

Collection Systems Conference 2018

Virginia Beach, Virginia, USA
8 - 11 April 2018

ISBN: 978-1-5108-6741-3

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2018) by Water Environment Federation (WEF)
All rights reserved.

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact Water Environment Federation (WEF)
at the address below.

Water Environment Federation (WEF)
601 Wythe Street
Alexandria, Virginia 22314
USA

Phone: 1-800-666-0206
Fax: 1-703-684-1545

csc@wef.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

SESSION 1 – ODOR CONTROL

Town of Cary, NC. Preventing a Collection System Odor Issue—From Concept Through Final Performance Test and Beyond	1
<i>J. Buchanan, R. Sprowl</i>	
Performance of Combined Two-Stage Biotower and Carbon System: When Great is Not Quite Good Enough	17
<i>C. Easter, M. Feltner, C. Wilson, A. Keisel</i>	

SESSION 2 - TRENCHLESS

Alternate Sewer Rehabilitation Methods: EXpanding the Toolbox	36
<i>J. Nagy, K. Hughes</i>	
Groundwater Impacts on Sewer Relocation using Trenchless Technologies Near and Under I-405 in Renton, Washington	46
<i>E. Waligorski, D. Christensen, M. Benoit</i>	
Pulled in All Directions: A Case Study in Maximizing Value with Risk Mitigation for an Urban Sewer Interceptor and Tunnels	60
<i>J. Farmer, K. Drumheller, B. Stone</i>	
Rehabilitating a Critical Large Diameter Sewer Under a Levee and a Historic Park	77
<i>M. Roder, G. Diaz, A. Hughes</i>	
Use the Force Luke! Rehabilitation Design, Bidding and Construction of a 100+ Year Old Parabolic Sanitary Sewer with Centrifugally Cast Cementitious Pipe Liner (CCCPL)	91
<i>J. Schroeder, M. Lehmann</i>	

SESSION 3 – SYSTEM ANALYSIS

Challenges Met and Lessons Learned from Managing a Consent Decree	97
<i>D. Eastall, C. Muscarella</i>	
Comparing Two Different Ways to Approach Pipeline Renewal Models	105
<i>D. Baranowski</i>	
Inspecting 100 Year Old Sewers - Which One Should We Inspect First to Understand Condition Assessment?	112
<i>S. Belz, C. Mazzei, C. Kontos, E. Dunn</i>	
Predicting and Preventing SSOs in a Wastewater Collection System	121
<i>R. Judy, J. Williams, W. Adams, A. Habibian</i>	
Risking It All: A Comprehensive Collection System Risk-Based Assessment in InfoMaster	125
<i>D. Ashworth, C. Carlson, C. Bondar, A. Kafray</i>	
Sewer System Data Analytics Substituting for Flow Monitoring	137
<i>F. Qiao, M. Wang</i>	

SESSION 4 – LOCAL I

Clearing the Fog Fats, Oils, and Grease Management and SSOs	147
<i>B. Werlein</i>	
HRSD’s Vision for Advanced Water Treatment and Managed Aquifer Recharge in Eastern Virginia, USA: Sustainable Water Initiative for Tomorrow (SWIFT)	153
<i>C. Bott, J. Dano, G. Salazar-Benites, C. Wilson, L. Zuravnsky, J. Mitchell, T. Nading, L. Schimmoller, D. Holloway, T. Henifin</i>	
Location, Assessment, and Repair of Wire Breaks on a 30- and 42-inch PCCP Force Main Fairfax County Department of Public Works and Environmental Services	156
<i>N. Schmidt, C. Weber</i>	
Rehabilitaiton of a 67.0 MGD Treatment Plant Influent Using Trenchless Technologies	168
<i>P. Longo, S. Fatah, B. Quaceknush</i>	

Tracking, Quantifying, And Mitigating Saltwater Inflow And Infiltration	171
<i>R. Radspinner, K. Peterson, R. Bohon</i>	
Presentation Summary	179
<i>D. Lankford</i>	

SESSION 5 - PLANNING

Challenges and Successful Strategies in Developing and Implementing a Capacity Assurance Program	186
<i>J. Herman, C. Prater</i>	
City of Airdrie Utility Master Planning: Integrating Overarching Inter-municipal Government Policies, Network Modelling and Asset Management to Ensure Sustainable and Sound Infrastructure for Short- and Long-Term Planning Needs	200
<i>S. Barbosa, G. Schulmeister</i>	
Evaluating Alternative Binder Materials for Sewer Collection System Concrete Structures to Reduce Fat, Oil, and Grease Related Sanitary Sewer Overflows	222
<i>S. Kusum, M. Pour-Ghaz, J. Ducoste</i>	
Next Generation Planning in the City of Los Angeles: Real Flow Projections for Long-Term Urban Metropolitan Growth	231
<i>A. Hagekhalil, A. Poosti, F. Gonzalez, J. Dennis, M. Mohandas, C. Ranck, V. Radhakrishnan, K. Johnson</i>	
Taking the Labels Off – Collaborative Approach to Regional Project Planning Yields District-Wide Benefits	247
<i>J. Mallore, J. Rehring, E. Corbett</i>	

SESSION 6 – SSO.CSO

A Case Study for Updating Design Storm Rainfall Hyetographs for Houston Public Works	253
<i>F. Rabbi, P. Pradhan, B. Vieux</i>	
Basic Hydraulics Alleviates a Thirty-Year-Old Overflow	267
<i>T. Turner, M. Easterbrook</i>	
Developing Solutions to Meet Regulatory Constraints and Long-Term Goals	273
<i>T. Bluver, T. Leach</i>	
Innovative Business Case Evaluation Guides Portland, Maine Through Tough Choices Among CSO Alternatives	297
<i>K. Mignone, N. Gallinaro, O. McCullough, G. Heath, J. Weiss</i>	
The Wastewater Tsunami is Coming – How Do We Stop It?	312
<i>N/A</i>	

SESSION 7 - POTPOURRI

Ground Truthing Oakland WWTP and Pump Station Flow Meters for Improved Peak Wet Weather Flow Management and Process Control City of Topeka, Kansas	324
<i>M. Lorenzo, A. Wright, G. Meyer, E. Meyer, S. Davis, M. Neiswender, Z. Stueve, E. Carman, J. Dodds, K. Salmon, D. Hagans</i>	
Integrated Plan Combining House-Level I/I Mitigation Program and GI Technology to Avoid Street Flooding – Case Study: Newton-Bedford Blueprint Columbus	340
<i>H. Gheith, Q. Lu</i>	
Managing Sewer Rehabilitation Design With the Push of a Button	353
<i>K. Iaukea</i>	
Pilot Flow Monitoring Program Tests Meter Capabilities	359
<i>J. Mallore, A. Atwater, K. Loyd, D. Wurst</i>	
The City Beautiful H2O Program Plan: An Integrated Wet Weather Plan for Pennsylvania’s Capital City	365
<i>J. Aldrich, C. Maulhardt</i>	
Using a Flow Dynamics 2D Model to Develop Street Flooding Solutions in a Highly Transited Urban Area	387
<i>Y. Catano-Lopera, D. Bedoya</i>	
Using Remote Sensors in the Collection System to Protect Treatment Processes	398
<i>P. Bixel, H. Phillips, A. Kurkowski, J. Foster, F. Koder, T. Roberts, I. Speer, D. McAllister</i>	

SESSION 8 – PUMP STATIONS

Cost-Effectively Upgrading an Old, Combined Sewer Pump Station 412
A. Schreiber, J. Celik, R. Atoulikian, D. Mohn

Difficult Run – It’s More than Just a Name Best Practices from Restoring a 36” Wastewater Force Main and Pump Station 429
F. Buser, A. Royse

No One Wants It but Everyone Needs It - Building an 8.5 mgd Wastewater System for the 5-Billion Dollar Mile 434
A. Hartle, C. Barnard, M. Kawasmi, J. Pannell

Preparing for the Unexpected During Design and Construction 445
S. McCreary, T. Weaver, J. Springer

SESSION 9 – LESSONS LEARNED

\$450 Million Asset Management Grant Program in Michigan: What Have We Learned? 457
G. Kacvinsky, K. Curie

Application of a Chemically Enhanced Retention Treatment Basin in Reducing CSO and Pollutant Loading into the Detroit River 474
J. Li, P. Drca

Little Cuyahoga Interceptor Slipline Replacement 481
J. Shelton

Unexpected History Lesson and Contractual Deal Making: Lessons Learned from a Large-Diameter Force Main Replacement Project in Downtown Norfolk; Home to Historical Landmarks, High-Rise Buildings, Critical Stakeholders, and Innovative Contractors 498
W. Gibson, T. Marsh

SESSION 10 – OPERATIONS & MAINTENANCE

Dynamic Prioritized System-wide Cleaning Schedule 516
A. Palmatier, K. Duncan

Electronic Motor Protection Saves Plant from Spills & Equipment Damage 536
R. Higgins

Use of Data Analytics Platform to Track and Predict the Location of Spills in the City of Atlanta 539
R. Bocarro

Wastewater Collection System Evaluations and Recommendations for Improvements 551
M. Nezat, R. Thornhill

SESSION 11 – ASSET MANAGEMENT

CDM Smith Water Analytics: Empowering Decision Making Through Big Data Analysis and Living Models in Hartford, CT 559
M. Gamache, J. Waterbury, S. Craig, A. Prasad

Condition & Criticality – How Fort Wayne Built their Asset Management Risk Model 566
B. Groeneweg

Establishing Pipe-by-Pipe Rehabilitation and Re-inspection Schedules Using Years Remaining Service Life 575
A. Filippi, J. Shelton, G. Gress

Failure Analysis Helps SD1 Improve Its Continuous Sewer Assessment Program 582
B. Copeland, M. Doren, G. Ahlberg

Integration of Sewer Tunnel System into Enterprise Asset Management – Benefits & Challenges 591
P. Manthena, M. Outland

The Importance of Design Criteria Standards for the Construction of a Centralized Wastewater Collection System in the Florida Keys 593
D. Mullen, D. Burden

SESSION 12 – PROJECT DELIVERY

Case Study: Designing a 11MG CSO Control Tunnel with Operations in Mind 604
S. Laberge, S. D'Aoust, E. McEachran, N. Schultz

Charlottesville Utilizes System-Wide Find-and-Fix Program to Address Consent Order and Streamline Comprehensive Rehabilitation of their Collection System 615
L. Hildebrand, J. McIlwee, A. Frazier

Don't Wait Until it Becomes an Emergency Repair: Sewers in Streams 623
B. Schillo, C. Block

Greenfield Road Force Main Failure. Responding to a High Profile Catastrophic Force Main Failure in the Town of Gilbert, Arizona..... 629
K. Snow, M. Horn

Life as a Watershed Consultant Delivering on a Consent Decree Program 637
S. Haw, S. Melendez

Taming the Multi-stakeholder Hydra: A Case Study in Planning, Permitting, Design and Construction of a Gravity Sewer Meeting Federal, State, and Private Stakeholder Constraints 663
C. Belk, A. Duke, J. Farmer, F. Glapion, B. Stone

SESSION 13 – LOCAL II

A Balancing Act; Replacing a 40 Year Old Sanitary Sewer FM Through One of the Original Colonial Settlements in America and Impact of Cnet's Founder on the Project..... 676
E. Abisaab, J. Burford, A. Edwards

Guaranteed Outcome Project Delivery for Sewer Rehabilitation - The HRSD Collaborative Design/Build Sewer Rehabilitation Pilot Project..... 678
J. Shelton

Integrated Planning Meets Adaptive Management 686
R. Stahr, P. Hubbard

Managing a Million Data Points: A How-To Guide..... 693
K. Peterson

HRSD 700
N/A

The Invisible Modernization of Aging Infrastructure 707
J. Kerns, C. Painter, L. Zuravksy

The Neighbor on Norchester: A Complex Project Becomes a Showcase for Integrating Stakeholders 716
J. Hou, K. Russo-Scarano

Work Order Planning for Wastewater Force Main Condition Assessment 731
P. Wilson, R. Radspinner, C. Toro

ADDITIONAL PAPER

Stretching Capital Dollars through Prioritization and Synergies in San Francisco..... 744
V. Lam, M. Chokshi, D. Danahue, S. Durbin, S. Harrison, S. Minick, S. Toloui

Author Index