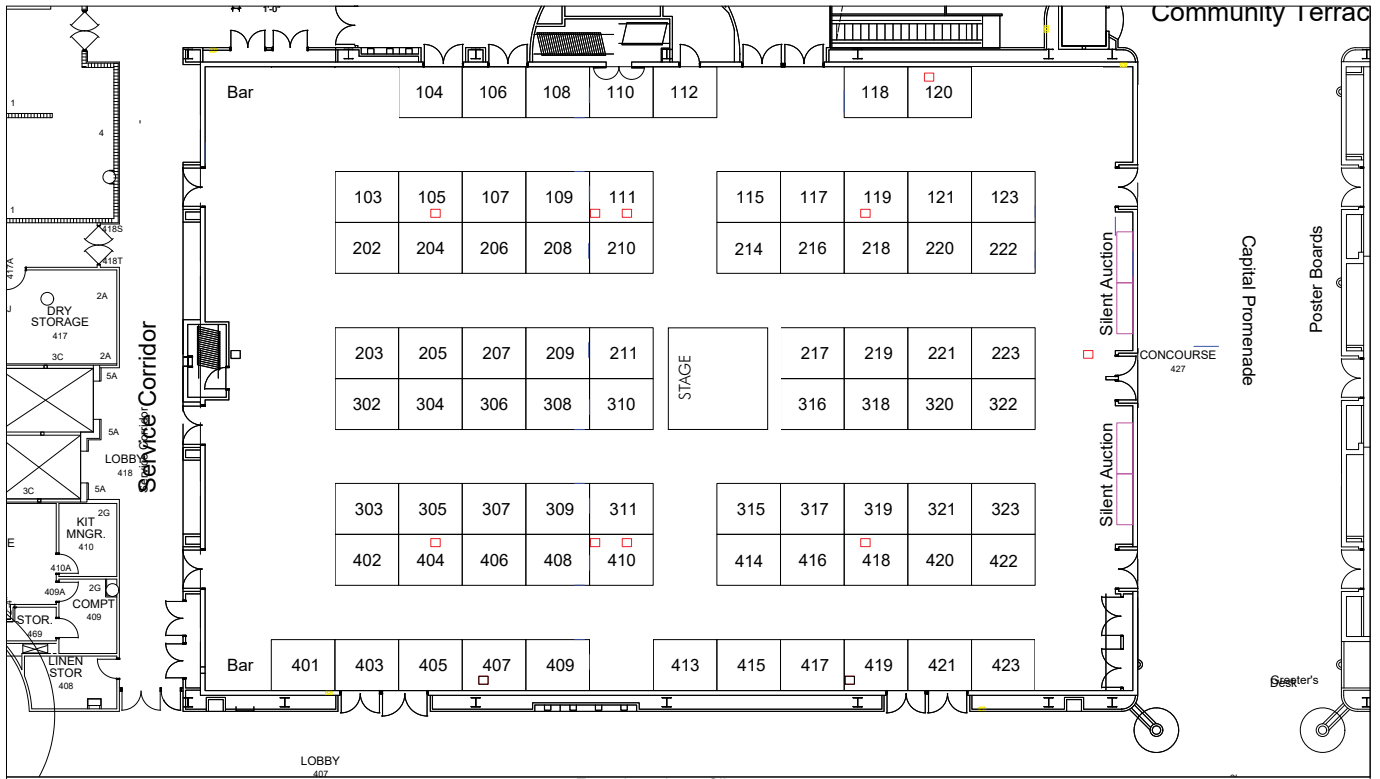
WEDNESDAY, MAY 18				
	Hall of Ideas Room FI	Hall of Ideas Room G	Hall of Ideas Room J	Hall of Ideas Room EH
	<b>Biomass Intensification</b>	<b>Utility Management</b>	<b>Filters for Secondary and Tertiary Treatment</b>	<b>Nutrient Management &amp; Recovery</b>
<b>Moderator</b>	<b>Matt Seib</b>	<b>Chris Buckley</b>	<b>Colin Fitzgerald</b>	<b>Shanna Czeck</b>
<b>YP Moderator</b>	<b>Quentin Hahn</b>	<b>Liz Kramer</b>	<b>Hunter Hermes</b>	<b>Anndee Huff Chester</b>
9:15-9:45	Latest Case Studies for Aerobic Granular Sludge in North America <b>Brett Quimby</b>	A Holistic Look at Infrastructure Replacements: The Madison Metropolitan Sewerage District's Energy Management Master Plan <b>Lindsey Busch</b>	The Old Dog Learns a New Trick: Rethinking The City of Waukesha's Tertiary Process to Achieve Ultra-Low Phosphorus Limits <b>Greg Markle</b>	Demystifying Sidestream Deammonification Application Practices <b>Eric Redmond</b>
9:45-10:15	Intensification Processes for BNR Upgrades - Technology Comparisons at Three Midwest WWTPs <b>Randall Wirtz</b>	So You Want to Set Up an I/I Program... <b>Jennifer Hurlebaus</b>	Comparison of Three Filter Technologies for Complying with Phosphorus Limits at the Oshkosh WWTP <b>Jim Fisher</b>	Two-Stage Partial-Nitritation/Anammox Process Demonstrates Stable and Efficient Treatment of High-Strength Digestate <b>Jonathan Liberzon</b>
<b>Break 10:15-11:00 AM</b>				
11:00-11:30	Enhancing the Activated Sludge Process Using CFD Modeling to Keep Granular Sludge in the System <b>Ed Wicklein</b>	The Unflushables Pilot Project <b>Sharon Thieszen</b>	Sustained 60 MGD for Consent Decree! <b>Katherine Merkle</b>	Single Stream Phosphorus and Ammonia Recovery in Community Anaerobic Digestion Projects <b>Rick Johnson</b>
11:30-12:00	Wasting Through the Spin Cycle <b>Colin Fitzgerald</b>	Diversity: How to Get More Mix in Your Mix Liquors <b>Nathaniel Tillis</b>	Enhanced Domestic Primary Wastewater Treatment Utilizing Pile Cloth Media Filtration for Operational Savings and Sustainability <b>John Dyson</b>	Plant Wide Effects of Magprex Phosphorous Removal System Implementation: Pilot to Full Scale <b>Gerhard Forstner</b>
<b>Exhibitor Lunch 12:00-1:00</b>				
	Hall of Ideas Room EH	Hall of Ideas Room FI	Hall of Ideas Room G	Hall of Ideas Room J
	<b>Advanced Activated Sludge</b>	<b>Digestion and Biosolids</b>	<b>Watershed P Approaches/Operational Challenges</b>	<b>Advanced Data Tools</b>
<b>Moderator</b>	<b>Matt Seib</b>	<b>Emma Larson</b>	<b>Colin Fitzgerald</b>	<b>Shanna Czeck</b>
<b>YP Moderator</b>	<b>Anndee Huff Chester</b>	<b>Quentin Hahn</b>	<b>Natalie Lenz</b>	
1:00-1:30	Carbon Optimization for Granular Sludge Systems <b>Leon Downing</b>	Are Biosolids Dryers in Your Future? <b>Dale Gabel</b>	Digital Solutions for Data Management and Visualization to Support Program Management of a Watershed-Based Approach for Phosphorus Compliance <b>Natalie Lenz</b>	Advanced Sewer Process Modeling to Develop Odor and Corrosion Solutions in Collection Systems <b>John Siczka</b>
1:30-2:00	Controlling Nitrogen and Phosphorus Removal in Suboxic Activated Sludge Treatment Processes <b>Tanja Rauch-Williams</b>	Cooking Without Gas: Reducing Sludge Management Costs Using Thermal Hydrolysis Process (THP) in Plants Without Anaerobic Digestion <b>Mohamed Abdelbadie</b>	Phosphorus Water Quality Trading Success: A Downstream Water Quality Trade in a Different Community <b>David Arnett</b>	Dynamic Watershed Characterization and Prioritization in Gwinnett County, GA <b>Ben Cray</b>
<b>Break 2:00-2:30</b>				
2:30-3:00	Full-Scale Demonstration of Low Energy BNR <b>Don Esping</b>	Polymer 101: Chemistry, Handling, Activation/Mixing, and Optimization <b>Yong Kim</b>	The Influent has Changed! Now What? <b>David Quast</b>	Expanding Your Toolbox: Using Data-Driven Tools for Process Decision Making <b>Brian Shoener</b>
3:00-3:30	Advanced Primary Treatment for Increased Biological Capacity in Existing Wastewater Treatment <b>Matthew Johnson</b>	Lessons Learned from Biosolids Drying <b>Travis Anderson</b>	Alternative Compliance Strategies for Phosphorus with Watershed Projects <b>Erin Delawalla</b>	Optimizing Lead Service Line Replacement with Machine Learning <b>Ankur Rathor</b>
<b>End of Day</b>				

## THURSDAY, MAY 19

	Hall of Ideas Room G	Hall of Ideas Room J	Hall of Ideas Room F	Hall of Ideas Room EH	Hall of Ideas Room I
	Novel Technology	Facility Management in Emergencies	S2EBPR	Resource Recovery & Energy (R2E)	Operations Track
Moderator	Matt Seib	Emma Larson	Chris Buckley	Colin Fitzgerald	
YP Moderator	Quentin Hahn		Natalie Lenz	Liz Kramer	
9:00-9:30	Addressing the Environmental Impacts of Chloride in Wastewater with a New Chloride-Specific Removal/ Recovery Technology <b>Margaret Lumley</b>	Emergency Repair of Metro Wastewater Force Mains Constructed of Prestressed Concrete Cylinder Pipe (PCCP) <b>Timothy Hewett</b>	Diversifying Carbon for Phosphorus Removal: Understanding RAS Fermentation and S2EBPR <b>Leon Downing</b>	Outside the Fence: How Resource Recovery Connects Wastewater Treatment to Other Industries and the Community Expert Panel Discussion  (Facilitated by <b>Gustavo Gallo-Chacon</b> )	Fundamentals of Wastewater Treatment <b>Mike Holland</b>
9:30-10:00	Utilizing the Revolving Algal Biofilm (RAB) System for Industrial Pretreatment in Sioux City, IA <b>Jens Dancer</b>	Pandemonium – Leveraging Procurement, Relationships, and Flexibility to Produce a Successful Project During a Pandemic <b>Amanda Streicher</b>	Lessons Learned from Early Side-Stream EBPR (S2EBPR) Adopters: How S2EBPR Can Increase Process Resiliency and Reduce Capital Costs <b>Bryan Coday</b>		
<b>Break 10:00-11:00</b>					
11:00-11:30	Treatment of High-Strength Brewery Wastewater with Enhanced Performance Metrics using Novel Anaerobic Ceramic Membrane Bioreactor Technology <b>Ashutosh Sharma</b>	It's 2:00 AM – Do You Know Where Your SCADA System Backup Is? <b>Mark Puckett</b>	Mixing Alternatives for S2EBPR <b>Jennifer Loconsole</b>	Committee Spotlight: State Section and Association-level Resource Recovery and Energy (R2E) Committees	Fundamentals of Wastewater Treatment (Cont.) <b>Mike Holland</b>
11:30-12:00	UV Technology's Role in Advanced Oxidation Processes as a Barrier Against Emerging Contaminants <b>Patrick Bollman</b>	Louisville MSD MFWQTC Emergency Biosolids Dryer Replacement Project <b>David Osborne</b>	Compressed Gas Mixing and Inline Fermentation Enhances Biological Phosphorus Removal <b>John Koch</b>		
<b>Lunch 12:00-1:30</b>					
	Hall of Ideas Room I	Hall of Ideas Room G	Hall of Ideas Room F	Hall of Ideas Room J	Hall of Ideas Room EH
	PFAS	Biogas & Renewables	N&P Removal	Stormwater	Ethics
Moderator	Emma Larson	Shanna Czeck	Colin Fitzgerald	Chris Buckley	
YP Moderator	Guisell Davila	Dan Thurston		Jake Krukowski	
1:30-2:00	Establishing the Impact of Pyrolysis on Removal of PFAS and Other Pollutants of Emerging Concern <b>Patrick McNamara</b>	Operational Best Practices of Anaerobic Digesters: Tips, Tricks, and Lessons Learned <b>Adam Parmenter</b>	What Have We Learned? An Operability Review of Low-Level Phosphorus Implementation <b>Troy Larson</b>	Prediction of Stormwater Pond TP Removal Performance by Limnological Investigation and Rapid Field Assessment Methods <b>David Austin</b>	Ethics Track <b>Mark Peterson</b>
2:00-2:30	Novel Approach to PFAS Removal Using a Highly Adsorbent Material and Robust Separator Minimizes Sorbent Usage and Waste Production <b>Dave Holland</b>	Path to Energy Neutrality: Energy Efficiency, External Feedstocks, CHP, and Solar <b>Mark Gockowski</b>	Low-Cost Nitrogen Removal and Optimization <b>Will Martin</b>	MnDOT's I35W Stormwater Storage Facility-Design and Constructing Hydraulic Resiliency with a CMGC Procurement Environment <b>Thomas Pullen</b>	
2:30-3:00	In-Depth Characterization of PFAS in Wastewater, a More Comprehensive Analysis <b>Taryn Mcknight</b>	Biogas to Pipeline RNG-Lincoln, NE Case Study <b>Kim Murdock-Timmerman</b>	Exploring the Carbon Balance in a Sidestream Enhanced Biological Phosphorus Removal (S2EBPR) Demonstration Facility <b>Derek Budsberg/Leon Downing</b>	Occurrence of Antibiotic Resistance Genes in Green Stormwater Infrastructure across Milwaukee County <b>Kassidy O'Malley</b>	
3:00-3:30	Synthetic Media as a Sustainable Treatment Solution for PFAS <b>Nicole Bolea</b>	Comparison of Life Cycle Costs at Operating Cogeneration and RNG Facilities <b>Becky Luna</b>	Achieving Low Effluent TP Limits with Enhanced Biological Phosphorus Removal in an Oxidation Ditch Process with Aerobic Digestion <b>Dennis Barnes</b>	Stormwater Quality and Flood Control in Monona's Tight Spaces <b>Jon Lindert</b>	
<b>End</b>					



# Exhibit Hall Layout



## CSWEA Annual Awards Event


**6:30 to 9:00 pm**

Join CSWEA as we explore updates about CSWEA activities from the outgoing president, hear the vision for the year ahead from our incoming president, and honor this year's award winners for the many WEF and CSWEA Awards presented to the very best of our industry.

Come early to connect with friends and enjoy refreshments before the Awards Banquet.

**6:30 to 7:00 pm – Social Reception.**  
**7:00 to 9:00 pm – Awards Presentations.**

The Annual CSWEA Awards Event is a ticketed event and includes a meal. Please remember to purchase a ticket and bring the ticket to the event.



## Global Water Stewardship Silent Auction

Support a great cause by attending the Silent Auction at the 2022 Annual Meeting will benefit Global Water Stewardship (GWS).

Since 2013, GWS has been addressing sanitation issues through a unique international exchange of know-how, and partnerships between professionals and communities. GWS resolves sanitation issues in the developing world by educating people and engineering sustainable centralized solutions that keep waterways clean and communities healthy. The program operates on a shoestring budget of \$10,000 and is a labor of love of many volunteers who have joined the cause over the years.

Auction items will be displayed in the Exhibit Hall. Support this amazing social and humanitarian effort by bidding on the items. Bids will be posted at 11:40 am on Thursday in the Exhibit Hall.

Learn more about GWS at [www.globalwaterstewardship.org](http://www.globalwaterstewardship.org).



**GLOBAL WATER STEWARDSHIP**

## Exhibit Hall

The Exhibit Hall will be open two days: Wednesday and Thursday, May 18 and 19, 2022. This year, there will be a Exhibit-Only Break from 10:15 to 11:00 am on Wednesday, for those who wish to attend. As well, the conference provides longer breaks during the technical sessions with refreshments in the exhibit hall.

**Exhibit-Only Break**  
**10:15 - 11:00 Wednesday**  
*Box Lunch and Reception Wednesday*

## EXHIBITORS

BOOTH #	EXHIBITOR
TBA	Adaptor Inc.
202	ADS Environmental Services
302	AllMax Software Inc.
203	Applied Technologies, Inc.
419	Aqua-Aerobic Systems, Inc.
214	Automatic Systems Co.
303	Baxter & Woodman, Inc.
117	BIOFerm Energy Systems
109	Blue-White Industries
321	Boerger, LLC
405	BPH Pump & Equipment, Inc.
104	Brierley Associates Corporation
223	Brown and Caldwell
107	Cady Aquastore Inc.
204	CB&I Storage Tank Solutions LLC
211	CSWEA
218	Centrisys/CNP
105	Chemtrade
319	CLEARAS Solutions Inc.
408	DN Tanks, LLC
421	Drydon Equipment, Inc.
118	Endress + Hauser Inc.
120	Energenecs
205	Engineered Sales Co./Valmet
311	Flygt Xylem
119	Forberg Smith Process Solutions
103	Foth Infrastructure and Environment
207	GS PlantOptics
406	Hobas Pipe USA
407	HydroCorp
305	IDEXX Laboratories, Inc.
110	InfoSense, Inc.
307	Inland Environmental Recourses
422	Integrated Process Solutions
416	Interstate Power Systems
115	Jim Jolly Sales, Inc.

BOOTH #	EXHIBITOR
216	LAI Ltd.
219	Lakeside Equipment Corp.
409	Midwest Chemical and Equipment
210	MSA Professional Services
318, 320, 322	Mulcahy Shaw Water
221	NISSEN Energy Inc.
410	Odle, Inc. Coating & Painting
111	Peterson and Matz, Inc.
206	Pumps and Controls
417	RDP Technologies
414	R.N.O.W., Inc.
323	Ruekert & Mielke, Inc.
123	SEH
220	Shand & Jurs Biogas
208	Sherwin Williams Paint Co.
418	SmartCover Systems
310	Stanley Consultants
306	Starnet Technologies
106	StormTrap
112	Strand Associates, Inc.
415	Strike Tool
304	Superior Tank Co. Inc.
420	Sustainable Generation
413	Symbiont Science, Engineering and Construction Inc.
317	Teledyne ISCO
316	Tomorrow Water
423	Trotter and Associates
121	Unison Solutions, Inc.
308	USALCO
309	USP Technologies
209	Visu Sewer Inc
108	VTScada
401, 402, 403, 404	William/Reid Ltd: A Division of Gasvoda & Associates
315	Xylem Sanitaire



95TH ANNUAL MEETING



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