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MAY 23 2013

PUBLIC SERVICE
COMMISSION

May 16, 2013

Jeff Derouen
Executive Director
Public Service Commission of Kentucky
P.O. Box 615
Frankfort, KY 40602-0615

Re: **Request for Continuing Education Units (CEUs)**
KYTN Water Professionals Conference
Louisville, KY; July 14-17, 2013

Dear Mr. Derouen:

On behalf of the Kentucky/Tennessee Water Professionals Conference, I hereby request consideration of our Technical Program for Continuing Education Units through the Public Service Commission of Kentucky. The Water Professionals Conference is a joint venture between the KYTN Section American Water Works Association and the KYTN Water Environment Association. It is a yearly conference that includes a training program that covers a variety of topics including management, operations, engineering, customer service and other issues facing the water community. Managers, plant operators, utility staff, engineers, and other water professionals from across Kentucky and Tennessee will attend this conference to network together and attend the Technical Program to receive information essential to the performance of their profession.

I am transmitting ten (10) hardcopies of this letter, our Technical Program schedule, and supplementary information regarding the requirements of 807 KAR 5:070. I am also transmitting ten (10) copies of the biographies of each of the presenters and abstracts of their presentations for your consideration.

Please let me know if you have any questions. I may be reached at (502) 583-7020.

Sincerely,

Paul G. Maron, P.E.
Vice Chair, KYTN Water Environment Association

cc: Brent Tippey

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2013 KYTN Water Professionals Conference
July 14-17, 2010
Kentucky International Convention Center, Louisville, KY
Request for Continuing Education Units- Public Service Commission of Kentucky
Supplementary Information

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(1) The name and address of the applicant;
Paul Maron, PE; 325 West Main Street, Suite 710, Louisville, KY 40202

(2) The name and sponsor of the program and the subject matter covered by the program;
2013 Kentucky/Tennessee Water Professionals Conference. This conference is a joint venture between the KYTN Section American Water Works Association and the KYTN Water Environment Association. It is a yearly conference that includes a training program that covers a variety of topics including management, operations, engineering, customer service and other issues facing the water community.

(3) A summary of the content of the program in detail sufficient to describe how the program will enhance the management, operation, and maintenance of water treatment and distribution systems.
We are transmitting the Technical Program and all of the abstracts associated with each training session for your review.

(4) The number of credit hours requested for the program;
The maximum number of credit hours that any individual could obtain if they attended every session is 12.5. We respectfully request that many credit hours be approved.

(5) The name and relevant qualifications and credentials of each instructor presenting the program;
We are including biographies for each of the presenters for your review.

(6) A copy of written materials given to water commissioners attending the program;
There will not be any written materials given to the attendees.

(7) If the program has been certified by an organization that provides training to persons associated with the water industry, the name of the certifying organization and a statement that the certification remains valid.
Certification by both the Kentucky Division of Compliance Assistance and the Tennessee Water and Wastewater Operator Certification Board is pending.

Technical Program - Sunday, July 14

	Sustainability Workshop	10:00 AM - 12:00 PM
	Plant Tours	1:00 PM - 4:00 PM
	Meet and Greet in Exhibit Hall	5:00 PM - 7:00 PM

Technical Program - Monday, July 15

	Welcome Breakfast	7:30 AM - 8:30 AM
	Opening Session/Awards	8:30 AM - 10:00 AM
	Break - Exhibit Hall	10:00 AM - 10:30 AM
	Exhibit Hall Open	10:00 AM - 12:00 PM and 1:30 PM - 6:30 PM

MON	Room 211 Session M1A	Room 210 Session M2A	Room 208 Session M3A	Room 209 Session M4A	Room 212/213 Session M5A	Room 207 Session M6A	Room 216/217 Session M7A	Room 214/215 Session M8A	Exhibit Hall Session M9A
TOPICS	Collection Systems	Wastewater Treatment	Water Treatment	Biosolids	Engineering and Construction	Regulatory Update TN	Sustainability	Special Topics	Exhibit Hall Sessions
10:30 AM	**SSES and CCTV Investigation Standardization in a Small System** - Brad Derrick, DLZ; Jessie Bessinger, Frankfort Sewer Department	**SD1's Western Regional Water Reclamation Facility: Form or Function?** - Mark Wurschmidt, SD1 of Northern Kentucky; Brad Montgomery, GRW	**UCMR 3 - What do you need to know?** - Joe Mattheis and Jessie Varab, UL, LLC	**Taking Waste Out of WAS: Sludge Pretreatment for Beneficial Uses** - Matthew Van Horne and Mark Bottin, Hazen and Sawyer; Ya-Chi Tsao, Philadelphia Water Department; James Grandstaff, Henrico County Department of Public Utilities	**Reducing the "Stress" in Prestressed Concrete Cylinder Pipe Rehab, Repair and Replacement : Success with Large Diameter Pipe** - Neal Stubblefield and Tim Ball, Jacobs Engineering Group	**Tennessee Drinking Water Update**	**Why We Increasingly "Look to the Catchment to Save the Stream"—A Review** - BobHawley and Katie McMannis, Sustainable Streams; Matt Wooten and Elizabeth Fet, SD1 of Northern Kentucky	**Talk to Me - How to Engage Employees in Customer Communications** - Kelley Dearing-Smith, Louisville Water Company	**Lesson learned -Largest Single Multi Censor Sewer Inspection Project in the United Statesn** - Bruce Jameson, Ace Pipe Cleaning; Darrel Gadberry, City of Fort Worth; Mazen Kawasmi, Freese and Nichols
11:00 AM	**Evaluating Sewer Force Mains without Tearing out the Pipe** - Jeff Hooyman and Sharon Shadwick-Deane, Knoxville Utilities Board	**Effective Grit Removal is an Essential but Often Overlooked Element of Wastewater Treatment** - Seth Dobyns and Ken Baker, Gresham, Smith and Partners	**Stage 2 D/DBP Compliance Through Implemetation of Advanced Treatment** - Matt Kusnir and Brent Tippey, HDR : Brian Gatewood, City of Williamstown	**Sustainable Biosolids Treatment Solution at Kent County, DE** - Alexander Kraemer, Parkson	**Central City's Regional Water Supply Enhanced Through System Improvements** - Chris Keil, Strand Associates; Mike McGhee, McGhee Engineering	**Tennessee Wastewater/Clean Water Update**	**Integrating Green and Sustainable Practices into Waterworks Facilities** - Thomas Waters and Richard Gell, O'Brien & Gere	**Dealing With The Difficult Customers** - Customer Service Roundtable	**Making Your Meters Smarter.... Advanced Metering Analytics (AMA)** - Tom Lindner, Badger Meter
11:30 AM	**Making the Old New Again: Rehabilitating First Utility District of Knox County's T-1 and T-2 Pump Stations** - Robert Frear, Jacobs Engineering Group	**Detailed Sampling for Wastewater Process Modeling of Phosphorous and Nitrogen Removal** - Alyssa Jenkins, William Martin, and Jamie Gellner, Hazen and Sawyer	**Louisville Water Case Study in Disinfectant Residual Management Under New Challenges** - Vince Monks and Rengao Song, Louisville Water Co	**Sometimes Average Isn't Good Enough: Understanding the Impact of Variability on Energy Recovery from Digester Gas** - Hunter Long, and Michael Bullard, Hazen and Sawyer; Frank Crump and Chris Shamel, Winston Salem Utilities Commission	**Providing Safer, Softer Water While Enhancing Historic Big Spring Park - All on an Expedited Schedule** - Andrew Lynn and Kevin Mullins, Garver	**Tennessee's Biosolids Rules** - Robert Odette, Tennessee Department of Environment and Conservation	**Sustanability Success! Maximizing savings through Integrated Water Management** - Edward Wade and Lamar Dunn, Lamar Dunn & Associates		**The Role Of Preventative Maintenance in Establishing An Asset Management Program** - Bob Hunn, Jr., Duke's Root Control
12:00 PM	Awards Luncheon								
MON	Session M1B	Session M2B	Session M3B	Session M4B	Session M5B	Session M6B	Session M7B	Session M8B	Session M9B
TOPICS	Collection Systems	Wastewater Treatment	Water Treatment	Biosolids	Engineering and Construction	Regulatory Update KY	Watershed Issues	Special Topics	Exhibit Hall Sessions
1:30 PM	**Liquefying the FOG through Advanced Asset Management** - Anthony Marconi, Saeed Assef, Sean Craig, Louisville MSD	**Wastewater Screening Improvements at the Moccasin Bend WWTP** - Stephen King, Hazen and Sawyer; Alice Cannella, City of Chattanooga	**Going the Last Mile - Achieving Stage 2 D/DBPR Compliance in Consecutive Systems and Problem Areas in Distribution Systems** - Nigel Grace and Tazio Qubeck, Brown and Caldwell	**Thermal Drying to Achieve Class A Biosolids – A Case Study in Bowling Green, Kentucky** - Kristi Schnell, Greshman, Smith and Partners	**Study-Design-Build: Owner, Engineer and Contractor Working Together!** - Leigh Cerda, Burgess & Niple; Preston Pendley, Hardin County Water District #1	**Kentucky Drinking Water Update**	**Reducing flows to a combined sewer system using sustainable, green infrastructure – what's your plan?** - Jason Brooks, LD&A	**Fluoride in Drinking Water Roundtable** - Moderator: Glen Thomas, Memphis Light, Gas and Water	**Sewer Structure Restoration** - Sam Wisener, Quadex
2:00 PM	**CSO Reduction using Express Sewers and Satellite Treatment** Kimberly Seidelmann, ARCADIS	**Nutrient Removal in Small Flow Systems** - John Olson and Ujwal Bhattad, Siemens Industry	**Emerging N-DBP Challenges and Reduction of NDMA at Louisville Water Company** - Eric Zhu and Rengao Song, Louisville Water Company	**Using Biosolids as Part of the Closure Cap for the City of Chattanooga** - William Johnson and Brian Givens, ARCADIS; Matthew Syndor, City of Chattanooga	**Fusible PVC versus HDPE: Direct Bid Comparison in a Sewer Rehabilitation Project** - Rhonda Collins, DLZ	**Kentucky Wastewater/Clean Water Update**	**Systematic CSO Sewershed Evaluation for Cost Effective and Optimal use of Green Infrastructure** - Jason Dempster, Louisville MSD		**Novel Floatable Abatement Technology in Newark, NJ (Verona Avenue And Herbert Street Overflow Structures)** - Gianfranco Maragno, John Meunier; Mark DelBove and Luigi Zecchin, ARCADIS
2:30 PM	**Nashville's Washington CSO Control Facility - Issues, Solutions, Construction Opportunites and Performance Results** - Paul Stonecipher and Bob Stolt, AECOM; Greg Ballard and Brent Freeman, Metro Water Services	**Process Optimization at SBR Plant Results in Improved Nutrient Removal** - Mark Strahota and Brian Book, Hazen and Sawyer	**Reducing the Cost of DBP Precursor Removal with Ballasted Flocculation and PAC Recycle** - Blake Warner, Kruger	**Going Green - How Bowling Green got into B.S. Part 2** - Doug Kimbler, Bowling Green Municipal Utilities	**Inspection, Condition Assessment and Rehabilitation of Pressure Pipelines** - Henry Derr and Doug Yarosz, Brown and Caldwell	**National Trends and Regulatory Updates for Wastewater** - Alan Victory, Water Environment Federation	**How to implement Integrated Planning to Achieve Affordable Water Quality** - Brandon Vatter and Robert Weimer, Hatch Mott MacDonald		**On-Site Generation: Not Just Disinfection** - Tony Edwards, Parkson

	Competitions - Exhibit Hall 3:00 PM - 6:00 PM
	Ice Cream Social - Exhibit Hall 3:00 PM - 4:30 PM
	Exhibitor Reception - Exhibit Hall 5:00 PM - 6:30 PM

Technical Program - Tuesday, July 16

	Awards Breakfast		7:00 AM - 8:30 AM						
	Exhibit Hall Open		8:30 AM - 2:00 PM						
	Room 211	Room 210	Room 208	Room 209	Room 212/213	Room 207	Room 216/217	Room 214/215	Exhibit Hall
TUES	Session T1A	Session T2A	Session T3A	Session T4A	Session T5A	Session T6A	Session T7A	Session T8A	Session T9A
TOPICS	Collection Systems	Wastewater Treatment	Water Treatment	Water Distribution	Engineering and Construction	Management	Stormwater	Industrial/Pretreatment	Exhibit Hall Sessions
8:45 AM	**Diagnosis and Correction of Hydraulic Inefficiencies Can Improve Wastewater System Performance** - Dennis Greene, O'Brien & Gere Engineers	**Considerations for UV Equipment Procurement – Understanding Project Lifecycle Costs** - Kati Bell, CDM-Smith	**Granular Activated Carbon - What are you using it for?** - David Shehee, Kentucky American Water		**Lower Second Creek at Woodland Trunk Sewer Replacement Project - Lessons Learned** - Andrew Clark, Barge Waggoner Sumner and Cannon; Doug Douthat, Knoxville Utilities Board	**Reviewing the INTERNal components of a Co-op Program** - Jordan Basham and Juan Afable, Louisville MSD	**A Detailed Look at Costs Associated with Green Stormwater Controls** - David Mason and Nancy Ellwood, CDM-Smith	**State Pretreatment Updates** - Jennifer Dodd and Yatasha Moore, TDEC; Diana Robertson & Jessica Acosta, KDEP	**Harnessing Solar Energy For Biosolids Management: A Green Approach To Drying** - Alexander Kraemer, Parkson
9:15 AM	**The Benefits of Incorporating Antecedent Moisture Conditions in Collection System Models** - Brian Moore and Thomas Batroney; Hatch Mott MacDonald	**The Hunt for Hidden Capacity: CFD Modeling of Primary/Secondary Clarifiers** - Eric Mayhaus, Brown and Caldwell	**First Year Operations of Advanced Treatment Facilities at the Northern Kentucky Water District** - Nick Winnike, CH2M Hill; Brent Tippey, HDR	**Optimization of MWS Distribution System: Juggling Water Quality, Reliability & Fire Protection** - Jennifer Lind, CDM; Leanne Scott, Metro Water Services	**Louisville Water Company's first sewer installation project (pre-merger!)** - Kay Ball, Louisville Water Company; Chuck Anderson, Strand Associates	**Consent Judgment Leads to Increased Rates – Blame EPA?** - Matt Kusnir and Charlie Scroggin, HDR	**Louisville Hill Road Stormwater Separation Project** Jessie Bessinger and William Scalf, Frankfort Sewer Department; Robert Campbell, QK4	**40 CFR Part 136 Requirements - Method Update Rule** - Yatasha Moore, TDEC	**CSO Technology Replaces a Tunnel Project** - Robert Hawkins and James Heist, Process Wastewater Technologies
9:45 AM	**Innovative Approaches in the Development of Henderson Water Utility's LTCP** - Paul Maron, Strand Associates; Bruce Shipley, HWU; Andrew Esarey, Strand Associates	**LFUCG West Hickman Creek WWTP Blower Upgrade Reduces Power Consumption** - Mark Sneve, Strand Associates; Tiffany Rank, Lexington Fayette Urban County Government; James worten, Lexington Fayette Urban County Government; Mike Davis, Strand Associates	**Louisville Water Company's Largest T&O Episode on Record** - Rengao Song and Eric Zhu, Louisville Water Company	**Planning a Regional Conversion to Chloramines** - Jeff Cruickshank, Hazen & Sawyer	**Versailles Raw Water Pump Station Slope Stabilization** - Michael Jacobs, GRW; Joseph Hauber, Thelen	**Transferring a Wastewater Utility from City Managed to a Utilities Board** - Lamar Dunn, LD&A; Anthony Cox, City of Morristown; Micheal Howard, Morristown Utility Systems	**National Priorities: The Flood Control Act of the Clean Water Act?** - John Loechle, Louisville MSD ; Derek Guthrie, HDR Engineering	**Bigger isn't always Better: Resturcturing a Decades-old Pretreatment Program** - Josh Balentine, City of Memphis; Chuck Durham, Tetra Tech, Inc.	**Not Just Your Father's Chlorine Safety: A Lesson in Modern Chemical Safety Techniques** - Gary Lohse and Kenenth Zazycki, Severn Trent Services
	Break		10:15 AM - 10:30 AM						
TUES	Session T1B	Session T2B	Session T3B	Session T4B	Session T5B	Session T6B	Session T7B	Session T8B	Session T9B
TOPICS	Collection Systems	Wastewater Treatment	Water Treatment	Water Distribution	Engineering and Construction	Management	Stormwater	Industrial/Pretreatment	Exhibit Hall Sessions
10:30 AM	**Eating the Elephant of I/I - The Beginnings of an I/I Program** - Travis Wilson, Littlejohn Engineering Associates; Greg Clark, Cleveland Utilities	**Triple Bottom Line Solution for a Decentralized Wastewater System: 2 Years Later** - Jason Hindenach and Joseph Pavoni, GRW Engineers	**What's New in UV Disinfection of Drinking Water** - Scott Alpert, Hazen & Sawyer	**Transient Analysis of a Major Water Transmission Main: How Making Fine Adjustments Extends Asset Life** - Neal Stubblefield and John Scioscia, Jacobs	**What to do with a Pump Station when it's no longer a Pump Station - 150 Year Old Zorn Avenue Pump Station Restoration** - Kay Ball, Louisville Water Company; Chris Bowling, K. Norman Berry Architects	**Integrated Capital Planning, New Tools to Integrate Project Delivery, Finance and Communications Systems** - Christina Gnadinger, Louisville Water Company; Rosemary Harman; Jacobs	**UK/Nicholasville Road Flood Mitigation Project** - Jim Buckles, Bell Engineering; Rich Riedl, University of Kentucky	**Flow Measurement in the Pretreatment World** - Tim Kazmier, Kazmier & Associates	**Technical, Environmental And Economic Assessment Of Sludge Thickening Processes: A Comparison Of Conventional And Novel Technologies** - Josh Gable, University of Wisconsin; Hiroko Yoshida and Jae Park, Technical University of Denmark
11:00 AM	**Accuracy and Precision for Predicting Design Storm I/I** - George Kruz; Todd Spangler, City of Brentwood; Drew Muirhead, BWSC	**Comparing Design and Operations of an SBR** - Kristi Schell and Ron Abraham, Gresham, Smith and Partners	**Fluid Mechanics and Polymer Chemistry in Advanced Polymer Mixing for Improved Clarification Process** - Yong Kim, Prominent Fluid Process	**The Chemistry of Corrosion Control and Cleaning in Water Distribution Lines** - Don Adams, Aulick Chemical	**Thinking of Converting to On-Site Generated Hypochlorite? Learn from Experience From Other Utilities - WRF Project 4410** - David Haas, Jacobs	**Alternative Project Delivery for Self-funding Projects** - Matthew Yonkin, ARCADIS	**Frankfort / Franklin County Green Block Demonstration Project** - William Scalf, Frankfort Sewer Department; Scott Southall, CDP Engineers; Robert Hewitt, Franklin County Fiscal Court	**Understanding Your POTW More Fully** - Dr. Larry Moore, University of Memphis	**Grit Happens – You Don't Know What You Are Missing** Pat Herrick, Hydro International
11:30 AM	**Real Time Control – Taking it to the Next Level** - John Loechle, Louisville MSD; Gary Swanson, CH2MHill	**Municipalities Facing Mandated Limits on Phosphorus** - Douglas Ralston, American Structurepoint	**Siting a New Water Treatment Plant for Nashville** - Brent Fulgham, Hazen & Sawyer	**Real Time Modeling of Water Distribution Systems: Costs and Benefits** - Sudhir Kshirsagar, Global Quality Group	**Jefferson City TN WTP - Upgrade and Expansion - The Design and Installation of Membrane Filters in Existing Filter Boxes** - Ben Simerl, McGill & Associates	**One Water - The Future of Louisville Water and MSD** - Greg Heitzman, Louisville Water and Louisville MSD	**Educated Site Hydrology is a Key to a Successful Green Infrastructures Planning** - Hazem Gheith and Vincent Tremante, ARCADIS	**Impacts of Industrial Wastewater on POTWs** - Dr. Larry Moore, University of Memphis	**Successful Pilot of MicroC 2000TM as substrate for Enhanced Biological Phosphorus Removal at ENR WWTP** - Brad Hice and Sam Ledwell, Environmental Operating Solutions

Lunch - Exhibit Hall 12:00 PM - 1:30 PM									
	Room 211	Room 210	Room 208	Room 209	Room 212/213	Room 207	Room 216/217	Room 214/215	Room 205/206
TUES	Session T1C	Session T2C	Session T3C	Session T4C	Session T5C	Session T6C	Session T7C	Session T8C	Session T9C
TOPICS	Collection Systems	Wastewater Treatment	Water Treatment	Water Distribution	Water Service Projects	Management	Special Topics	Industrial/Pretreatment	TN Collection Systems
1:30 PM	**Rain Barrel Installations Reduce Combined Sewage Overflow in Louisville's CSO140 Area** - Wesley Sydnor, Louisville MSD; Tim Kraus and Paula Glasford, O'Brien & Gere;	**Post Construction Compliance Monitoring Plan Development for the DRGWQTC Wet Weather Treatment Facility** - Gary Boblitt, Derek Guthrie, and Steve Keiber, HDR Engineering; Vicki Coombs, Louisville MSD	**Achieving Reliability While Rebuilding and Maintaining Operation of a Water Treatment Plant** - Richard Gell, O'Brien & Gere	**Organizing/Planning/Executing a Grab Sample Tracer Study for a Small to Medium Sized Water Utility: Lessons Learned** - Joseph Goodin, Stantec; Scott Yost, University of Kentucky	**Technology and Training That Empowers Ordinary People to Save Lives With Water** - Mark Hogg, WaterStep		**The University of Diversity** Tamika Parker	**A Year in Review: Evaluating Success of a FOG Program** - Jason Crawford, Sanitation District #1 of Northern Kentucky	
2:00 PM	**CSO Storage and Conveyance Design Decisions that Save Louisville MSD over $10,000,000** - Anthony Young, O'Brien and Gere	**Erwin Wastewater Treatment Plant: Novel Solutions to Treatment Challenges** - Sam Harrison, SSR	**On-Site Hypochlorite Generation - Your Clean, Green, Safe and Sound Disinfection Option** - Brian Branch, PSI	**Operation Leap Frog: Minor Hill's Emergency Water Supply Initiatve** - Jason Griffin and Greg Sanford, Jacobs	**KnoxProCorps** - Bruce Giles, First Utility District; Others TBD	**Management Panel Discussion Managing the Infrastructure Funding Gap** Moderator: Ed Wetzel, WetCon	**The Years Between Us - Working Across Generations?** Priya Dhingra Klocek, Consultant On The Go	**Taking FOG International** - Byron Ross, Monitoring & Management Services	**Updated Design Criteria and Guidance for Tennessee Collection Systems** Saya Qualls, Hazen and Sawyer; Bob O'dette and Phil Simmons, TDEC; George Kurz, Sewer Capacity Management, UT-MAS
2:30 PM	**Buffalo Sewer Authority Pilot Rain Barrel Program: The Good, the Bad, and the Indifferent** - David Comerford, Buffalo Sewer Authority; Charles Poskas and Michael Quinn, ARCADIS	**Low Cost Strategies for Wet Weather Treatment** - Dan Miklos and James Gellner, Hazen and Sawyer	**Stage 2 DBP - Operational Evaluation Level Study - Meeting Requirements** - Dorothy Johnson, Kentucky American Water	**Aging Transmission Water Infrastructure in Urban Areas - Rehabilitation or Replacement?** - Kevin Brian, HDR	**Water For People Showcases Sustainability and Transparency in Guatemala** - JJ VanDyke, Hazen and Sawyer; John McMaine, University of Kentucky; Ron McMaine, Bell Engineering			**Surviving a PCI or Audit: Common Problems to Avoid** - Chuck Durham, Tetra Tech, Inc.; Jennifer Dodd, TDEC; Tracy Nuchols, West Knox Utility District	
	Break		3:00 PM - 3:15 PM						
	Ice Cream Social		2:30 PM - 4:30 PM						
TUES	Session T1D	SessionT2D	Session T3D	Session T4D	Session T5D	Session T6D	Session T7D	Session T8D	Session T9D
TOPICS	Collection Systems	Wastewater Treatment	Water Treatment	Safety and Security	Water Service Projects	Small Systems	Special Topics	Water Resources/Conservation	Young Professionals
3:15 PM	**Unbridled Spirits - Providing Service to Jim Beam Bottling Plant** - Richard Smith, HDR	**Design and Construction of BNR Upgrades at an Operating Secondary Treatment Facility** - Patrick Moore, Peterson Benjamin, and Fred Holmes, Hazen and Sawyer; Sondra Lee, City of Tallahassee	**Louisville Water's Quest for Advanced Treatment Technologies: Riverbank Filtration, What we have learned and Where we are Headed** - Kay Ball and Jim Brammell, Louisville Water Company	**Fire Department Considerations for Response to Sewers and Treatment Facilities**, Ken Nichter, Louisville MSD	**University of Louisville's Engineers Without Borders/WEA/AWWA Chapter**	**Sanitary Sewer Lift Station Evaluation for Smaller Communities - Where is it, What is it, What condition is it in?** - Steven Bostic, LD&A		**State of the States: Emerging Water Loss Regulations in the U.S.** - Will Jernigan, Cavanaugh & Associates	
3:45 PM	**Avoiding the Rehab Rut** - Robert Cook, CH2M-Hill; Dwayne Frye and Sharon Deane, Knoxville Utilities Board	**Whites Creek WWTP UV Disinfection** - Robert Stolt & Paul Stonecipher, AECOM; Johnny McDonald and Phil Regen, Metro Water Services	**Life Support System Design for a Stingray Touch Exhibit** - Matt Kusnir, HDR	**Why Utility Safety Matters** Bob Hathcock, Alliance Water Resources	**Engineers Without Borders Project in Honduras** Steve Hubbs, WaterAdvice Associates	**EPA Orders aren't just for "Big Cities"... what to consider when your small community has to address the capacity of your Sewer System** - Gary Cinder, Oak Ridge, TN; Lee Gentry and Amanda Purkey, Lamar Dunn & Associates	**Panel Discussion** Topic: How to Pick the Best and the Brightest from a Diverse Pool of Talent	**Biscuits and Reuse, the State of Reclaimed Water in the South, and One State's Process to Form a Reuse Rulebook** - Andrew Lynn and Graves Michael, Garver	**Young Professionals Session** Dave Vogel, Louisville Water Company
4:15 PM	**Low Velocities in Force Mains: Impacts and Solutions** - Bo Copeland and Sean O'Rourke, Hazen and Sawyer	**Achieve Low Total Nitrogen Limits by Implementing Deep Bed Denitrification Filters** - Scott Phipps, Hazen and Sawyer	**Is My Dam Failing? How to Identify Problems With Your Dam Before They Become Emergencies** - Tony Grubbs, Schnabel Engineering	**Natural Disaster Response: Lessons Learned for Water and Wastewater Utilities** - Gregory Walter, O'Brien & Gere Engineers	**Engineers Without Borders Project in Belize** Erin Wagoner, URS	**You Can't Learn to Fly a Plane by Playing a Video Game – Reducing Non Revenue Water Takes Practice!** - Steve Cavanaugh, Cavanaugh & Associates		**Conserving Water at the Moccasin Bend WWTP** - Kyle Mangum, Jacobs Engineering Group	
Young Professionals Social 4:30 PM - 6:00 PM									
Member Celebration - Churchill Downs 6:00 PM - 9:30 PM									

Technical Program - Wednesday July 17

Continental Breakfast - Joint Workshop 7:30 AM - 8:30 AM

Joint Workshop 8:30 AM - 12:00 PM Hyatt Auditorium

Basic Outline for McAlpine Tour

1. USACE Main Missions- Military and Civil Works
2. Civil Works Main Missions – Navigation & Flood Control
3. Flood Control Lakes / Navigation Locks and Dams
4. USACE Divided into 7 Divisions nationwide, each Division is divided into Districts
5. Great Lakes & Ohio River Division – Buffalo, Chicago, Detroit, Huntington, Louisville, Nashville, Pittsburgh
6. Louisville District – 20 Flood Control Lakes & 10 Locks and Dam
7. Lock & Dam Purpose – to provide a consistent river for Navigation/commerce, approximately 500' elevation drop from Pittsburgh to the Mississippi River.
   By impounding pools, above each dam, year round to provide a constant depth, 9' minimum, regulated by movable dams, Locks raise and lower vessels between pools and operate by gravity flow
8. McAlpine Locks and Dam-
   a. Located at MM 604 Ohio River Louisville, KY
   b. First Lock on the Ohio River because Falls of the Ohio natural 26' drop
   c. **1830**- First lock 3 flight , **1870**- 360' 2 flight lock,
      1920- 600' X110', **1960**- 1200'X110', **2009**- 1200'X110' (360 & 600 demolished)
   d. Canal- **1830**- 50' enlarged **1870**-100', **1920**-200' & finally 500' in **1960**
   e. One of only two facilities on the Ohio with twin 1200' (Smithland)
   f. Facts@ pool - 36' lift, 1M gal /foot, 45 minutes to complete lockage, 10 minutes to raise or lower
   g. Other Facts- approximately 16 lockages per day, 73MTons Cargo /yr
   h. Types of Cargo- Grain, Fertilizer, Fuels, Chemicals, Iron, Steel Aggregates, Coal (38%)
   i. Dry Cargo Capacity- Normal Full Tow 15 Barges – 26,250 Tons(1750T/Barge)

      Equivalent dry cargo by Semi-Truck - 1050 trucks

      Equivalent dry cargo by rail- 240 cars

   (similar advantages with fluid cargo)

   j. Inland River Transportation Advantages vs. Truck / Train
      1. Greatly reduce Highway congestion, Infrastructure Impacts
      2. Reduce emissions, (carbon footprint)
      3. More Energy Efficient
      4. Safer, Reduces Fatalities and Injuries
      5. Fewer Haz Mat Incidents
         (Source- Texas Transportation Institute, Center for Ports and Waterways)

Kerry R. Johnson
Operations/Maintenance Leader
Ohio Falls Station

Background Information:

1976-1978 Fab-Tek Inc.
Tool & Die Apprentice
Company specialized in proto-type work for General Electric (Louisville)

1978-1980 Eaton Corporation
Quality Control Inspector
Front & rear axle division

1980-1987 Ky. Hardfacing & Machine Company
Journeyman Tool & Die maker
Journeyman Welding Specialist
Company specialized in exotic metal alloys. Several proto-type projects with N.A.S.A. and with the Navy in cooperation with The University of Louisville.

1987-Present
Louisville Gas & Electric
Mill Creek Operations 1987-1995
Mill Creek Machine Shop 1995-1996
Cane Run Operations 1996-2000
Cane Run Operations Management 2000-2010
Ohio Falls Station Management 2010 – Present

Education:

Pleasure Ridge Technical School 1976-1978
Machine Shop

Prosser Technical School 1978 – 1982
Apprenticeship Program (s)

College Coursework:

Texas A&M College
Jefferson Community College
Purdue University
University of Louisville
Indiana University

David Michael Seng
8296 Scottsville Rd
Borden, IN 47106 US
Day Phone: (502) 774-3514
Evening Phone: (812) 923-7748
Mobile: (502) 345-3634
Email: david.m.seng@usace.army.mil

Availability: **Job Type:** Permanent
Work Schedule: Full-Time

Desired locations: United States

Work Experience: **US Army Corps of Engineers**
Louisville, KY United States

04/2012 – Present
Hours per week: 40
Series: 5318
Pay Plan: WA
Grade: 11

Lock & Dam Equipment Mechanic Supervisor (This is a federal job)
Supervisor: Tracey Keel ((502) 315-6695)
Okay to contact this Supervisor: Yes

As the Supervisor (Lockmaster) I have overall responsibility for the operation, maintenance, and repair of the facility. I place high emphasis on the most efficient operation to serve our customers which has significant impact on the economy of the region and the nation. The work is conducted seven days per week, twenty-four hours per day basis necessitating the use of several shift operators, work leader, lock and dam operators, and senior lock and dam equipment mechanic positions to coordinate the operations, repair and maintenance work. I am responsible for long term planning (multi year) as well as day to day. I establish priorities of work on a long term basis and adjust them to meet needs. I am held responsible to ensure safety throughout the facility.

Planning:

I participate in long term repair and maintenance planning for the project by developing and prioritizing projects needed to insure continued effective operations of the facility. As the senior facility employee I am relied upon to provide technical advice needed to determine how work can be accomplished efficiently and economically within operational and fiscal requirements and what is needed in terms of man-hour, equipment, materials, supplies, etc. I produce and initiate the facility annual budget.

Work Direction:

I exercise full legal authority in controlling river traffic through locks. I coordinate with all District elements on a variety of problems and issues. (engineering, contracting, construction, operations, safety, real estate). I act as a Contracting Officers Representative on contracts at the facility and authorize payment to contractors. I write Scopes of Work for various projects and submit all necessary documents to the Contracting Officer to initiate service, supply, and construction contracts. I participate in public meetings as the representative of the District.

Administration:

I perform the following administrative duties:

1. Maintain Production reports and records
2. Personnel- leave, performance, counsel, adjust complaints, interviews, hire, disciplinary action, awards
3. Write, change, update, review work method procedures
4. Develop Training
5. Safety- MSDS, Activity Hazards, meetings, training,
6. Environmental- Recycling program, haz waste disposal, spill plans and materials,
7. District Liaison with other Govt Agencies and Public Groups

US Army Corps of Engineers
McAlpine Locks and Dam
805 N 27th St
Louisville, KY 40212 United States

02/2010 - 04/2012

Hours per week: 40
Series: 5318
Pay Plan: WO
Grade: 11

Lock and Dam Equipment Mechanic Leader (This is a federal job)
Supervisor: Robert P Azinger ((502)774-3514)
Okay to contact this Supervisor: Yes
As the work leader at a high lift lock and dam I ensure that the maintenance team and the bullgang operators know their daily assignments to keep the locks operating in the most efficient manner possible. I provide guidance on repairs when required and coordinate with other departments or contractors when the need arises. I answer many questions from the other employees on procedures and standard operating practices. I also review these to ensure that they remain current with both the latest technology which we employ, and with changing conditions. I have reviewed and updated the current Lock Operator Training program for McAlpine to keep up with changes to the EM385-1-1 safety manual and the changes at the facility. I have also reviewed and submitted site specific information for the new IMTS Lock Operator Training program.
By utilizing FEM (Facility and Equipment Maintenance) and training the maintenance staff on FEM, I have made great improvements to the tracking and scheduling of both preventive maintenance and repair maintenance. I have also created training guides and traveled to most of the locks in the Louisville District to provide assistance on FEM to ensure that all locks are in compliance with the reporting requirements.
As a government purchase card holder, I order the majority of the tools and materials required to ensure the facility remains operating efficiently and we remain within budget. I verify purchase requests are valid and utilize various tools such as the internet, catalogs, and vendors to find the best value for the government. I work closely with the lockmaster to determine priorities for the projects to ensure we have proper funding.

US Army Corps of Engineers
McAlpine Locks and Dam
805 N 27th St
Louisville, KY 40212 United States

07/2009 - 02/2010
Hours per week: 40
Series: 2610
Pay Plan: WY
Grade: 12

Electronic Integrated Systems Mechanic (This is a federal job)
Supervisor: Robert P Azinger ((502) 774-3514)
Okay to contact this Supervisor: Yes
As the electronics technician I have been responsible for the troubleshooting and repair of the lock operating and dam operating computers, camera systems, security systems, phone systems, PLC's and their supporting components including digital input and digital output cards, analog input and output cards, communication cards, and the various programming and communication protocols including ControlLogix and RsLinx for Allen-Bradley PLC's and Siemens Simatic Step 7 Basic. Additionally, I have had to troubleshoot our fiber optic system which is comprised of both multi-mode and single mode and the various transceivers to transmit data over the fiber. I have become a government purchase card holder for McAlpine Locks and am a CEFMS user. I have volunteered to be a member of the FEM implementation team for the Louisville District to bring an automated maintenance program online. I have helped investigate accidents at the locks and have designed and implemented solutions to prevent similar accidents in the future. I work closely with the Lockmaster to determine priorities for upgrades, repairs, and safety improvements to lock operating equipment as well as to the buildings and grounds while working to stay within our budget. I have given on the job training to employees plus I answer questions from the other employees on procedures and practices. While scheduling the day to day maintenance work I have distributed and helped balance the daily work load among employees. I stay in touch with the progress of the work and ensure that all safety and good housekeeping practices are being followed plus amending or rejecting work during spot checks.

US Army Corps of Engineers
McAlpine Locks and Dam
805 N 27th St
Louisville, KY 40212 United States

09/2007 - 07/2009
Hours per week: 40
Series: 5318
Pay Plan: WY
Grade: 11

Lock and Dam Equipment Mechanic (This is a federal job)
Supervisor: Robert P Azinger ((502) 774-3514)
Okay to contact this Supervisor: Yes
In my duties as a WY-11 mechanic, I am responsible for the majority of the more technically challenging repairs. This includes repairs to the electrical, hydraulic and pneumatic systems which directly control the lock and dam operations. I have also had to troubleshoot and repair problems with the heating and cooling systems, sewage system, lighting, and performed general building maintenance. While performing these repairs I would often need to find compatible replacement parts to replace obsolete components as well as a low cost supplier for these parts. I also follow preventive maintenance schedules to keep the system downtime to a minimum. During the time between 07/08/2007 and 11/03/2007 I was temporarily promoted to WY-2610-12 Electronic Integrated Systems Mechanic. As an IT-POC I assist our lock personnel with their network connections and PC issues. I am a qualified lock operator, as well as a qualified operator for our bulkhead cranes, mobile rail mounted cranes, boat mounted boom crane, work boat, man lift, forklift, tractor, and personnel carts. I also assist with the scheduling and prioritizing of the day to day tasks and provide direction and guidance to the other maintenance personnel and seasonal help. I have been able to better utilize my time during the periods when I have been required to perform locking duties by completing several online classes provided by the Army for no cost.

US Army Corps of Engineers
McAlpine Locks and Dam
805 N 27th St
Louisville, KY 40212 United States

08/2006 - 09/2007
Hours per week: 40
Series: 5318
Pay Plan: WY
Grade: 10

Lock and Dam Equipment Mechanic (This is a federal job)
I perform a wide variety of electrical and mechanical repair and preventive maintenance on the operating machinery at the locks and dams. This has included, but is not limited to, maintaining and the repair of the lighting systems, troubleshooting and repairing problems with the bulkhead cranes and piggyback cranes, troubleshooting and repairing problems with the gate position indicator interface to the PLC's, inspecting and adjusting brakes and limit switches on dam gates, the troubleshooting, repairing, and calibration of the upper pool gauge, and the troubleshooting and replacement of several faulty three phase 480 volt motors just to name a few of the tasks. I perform these duties by utilizing all available resources including blueprints, wiring diagrams, repair manuals, and the equipment manufacturer websites as well as the available test equipment such as multimeters, ampmeters, meggers, and general hand tools. I follow the preventive maintenance schedule in performing the greasing and lubricating duties.

Carriage House Industries
Buckner, KY United States

01/2004 - 08/2006
Salary:
19.25 USD Per Hour
Hours per week: 40

Maintenance Technician
Supervisor: L J McGraw ((502) 222-2700)
Okay to contact this Supervisor: Yes

I performed all aspects of maintaining and repairing machinery in order to ensure the least amount of downtime in our production facility. This includes preventive maintenance, troubleshooting of electrical and mechanical systems, and repair of systems as required. The electical systems include high and low voltage from 12 volt systems up to 480 volts. This includes 3 phase motors, single phase motors, DC motors and drives, and Servo motors and drives. I also troubleshoot, repair, and install electrical control wiring and devices according to blueprints and repair manuals. This includes troubleshooting and minor reprogramming of PLC's, replacing and reprogramming of variable frequency drives, power supplies, relays, safety relays and switches, pushbuttons, selector switches, fuses, breakers, disconnects, photoeyes, proximity switches, level probes, etc. I use different testing devices to find faults including multimeters, amprobes, wire circuit tracers, and meggers. In addition to the electrical systems, I also must troubleshoot, repair, and install pneumatic equipment including valves, pressure regulators, self lubricators, filters, fittings, tubing, and couplings. I was responsible for a project of installing lockable pneumatic valves on all machinery to implement a lockout/tagout program for OSHA compliance. Mechanically I am responsible for the repair, replacement, and preventive maintenance of bearings and shafts, product pumps and valves, conveyor systems, chains, sprockets, couplings, etc. I am familiar with a wide variety of hand tools and power equipment to perform these duties including drills and taps, grinders, portable band saws, plasma cutters, drill presses, etc..

Raque Food Systems, Inc
Louisville, KY   United States

10/2001 - 08/2003
Salary: 15.25 USD Per Hour
Hours per week: 40

Electrician
Supervisor: Jim Richert ((502) 267-9641)
Okay to contact this Supervisor: Yes
Installed all electrical components and performed all wiring necessary according to blueprints for the manufacturing of custom food packaging machinery. This included the layout and fitting of each individual component to the backpanel in the electrical cabinets using tape measures and scales, the mounting of each component using drills and taps as well as necessary hand tools, and then installing the wiring between the components which include PLC's, variable frequency drives, relays and bases, safety relays, power supplies, etc. I would then mount each cabinet to the machine and run all cabling between cabinets and external devices such as photoeyes, limit switches, proximity switches, foot pedals, safety latches and switches, and operator panels. Upon completion of all wiring, I would connect power and test and troubleshoot machine, making any corrections to wiring or blueprints as needed. Used a wide variety of tools and test equipment during this process such as multimeters, amprobes, drills, die grinders, hole knockout sets, heat guns, soldering irons, and hand tools.

Elec-Tech Services, Inc.
Louisville, KY   United States

09/1998 - 09/2001
Salary: 14.75 USD Per Hour
Hours per week: 40

Electrician
Supervisor: Paul VanArsdale ((502) 493-9132)
Okay to contact this Supervisor: Yes
I installed an extremely wide variety of equipment on metal and plastic fabrication machinery in many locations throughout the United States as well as out of the country. This included complete rewiring and installation of new controls according to blueprints, troubleshooting of installation, and training of the operators. I also installed safety equipment such as light curtains and floor mats on metal stamping presses and break presses, connecting into the machines safety circuit according to OSHA. Another large portion of my duties included installing pneumatic and hydraulic clamping systems onto various industrial equipment. This

included installing new hydraulic pumps, hydraulic or pneumatic piping and tubing, controls, and interconnecting wiring between clamping system and machine controls. I used many different tools in performing these duties including impact wrenches, magnetic base drills, tubing benders, hydraulic hose crimpers, wire tracers, label makers, multimeters, load cells, grinders, saws, drills and taps, hand tools, etc. I performed many of the jobs in a supervisory position laying out the work and informing the other personnel of the duties they needed to perform to maintain our schedule.

Education:

Indiana University Southeast New Albany, IN United States
Some College Coursework Completed

Relevant Coursework, Licenses and Certifications:
Studied various undergraduate courses primarily in mathematics and computer programming.

South Central Jr. Sr. High School Elizabeth, IN United States
High School or equivalent

Job Related Training:

Additional Education - Public Involvement - Communication, Prospect Course, 36 Hr (02/13/2012 - 02/17/2012)

Additional Education - Fiber Optics 123 (01/26/2010 - 01/29/2010)
32Hr course. Passed the Electronics Technicians Association, International exam and became registered as a Certified Fiber Optics Installer, FOI.

Additional Education - National Electrical Code (06/08/2009-06/12/2009)
36HRS

Additional Education - Introducing Outlook 2002
Online Army eLearning program completed on 04/04/2008
5 HRS

Additional Education - Identifying, Adding, and Removing PC Systems
Online Army eLearning program completed on 02/14/2008
2 HRS

Additional Education - Rosetta Stone Spanish (Lat. Am) Unit 01
Online Army eLearning program completed on 01/03/2008
4 HRS

Additional Education - Basic Electricity / Electronic Spec Crs (CMF 33)
Online Army Training Support Center Course completed on 11/01/2007
55 Cumulative Credit Hours

Additional Education - CCP153 - RSLogix 5000 Level 3: ControlLogix Maintenance and Troubleshooting (06/26/2007 - 06/29/2007)
32 HRS
Rockwell Automation

Additional Education - CCCL21 RSLogix 5000 Level 2: Basic Ladder Logic Interpretation (06/07/07 - 06/08/07)
16 HRS
Rockwell Automation

Training - Mobile Crane Safety (11/30/2006)
32 HRS
Crane Institute of America

Additional Information:

Outstanding Performance Awards - 2007 through 2011
LRL and LRD 2010 Operations and Maintenance Castle Award

Sunday Workshops Request for CEU Credits

What: Sunday Sustainability Workshop at the Water Professionals Conference

Where: MSD and walking tour around Louisville

When: Sunday, July 14th 2013
Sustainability Workshop - Green Infrastructure
10:00 - 10:15 Intro/Welcome
10:15 - 10:35 Larry Owsley University of Louisville - Green Incentives
10:35 - 11:10 Design Activity - Justin Gray and Wes Sydnor, Louisville MSD
11:10 - 11:35 Tom Rockaway and Josh Rivard, University of Louisville Center for Infrastructure Research - Green Infrastructure Operations and Maintenance
11:35 - 12:30 Panel Discussion - Gil Holland, Brian Bingham, Steve McKinley, Tim Dues
12:30 - 1:30 Lunch with debrief / lessons learned
1:30 - 2:00 Break

Green Infrastructure Walking Tour 2:00 - 4:00
MSD rain garden
Double ring infiltrometer testing at the Office of Employment rain garden
Belvedere rain barrel and rain garden outreach site
American Life green roof tour with Ty Harrison
Refreshments

Who:

Speaker: **Larry Owsley**, Vice President for Business Affairs, University of Louisville

Topic: Green Incentives

Times: 10:15 – 10:35

Bio:
Larry Owsley has served as the University of Louisville's Vice President for Business Affairs since 1983. A native Kentuckian, he earned graduate degrees from the University of Virginia and the University of California, Berkeley in public administration and public policy analysis respectively. His undergraduate degree is in history from Centre College of Kentucky.

Larry has been a leader of the University of Louisville's efforts to implement a greener, more sustainable campus. His vision is to utilize the campus as a living laboratory for sustainability – that is, practicing what the university teaches. Larry jump started the process at UofL by establishing a Sustainable Operations Committee in January 2008. This group focuses on greener operations at the university including areas such as purchasing, energy, construction, stormwater mitigation, recycling, food, and information technology.

UofL's President and Provost established the UofL Sustainability Council in the summer of 2008. Larry is a member of the Council and continues to serve as the chair of the Council's Sustainable Operations Committee. In 2010, he was the recipient of the first annual Joan Riehm Environmental Leadership Award given by the Louisville Partnership for a Green City.

Speaker: **Justin Gray**, Sr. Tech Services Engineer at Louisville and Jefferson County Metropolitan Sewer District

Topic: Green Activity along with Wes Sydnor

Times: 10:35 – 11:10

Bio:

Education: University of Louisville Master of Engineering, Civil and Environmental 1995-2001

Experience: Sr. Tech Services Engineer, Louisville and Jefferson County Metropolitan Sewer District May 2006 -- Present
Senior Project Engineer, FMSM Engineers March 1996 – May 2006
Senior Project Engineer, Stantec 1997- 2005

Justin is originally from Owensboro, KY. He is a 2001 graduate of the University of Louisville with a Masters in Civil & Environmental Engineering.

For ten years, Mr. Gray worked with FMSM Engineers in Louisville, Kentucky focused on stormwater and flood mitigation planning, hydrologic and hydraulic modeling applications, & GIS development.

Currently, he is with the Louisville Metropolitan Sewer District managing planning and Consent Decree related programs including sewer and water quality modeling, environmental monitoring, green infrastructure efficacy, asset management, and capacity assurance programs in the Regulatory Services Division. He is the 2009 Young Engineer of the Year for both the Louisville and State Chapters of the Society for Professional Engineers.

Speaker: **Wes Sydnor**, Senior Technical Engineer at Louisville Metropolitan Sewer District

Topic: Green Activity along with Justin Gray

Times: 10:35 – 11:10

Bio:

Current professional experience:
*Green Infrastructure (design, approval, community engagement, guidance and programmatic development)

* Consent Decree Programs (Nine Minimum Controls, CMOM, and Treatment Plant Bypass Correction)

* Consent Decree Reporting (Quarterly and Annual Report Management and Delivery)

* Public Education and Outreach Efforts

Currently serving in the following professional development roles:

* President of the Kentucky/Tennessee Water Environment Association. Local WEF Member Association,

* President-Elect of the Kentucky Society of Professional Engineers (Louisville Chapter),

* Louisville Loop Planning Team Member

* KY/TN WEA/AWWA Joint Steering Committee,

* 5-S Society

* Leadership PE Session Dean

Education: University of Louisville Master of Engineering, Civil Engineering 1995-2002

Experience: Sr. Tech Engineer, Louisville County Metropolitan Sewer District August 2008 – Present
Design Engineer/Project Engineer/Project Associate, O'Brien & Gere November 2003 – August 2008
Project Engineer, Greeley and Hansen September 2000 – October 2003

Wesley is from Shively, KY and a 2000 and 2002 graduate of the University of Louisville with a Masters in Civil & Environmental Engineering.

Mr. Sydnor spent three years with Greeley and Hansen in Sarasota, Florida performing design and planning of water, sewer, force main, and reclaimed water systems. For 5 years, Mr. Sydnor worked for O'Brien and Gere Engineers working on CSO projects, regulatory document development, and EPA Consent Decree efforts.

Currently, he is with the Louisville Metropolitan Sewer District working on Nine Minimum Controls, CMOM, and green programs and projects in the Regulatory Services Division. He is the 2007 Young Engineer of the Year for the Louisville Chapter of the Kentucky Society for Professional Engineers.

Speaker: **Tom Rockaway**, Director of the Center for Infrastructure Research, Civil and Environmental Engineering, University of Louisville

Topic: Green Infrastructure Operations and Maintenance with Josh Rivard

Times: 11:10 – 11:35

Bio: A DePauw, Purdue and Georgia Institute of Technology graduate with a Ph.D. in Civil Engineering, Dr. Rockaway is a licensed Professional Engineer (P.E.) in Georgia, Indiana and Kentucky. He serves as an assistant professor and Director of the Center for Infrastructure Research, a partnership between UofL, utilities and industry formed to research, evaluate and solve urban infrastructure-related issues and problems. Dr. Rockaway is a recipient of the Engineer of the Year in Education Award. He worked for two years in the Geotechnical and Dam Safety Section of the United States Army Corps of Engineers and is a frequent contributor to various scientific and technical publications.

Speaker: **Josh Rivard**, Research Coordinator Center for Infrastructure Research

Topic: Green Infrastructure Operations and Maintenance with Tom Rockaway

Times: 11:10 – 11:35

Bio:

Education:

Masters of Urban Planning, 2006, University of Louisville
Bachelor of Science in Environmental Science, 1998, Morehead State University

Experience:

Before coming to the Speed school, I worked seven years as a GIS Analyst in the private sector. For the past two years, I have been working for the Center of Infrastructure under Dr Thomas Rockaway as a Research Coordinator.

Research Projects:

During my tenure, here at the CIR my work has been dedicated to two projects. The first project, Changes in Residential Water Patterns, quantifies changes in residential water use across North America observed during the past 30 years and identifies contributing factors. To account for geographic and demographic variations, the research evaluated usage on the national, regional and local levels. This research initiative will provide an up-to-date and comprehensive assessment of changing water use patterns by national, regional, and local levels. This will provide utilities with better tools to estimate water usage and to modify pricing structures. In this manner, utilities can have better financial models to predict revenues. This project is a joint collaboration between the CIR and the Louisville Economical Monitor in located in University of Louisville's College of Business.

The other project, Infrastructure Asset Identification and Condition Assessment, objective is to develop a system using remote sensing and non destructive testing methods to rapidly assess the condition of existing urban infrastructure. Specifically, this project will focus on determining effective methods to identify impending failure areas of water and wastewater infrastructure using ground penetrating radar (other NDT and RS methods will be evaluated, as additional funds become available). This will involve the development of a test field to evaluate experimental applications in a controlled environment. The final phase will apply the learned techniques to the Louisville urban area within a pilot study area.

Speaker: **Gill Holland**, The Green Building

Topic: Panel Discussion with Gil Holland, Brian Bingham, Steve McKinley, and Tim Dues

Times: 11:35 – 12:30

Bio: Gill Holland has become a major player in the green movement in Kentucky. His biggest [illegible]
Green Building (Louisville, Kentucky). The building has become a staple of the movement in the Phoenix Hill district, attempting to be marketed as NuLu. His goal with this district, is to create a locally run area that showcases local restaurants, locally grown food and buildings that use sustainable resources. Holland was quoted by The Lane Report saying "There's a saying that the Stone Age didn't end because we ran out of stone," he said. "The coal age is not going to end because we run out of coal. I'm all about incentivizing people to change, (but) not mandating it or telling them (they have) to do it." about the green movement. The Green Building (Louisville, Kentucky), was only step one. Now Holland, who is the poster child for the green movement in Kentucky, has more plans to make Kentucky a green state as well. He was instrumental in helping Louisville Mayor Greg Fischer hire its first Director of Sustainability.

Speaker: **Brian Bingham**

Topic: Panel Discussion with Gil Holland, Brian Bingham, Steve McKinley, and Tim Dues

Times: 11:35 – 12:30

Bio:
Brian has 25 years of experience in the development and implementation of unique solutions to programmatic and engineering problems. He joined Louisville MSD in late 2004 to assist in the final negotiations and to lead the development of the $850M Wet Weather Amended Consent Decree Program. Brian oversees the Regulatory Services Division which includes consent decree program management, green infrastructure program, laboratory services, flow monitoring and sampling, sewer system modeling, wet weather capital planning, wastewater pretreatment, wastewater treatment plant expansion, flood pump station replacement, and the plumbing modification program.

Previous experience includes technical expertise in program development and implementation and in Hydrology and Hydraulics with an emphasis on modeling.

Brian has a Bachelor of Science Degree in Civil Engineering from the University of Louisville Speed Scientific School.

Speaker: **Steve McKinley, PE**

Topic: Panel Discussion with Gil Holland, Brian Bingham, Steve McKinley, and Tim Dues

Times: 11:35 – 12:30

Bio:
Mr. McKinley is Vice President and Director of Water Resources for URS Corporation. He is a graduate of the University Of Kentucky School Of Engineering and a Registered Professional Engineer. Steve has 35 years experience in water resource development, planning, and design. His experience includes Storm Water Utility development, Storm Water Program evaluation, FEMA Floodplain Studies and Floodplain Management, Dam inspection and design, Wet Weather and Watershed Management efforts. Steve has successfully developed storm water and wet weather programs for Louisville, Kentucky; Columbus, Ohio; Fort Wayne, Indiana; Toledo, Ohio; Hamilton County, Ohio; Gwinnett County, Georgia and assessed the Chattanooga, Tennessee Storm Water Program.

Speaker: **Tim Dues,** E-Z Construction Vice President

Topic: Panel Discussion with Gil Holland, Brian Bingham, Steve McKinley, and Tim Dues

Times: 11:35 – 12:30

Bio:
Tim holds an MBA and Masters in Civil Engineer from UofL and is a licensed professional engineer in Kentucky.
He has worked at E-Z Construction since May 2000. His primary responsibilities include project management, contract administration, office functions of company, estimating and procurement of new projects.

Submission

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ID: 87

Submitted: 2012-12-13

Last Updated: 2012-12-18

Title: SSES and CCTV Investigation Standardization in a Small System

Student: No

Author 1: First Name: Brad
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Author 2: First Name: Jessie
Last Name: Bessinger
Organization: Frankfort Sewer Department
Country: United States
Email: jbessinger@frankofrt.ky.gov
Telephone: 5028752448

Contact Author: Author 1

Alternate Contact: bradford.derrick@gmail.com

Topic(s): Collection Systems

Keywords: SSES, rehabilitation, condition assessment, standardization

Abstract: The Frankfort Sewer Department (FSD) is undertaking an intensive investigation and rehabilitation program within its Separate Sanitary Sewer System to eliminate recurring Sanitary Sewer Overflows (SSOs) as required by the City of Frankfort, Kentucky Wet Weather Consent Judgment. This rehabilitation program is a key aspect of the overall consent judgment plan and the City has a goal of televising 10% annually of its collection system.

Because Frankfort is a small community and has limited resources, there are limited resources to review, format and upload the boxes of data developed with each Sanitary Sewer Evaluation Study (SSES) project undertaken by consultants. To better utilize the

large volume of information generated through SSES studies, [illegible] created by FSD closed circuit television (CCTV) crews and verification inspections for new construction, standard specifications and procedures have been developed to meet FSDs specific needs. One of the most important parts of this standard development is defining formats and data collection systems that allow for easy and seamless integration of CCTV and defect coding data for use with FSD's condition assessment software.

Implementation of these standards reduces labor intensive data entry by the utility and allows all of this information to be incorporated into a working GIS database. This database can be used by management and maintenance crews to quickly and easily make? informed decisions in real-time and at the job site through mobile connections.

Frankfort's SSES standard specifications also provide standard templates for manhole inspection data collection. These are designed to reduce variances between projects and make objective comparisons between assessments performed by different consultants by providing uniform and relevant information to FSD.

Other benefits provided to the City through this effort include:
• Defining standard and acceptable minimum requirements for sewer cleaning to enable condition assessments
• Payment methods to ensure effective delivery of data, not just rehabilitation recommendations.
• Setting consistent expectations for interaction with local residents and customers.

Comments: this could also be considered under small systems

Files: Presentation (1): *not uploaded*
Bio (2): 19KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Charles Poskas, ARCADIS
- John Ricketts, URS Corporation

Bradford E. Derrick, P.E. is a Project Engineer for DLZ Kentucky, in their Louisville office. Brad has been a consulting engineer since 2005, with focus on wastewater treatment and wet weather compliance. Brad spends most of his time away from work keeping up with his sons Everett (4), and Owen (2).

2013 Water Professionals Conference
Title: KUB's Wastewater Pump Station Performance Evaluation

Jeff Hooyman, P.E.
Knoxville Utilities Board
865-558-2441
Jeff.Hooyman@kub.org

CREDENTIALS

State of Tennessee Professional Engineer
Certified Grade III Wastewater Plant Operator
Certified Grade II Collection System Operator
17 years experience in water & wastewater utilities

EXPERIENCE

12/2005 – Present
Project Engineer
Collection System Improvements / PACE-10
Knoxville Utilities Board

8/2000 - 12/2005
Industrial Pretreatment Coordinator
Knoxville Utilities Board

11/93 – 8/2000
Operations Manager
Tellico Reservoir Development Agency

EDUCATION

B.S. Civil Engineering
University of Tennessee

B.S. Environmental Science
University of Tennessee

Sharon L. Shadwick, P.E.
Knoxville Utilities Board
865-558-2693
Sharon.Shadwick@kub.org

CREDENTIALS

State of Tennessee Professional Engineer

EXPERIENCE

6/2008 – Present
Project Engineer
Collection System Improvements / PACE-10
Knoxville Utilities Board

EDUCATION

Bachelor of Science – Civil Engineering, 2008
University of Tennessee, Knoxville

Master of Science – Civil Engineering, 2010
University of Tennessee, Knoxville

ACTIVITIES

Avid Biker
Award Winning Tri-athlete (Athena Division)
Anchovie Fishing

2013 Kentucky-Tennessee Water Professionals Conference

OpenConf Peer Review & Conference Management System v5.00

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Submission

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ID: 133

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Evaluating Sewer Force Mains without Tearing out the Pipe

Student: No

Author 1: First Name: Jeff
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Contact Author: Author 1

Alternate Contact: Doug Douthat, 865-558-2713

Topic(s): Collection Systems

Keywords: force main

Abstract: 2013 KY/TN Water Professionals Conference Abstract
Evaluating Sewer Force Mains without Tearing out the Pipe
The Knoxville Utilities Board (KUB) entered into a Consent Decree with the State of Tennessee, City of Knoxville, EPA and Tennessee Clean Water Network in February, 2005. Under the Consent Decree KUB is required to perform an assessment of all the active wastewater force mains in the system. KUB has recently completed an evaluation of 64 active wastewater force main using a conditional assessment. This assessment included the inspection of all air release valves and discharge manholes. Conditional values were assigned to every force main priorities for replacement and rehabilitation. Conditional values ranging from 1 to 5 were assigned, the factors that these number were based are

as follows:

- Pipe Material
- Age
- Air Release Valve Condition
- SSOs
- Physical Condition
- Maintenance Issues

In order to make the best assessment, non-destructive techniques were used with visiual inspection. The assessment was based on both field data and hydraulic calculations to assess flow data with hyrolic retention times. For some force mains, additional testing was performed to measure pipe thickness and wastewater chemical composition.

This presentation will give a complete overview of all the inspection criteria and maintenance assessment that went into comprising KUB's pump station performance evaluation for 2012.

Prepared by:
Jeff Hooyman
Sharon Shadwick

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 28KB
© Release (3): *not uploaded*

Reviewer(s):
- Charles Poskas, ARCADIS
- Preston Pendley, Hardin County Water District No. 1
- Katie Nolan, Gresham, Smith and Partners

2013 Kentucky-Tennessee Water Professionals Conference

Submission

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ID: 111

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Making the Old New Again: Rehabilitating First Utility District of Knox County's T-1 and T-2 Pump Stations

Student: No

Author 1: First Name: Robert
Last Name: Frear
Organization: Jacobs Engineering Group
Country: United States
Email: bob.frear@jacobs.com
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Contact Author: Author 1

Alternate Contact: boblyj@aol.com, 865-567-0574

Topic(s): Collection Systems

Keywords: rehabilitation, wastewater collection, pump stations, capacity

Abstract: Many pump stations built in the late seventies and early eighties are now reaching or have passed their useful design lives. First Utility District's T-1 and T-2 Pump Stations were prime examples of key components of its wastewater collection system infrastructure having reached obsolescence. The pump stations suffered from capacity and operational issues which resulted in the utility experiencing several compliance events each year.

Rehabilitating pump stations can present the designer, builder and owner with many challenges - these are the issues that had to be addressed with the T-1 and T-2 stations:

• Available property is limited on the site for improvements and construction. Property for pump stations is often purchased with little regard for future expansion. Development over time can close in around station sites making acquisition of additional property or even temporary construction easements difficult.

• New permitting requirements arise which were not in place at the time of the original design and construction. Design of upgrades as well as rehabilitation must take into account current code requirements that did not exist 25 to 30 years ago when the facilities were first designed.

• Unknown subsurface features may be present. Often record drawings are not accurate reflections of "existing conditions". Post-construction revisions to underground piping,

conduits and other features not readily visible also are often not documented. In East Tennessee, the geologic region is predominantly described as "karst" and often has sub-surface features such as sink holes or underground caves that are not evident from the surface.

• Maintaining operations of the existing pump station equipment while trying to construct improvements can be tricky and expensive. Sequence of construction, limitations on planned outages, tie-ins and temporary bypass pumping are but a few of the considerations that must be made when trying to maintain normal flows through a station that's under construction.

• Congestion of other nearby features and structures can inhibit design and construction. Often pump stations are located next to water features, other utility infrastructure, roadways or hill sides providing additional challenges to staying away from or impacting those elements.

How these challenges were faced by the designer, contractor and the owner, First Utility District, in the rehabilitation of these two pump stations and the lessons learned provide the focus for this presentation.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 16KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- John Ricketts, URS Corporation
- Brent Tippey, HDR

SPEAKER DATA FORM

NAME: Robert M. Frear, P.E.

TITLE: TENNESSEE MANAGER OF PROJECTS & OPERATIONS MANAGER: KNOXVILLE

COMPANY: JACOBS ENGINEERING GROUP

SHORT PERSONAL RESUME SUITABLE FOR INTRODUCTION: **Mr. Frear serves several roles in his duties with Jacobs. Not only does he serve as the Operational Manager for Jacob's Knoxville Office, but as Manager of Projects for Tennessee, he oversees the performance of over 80 ongoing projects Jacobs' has with its clients. In addition, he's a senior project manager and design engineer on municipal water and wastewater studies and design projects. He's a civil engineering graduate of the University of Arkansas, a cyclist and a proud grandfather.**

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Submission

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ID: 18

Submitted: 2012-11-05

Last Updated: 2012-11-05

Title: SD1's Western Regional Water Reclamation Facility: Form or Function?

Student: No

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Topic(s): Wastewater Plant Operations

Keywords:

Abstract:

Comments:

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Bio (2): 274KB
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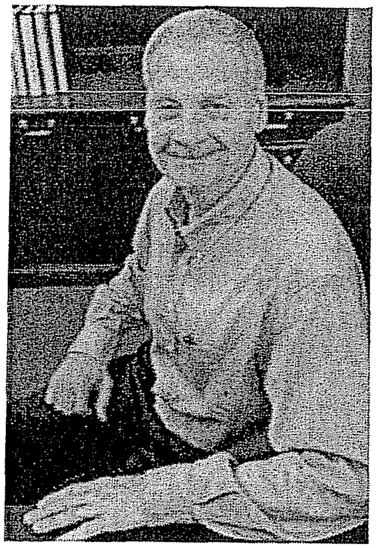
Reviewer(s):
- Mark Sneve, Strand Associates
- Brad Derrick, DLZ
- Michelle Hatcher, CDM Smith

ABSTRACT



Mark W. Wurschmidt, P.E., BCEE
Deputy Executive Director

Sanitation District No. 1

Mark is the Deputy Executive Director overseeing the Engineering, Treatment Plant and Pump Station Operations at SD1. He has been in the water and wastewater industry for over 35 years with extensive experience in all aspects of planning, design, construction and program management in both the private and public sectors. He received his B.S. in Civil Engineering from The Ohio State University and is a Board Certified Environmental Engineer with the American Academy of Environmental Engineers. He is the current President of the Wet Weather Partnership, is a member of many professional organizations including NSPE, WEF and NACWA, and is a licensed Professional Engineer in Kentucky and Ohio.

Brad Montgomery, P.E.
Vice President

GRW, Inc.

Engineers . Architects . Planners

Brad is a Vice President at GRW with extensive experience in the planning, design and construction administration of wastewater and drinking water projects. He has been with GRW for 30 years and currently serves in both their Lexington and Louisville offices. He received his B.S. in Civil Engineering from the University of Kentucky and is a Registered Professional Engineer in Kentucky, Ohio, Indiana, West Virginia and Tennessee. Brad is currently the Chair of the Kentucky/Tennessee Section of the American Water Works Association.

Bio's

Seth Dobyns is Engineering Intern at Gresham Smith and Partners. He's worked on a variety of water projects including combined sewer overflow and storm water runoff management, water and wastewater treatment processes, and even industrial water purification processes. In his free time Seth enjoys camping and other outdoor activities.

Ken Baker is a Senior Vice President at Gresham, Smith and Partners. He has 30-years of experience in both the public and private sectors of water and wastewater industry in the areas of treatment process and system operations, maintenance, and management. In his free time Ken enjoys fishing.

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Submission

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ID: 160

Submitted: 2012-12-15

Last Updated: 2012-12-15

Title: Effective Grit Removal is an Essential but Often Overlooked Element of Wastewater Treatment

Student: No

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Topic(s): Wastewater Plant Operations

Keywords: grit, vortex, wastewater

Abstract: Grit is one of many components comprising raw sewage conveyed to a wastewater treatment plant from the collection system. According to Metcalf and Eddy's Wastewater Engineering: Treatment and Reuse textbook, "Grit consists of sand, gravel, cinders, or other heavy materials that have specific gravities or settling velocities considerably greater than those of organic particles". The removal of grit from wastewater is typically achieved by physical separation, gravity settling or centrifugal force, of the grit particles from the liquid medium. Grit passing through preliminary screening and not separated from the liquid stream will be carried to the downstream treatment processes where it can promote premature wear of mechanical equipment like pumps and adversely affect

the operational performance of primary and secondary sedimentation, the biological treatment, the anaerobic digestion, and other associated processes of a wastewater treatment plant.

Generally grit can be defined as inorganic material larger than 105 microns with a specific gravity of around 2.65; anything smaller than 105 microns, or 140 mesh, can be considered silt. Although grit falls under these general physical characteristics, not all grit particles act the same. For example the specific gravity of a grit particle can be lowered when surface active agents such as fats, oils, and grease adhere to the surface, changing the shape and composition of the particle and its settling velocity. If grit is not properly removed it can have compounding consequences throughout the treatment process. One example where these conditions have been observed is at the Central Wastewater Treatment Plant located in Nashville Tennessee.

The Central Wastewater Treatment Plant is the largest of three wastewater treatment facilities servicing the greater Nashville metropolitan area. The Central WWTP provides treatment for both the separated and combined sewer systems. The Central WWTP is a secondary activated sludge facility that is designed for an average daily flow of 125 mgd and a peak hydraulic capacity of 330 mgd. Historically grit has been removed by tapered aerated grit tanks. These tanks use a low pressure air system which creates a spiral roll pattern that acts perpendicular to the water flow. The roll pattern suspends lighter organic particles while allowing the heavier grit particles to settle to the bottom of the tank. There the grit is collected, pumped out, classified, and then disposed of. This grit removal technique has several drawbacks such as higher organic content which impacts handling and disposal, nutrient loss of settable material when the collected grit is removed, a need for a longer retention time to allow the grit particles to settle, and a lower efficiency in removing the smaller grit particles such as the 140 mesh grit (105 microns).

More innovate and efficient grit removal methods are being used today such as the vortex grit removal system. The Central WWTP recently piloted one of these vortex systems, Eutek's Headcell/SlurryCup Grit Removal System. Instead of using air to separate the denser grit particles from the organic matter, the vortex system uses toroidal forces. The toroidal forces whirl the grit in a circular pattern forcing it out and down along the tank walls to the floor. The grit is then forced across the floor to the center of the tank where it can be collected by a hopper system and then removed from the wastewater. Not only do the toroidal forces drive the grit into a hopper, they clean the grit of most organic matter. This stripped organic material can then be settled or treated in the subsequent processes. The vortex grit removal system can provide a cleaner grit and can effectively separate up to 95% of all particles of the 105 micron size.

This presentation will focus on the pilot test of the HeadCell/SlurryCup Grit Removal System preformed at Nashville's Central Wastewater Treatment Plant. It will discuss the HeadCell/SlurryCup's grit separation technique, the pilot results for both dry and wet weather conditions, as well as a efficiency comparison between the tapered aerated tanks versus the HeadCell/SlurryCup System.

Comments:

Files: Presentation (1): 18KB
Bio (2): 13KB
© Release (3): *not uploaded*

Reviewer(s):
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- Brad Derrick, DLZ
- Michelle Hatcher, CDM Smith

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ID: 162

Submitted: 2012-12-15

Last Updated: 2012-12-15

Title: Detailed Sampling for Wastewater Process Modeling of Phosphorous and Nitrogen Removal

Student: No

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Topic(s): Wastewater Plant Operations

Keywords: Process Modeling

Abstract: Process Modeling can be a valuable tool for wastewater utilities to optimize existing treatment processes, and plan for future plant upgrades. However, in order to maximize the utility of the process models, development of the model requires a significant amount of information about the plant influent characteristics, unit processes performance, as well as variation of these parameters on a daily or weekly basis. Failure to collect sufficient data for model calibration may lead to inaccurately modeled plant performance, especially for BNR systems. Data collected by the plant on a regular basis is typically not sufficient to calibrate a process model, so additional detailed sampling is required to obtain all the pertinent information. Wastewater treatment plants that employ Biological Nutrient Removal (BNR) or experience significant wet weather flows require an additional level of detailed sampling to reflect the complexity and variation.

Additional data collection typically exceeds the requirements for regular ongoing plant monitoring by at least an order of magnitude in terms of numbers, locations, and analytical parameters. Successfully carrying out a detailed sampling program for development and calibration of a process model requires a significant amount of coordination and planning. At least a week of intensive sampling and analysis is necessary to obtain sufficient data. Intensive sampling can be expensive, both in terms of labor hours and analytical fees, and a successful sampling program needs to be well designed to capture the necessary field data without incurring unnecessary expenses for collection of extraneous data. Hazen and Sawyer has worked with multiple utilities throughout Ohio and the US to coordinate and execute large sampling events for the purposes of calibrating process models. Our presentation will attempt to summarize the accumulated lessons learned from our experience and provide a recommended framework for a successful sampling program including the following steps: identification of modeling goals, development of a sampling plan, on-site coordination, and sample analysis.

Identification of modeling goals is critical first step for tailoring of a sampling program to the needs of a particular plant. For example, the development of a process model for BNR purposes typically requires collection of substantially more samples to precisely quantify elements such as influent Nitrogen and Phosphorous loads, readily biodegradable COD, and influent TKN to COD ratios.

Developing a Sampling Plan involves identifying locations, sample collection methods and frequency, analytes and the division of analysis between labs. Key criteria for the development of a successful sampling plan include the following:
1. It is of particular importance that the raw influent (free of recycles) is identified and sampled if possible during the sampling event. Recycle streams can add significant load to the plant and need to be distinguished from true influent loads.
2. Sampling locations should be selected to collect daily flow weighted composite samples from several key locations (plant influent, plant effluent, and recycles) for the purposes of determining daily average concentrations and loads entering the plant and typical plant performance. Grab samples are also frequently collected at multiple time points throughout the day or week, at different unit process location to evaluate individual performance and its variation under different load conditions. Diurnal samples should also be collected, especially from the plant influent, at frequent intervals over a 24 hour period to understand loading variation.
3. Selection of analytical parameters for samples collected at each location (typically COD, BOD, cBOD, TKN, NH_3, NO_3, TP, PO_4). It is also important to understand the preparation required so that appropriate analyses can be performed. Several types of filtration can be used in order to distinguish the particulate vs soluble fractions of these parameters.

Once the sampling plan is finalized, on-site coordination is necessary to handle the logistics of sample collection, sample preparation for each analysis and distribution of samples to the necessary labs. Special sampling can pose a significant disruption to regular WWTP operator and lab staff activities, therefore proper coordination with plant management and staff cannot be overemphasized as an essential component to execution of the sampling program. Additionally, data should be taken on-site to monitor nitrogen and phosphorus removal including DO profiles, ORP data, temperature, chemical feed, and pH profiles, as applicable.

Sample Analysis can be split between multiple labs to minimize cost. Several parameters

can be measured on-site with field kits (COD, NH3, NO3, TP, PO4), but others (TSS, VSS, cBOD, BOD) require additional lab equipment and need to be sent offsite. Duplicates should be performed on some fraction of the samples as a form on quality control. After the results are obtained from all the sampling, the data must be organized and reviewed for outliers and any data quality issues and then turned into process model inputs.

Supplemental Wet Weather Sampling
In addition to the week-long detailed sampling for process modeling, supplemental sampling can be performed to characterize the plant's wet weather influent concentrations and loading as well as clarifier performance. Portable samplers capable of collecting 24 discrete 1L samples positioned at the plant influent, primary clarifier effluent, and secondary clarifier effluent (in two separate locations) can be deployed prior to the rain event. Sample collection, preparation and analysis methods are similar to the special sampling program, but may require the ability to handle higher volumes of samples in a shorter period of time. This type of evaluation can provide the capability to more accurately simulate wet weather events in a process model.
The exact nature of the special sampling program needed will vary substantially from plant to plant depending on the plant's size, unit processes, sidestreams, and modeling goals. However, a number of standard practices exist based on WERF guidelines ("Methods for Wastewater Characterization in Activated Sludge Modeling"), model software developer guidelines (Envirosim or Hydromantis), and professional experience. The presentation will provide an overview of the requirements for a successful special sampling effort including a summary of commonly employed guidelines for development of a sampling program, the logistical challenges associated with execution of an intensive sampling program, several case studies, and lessons learned from previous sampling projects.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 11KB
© Release (3): *not uploaded*

Reviewer(s):
- Mark Sneve, Strand Associates
- Brad Derrick, DLZ
- Michelle Hatcher, CDM Smith

Presenter Biographies

Alyssa Jenkins
Assistant Engineer
Hazen and Sawyer, P.C.
1 Year Experience
MS – Env Engineering – Univ of Michigan

Alyssa Jenkins is an assistant engineer out of Hazen and Sawyer's Cincinnati, OH office. Ms. Jenkins project experience includes work on biological process modeling for several wastewater plants in the Cincinnati, OH area.

William Martin
Assistant Engineer
Hazen and Sawyer, P.C.
2 Years Experience
MS – Env Engineering – Stanford University

William Martin is an assistant engineer out of Hazen and Sawyer's Cincinnati, OH office. Mr. Martin project experience includes work on development of WWTP hydraulic model and biological process modeling for several wastewater plants in the Cincinnati, OH area.

W. James Gellner, P.E.
Senior Associate Engineer
Hazen and Sawyer, P.C.
15 Years Experience
MS – Env Engineering – Michigan State University

Mr. Gellner is a Senior Associate in Hazen and Sawyer's Cincinnati office. He has over 15 years of experience in the planning, design, and construction of wastewater treatment facilities and collection systems.

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Submission

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ID: 11
Submitted: 2012-10-26
Last Updated: 2012-10-26
Title: UCMR 3 - What You Need To Know
Student: No

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Topic(s): Drinking Water Quality
Keywords: UCMR 3

Abstract: The third Unregulated Contaminant Monitoring Rule (UCMR 3) was finalized in May 2012. Under this rule, all Public Water Supplies (PWSs) with populations > 10,000 and 800 PWSs with populations <10,000 will be required to monitor for either List 1 or List 1 & List 2 for a one-year period between January 2013 and December 2015. Under List 1 & 2 of UCMR3, 28 chemical contaminants will be monitored.
The objective of this presentation will be to compare the similarities and differences between UCMR3 and the first two UCMRs. It will also focus on the analyte lists and include the analytical methods used to acquire data. The methods will be broken down to include instrumentation information, sampling techniques and locations, preservation and bottle requirements. Potential collection and laboratory related anomalies will be

discussed. Methods to be discussed will include: List 1 EPA method 524.3 for Volatiles, EPA method 522 for 1,4-dioxane, EPA method 200.8 for metals, EPA method 300.1 for chlorate, EPA method 537 for Perfluorinated compounds and EPA method 218.7 for hexavalent chromium and List 2 EPA method 539 for Hormones. Additionally the unique reporting requirements for both the PWSs and the laboratories will be explained. This explanation will include new deadline requirements, data elements that need to be reported by both the PWS and the lab, and SDWARS information and data upload requirements.

As of the publication of this abstract, UL has been fully approved for all of the chemistry methods for UCMR3. With a history of full approval for both UCMR and UCMR2, UL is uniquely qualified to present on this topic from a laboratory's perspective. UL maintains drinking water certification in all 50 states and focuses primarily on drinking water. UL has worked with EPA in developing the UCMR methods, tested previous UCMR samples for hundreds of PWSs and has provided support for other laboratories that have clients that must meet the requirements of the previous UCMRs.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 23KB
© Release (3): *not uploaded*

Reviewer(s):
- Jim Pelton, Pelton Environmental Products
- RENGAO SONG, LOUISVILLE WATER
- Preston Pendley, Hardin County Water District No. 1
- Brent Tippey, HDR

Joe Mattheis – Bio:

-Water Quality Account Executive, Eastern US, for Underwriters Laboratory-Drinking Water Testing Facility located in South Bend Indiana.

-Other work experience:

- 11 years as Account Management for environmental testing laboratory.
- 13 years as Geologist and Administrator in the Environmental Services Industry, primarily focus was pollution assessment and remediation under RCRA.

-Bachelor of Science degree from East Carolina University in Geology.

Matt Kusnir bio:

Matt is a University of Kentucky graduate of civil engineering. Matt has four years experience as a project engineer in the areas of potable water treatment and transmission system design and modeling. Additionally, Matt has undertaken projects for wastewater inspection, collection and treatment systems design.

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ID:	58	
Submitted:	2012-12-11	
Last Updated:	2012-12-11	
Title:	Stage 2 D/DBP Compliance Through Implementation of Advanced Treatment	
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Topic(s):	Drinking Water Quality	
Keywords:	D/DBP, water treatment, dissolved air flotation, Actiflo Carb, MIEX, disinfection by-products	

Abstract: Stage 2 D/DBP Compliance Through Implementation of Advanced Treatment

Matt Kusnir, HDR
Brent Tippey, HDR
Brian Gatewood, City of Williamstown

The City of Williamstown is a growing community in northern Kentucky that provides potable water to over 20,000 residents in the city and surrounding county. In order to meet these demands, the Williamstown Water Treatment Plant was originally constructed in 1964, with subsequent improvements being undertaken in 1977, 1987, 1991, 1997, and as recently as 2002. The WTP performance has remained steady thanks to excellent operations but the ability to meet the Stage 2 Disinfectants/Disinfection By-Products (D/DBP) Rule is questionable. This concern is in addition to the seasonal taste and odor issues and variable raw water quality received from the primary raw water source (Williamstown Lake). Seasonal lake turnover only exacerbates the situation, leading to spikes in total organic carbon levels and elevated DBP formation.

In addition to the existing customers, Williamstown faces rapid demand growth with the construction of a nearby Ark Park, anticipated to lure in thousands of tourists and ancillary businesses to the region. Acknowledging the growing demand and performance challenges faced with the existing water treatment plant, Williamstown began investigations into feasibility for a new water treatment plant to also include advanced treatment options. In 2012, Williamstown retained HDR to produce a comprehensive approach that would provide the city security in meeting future water demands and ensuring Stage 2 D/DBP compliance.

HDR reviewed multiple treatment processes and how they might fit in Williamstown. Several site visits were performed to gain an understanding of the process performance as well as operational requirements for the different options. In addition to consideration of various advanced treatments, Williamstown Lake provides an opportunity to effectively utilize dissolved air flotation in lieu of the existing conventional flocculation and sedimentation basins currently installed. HDR also encouraged Williamstown to undertake multiple pilot tests and bench-top analyses:

- Dissolved Air Flotation pilot test
- Actiflo Carb pilot test
- MIEX bench testing performed by Orica

This presentation will outline the findings from this investigation and the direction that HDR recommended based on estimated capital costs, annual operational costs and other non-financial factors. Williamstown is expected to build a new green-field 4 MGD water plant as part of this activity.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 10KB
© Release (3): *not uploaded*

Reviewer(s):
- Jim Pelton, Pelton Environmental Products
- RENGAO SONG, LOUISVILLE WATER
- Josh Cravins, WASCON, Incorporated

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ID: 121

Submitted: 2012-12-14

Last Updated: 2013-01-04

Title: A Louisville Water Case Study in Disinfectant Residual Management Under New Challenges.

Student: No

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Topic(s): Drinking Water Quality

Keywords: Distribution water quality, disinfectant residual

Abstract: The Louisville Water Company (LWC) distribution system is large and expansive; consisting of over 4,100 miles of main and over 30 finished water storage facilities (ranging in size from 100,000 gallons to 30 MG) with an average daily system demand of ~120 million gallons. Growth of the infrastructure occurred over many years through LWC's history of building a primary and secondary transmission grid for fire flow demands in accordance with the National Fire Protection Association (NFPA) standards; creation of a modified urban system in the 1990's to extend main to very low density areas; future demand planning assumptions; and continued expansion of the core infrastructure to receive new and/or potential customers – including development of regional supply solutions.

To best fit with this size distribution system, LWC, like many other large water utilities, utilize chloramines (with the dominant species being mono-chloramine) as a secondary disinfectant. Chloramine is used as an alternative to free chlorine because it minimizes the formation of Disinfection By-Products (DBP's), decays at a slower rate, does not give off any taste or smell and is relatively safe. The most common drawbacks to the introduction of chloramines are the high potential for nitrification. To successfully manage a consistent secondary disinfectant in a distribution system this size can be challenging and has required LWC to adapt, and optimize methodologies.

In recent years however, these optimization strategies have been stretched to capacity, as each summer season has become more and more challenging in managing disinfectant residuals. This has been in part due to the continued water infrastructure growth, slow growth of our economy, the economic shift from manufacturing to service, significant under-utilized transmission capacity, and creeping conservation practices reducing overall demand assumptions. Understanding and adapting is vital in order to continue providing the highest quality water to our customers.

This presentation will highlight LWC's disinfectant residual management practices; provide details on the challenges that LWC face; and the new methodologies/technologies that must be developed/implemented in order to continue to achieve the high quality goals that have been established. As an example, this presentation will provide results of a study in which LWC is investigating water quality challenges as a function of daily water demands (overall/zone based) versus distribution system size (length/pipe size). This methodology, as a potential indicator of water quality issues, can also be helpful to utilities that use free chlorine as the secondary disinfectant.

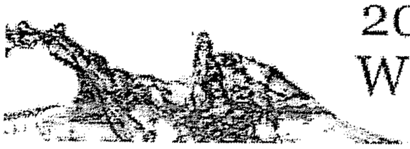
Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 18KB
© Release (3): *not uploaded*

Reviewer(s):
- Jim Pelton, Pelton Environmental Products
- Amy Kramer, Northern Kentucky Water District
- Josh Cravins, WASCON, Incorporated

Vince Monks is the Supervisor of Distribution Water Quality at Louisville Water Company. This department includes: Cross-connection Control, Water Quality Customer Complaint Surveillance and Resolution, Flushing, Tank Management and Nitrification Prevention and Control, Distribution System Water Quality Monitoring and Treatment, and WQ Modeling. He is a graduate of the University of Louisville with a Bachelor of Science with a focus in urban and regional analysis and environmental science. He holds a Class IV Water Distribution Operator license and is a certified Drinking Water Microbiology Analyst in the state of KY. He has technical experience in water distribution hydraulics and water quality, storm and sanitary sewer preliminary engineering design, GIS technologies and water distribution hydraulic/water quality modeling. He has contributed to ongoing Water Research Foundation (WRF) studies and currently is a member of the National AWWA Cross-connection Control Committee. He has provided guidance and material to peer-reviewed AWWA Journal articles, presented material on distribution water quality at AWWA Sectional and National Conferences and national webcasts. He is serving as a member of the KY sub-committee on the assessment of a state-wide cross–connection control program implementation. He serves on the Board of Directors Lifeline Children's Services. Vince is also a technical advisor to three not-for-profit ministries that work to provide clean water and serve other life-saving functions to underdeveloped and developing countries and the most vulnerable of society.

Matt Van Horne is a Senior Principal Engineer with Hazen and Sawyer in their Fairfax, VA office where he has been for over 4 years following over 5 years of experience in California. He is a registered professional engineer in several states including Virginia, Maryland, Texas, Massachusetts and California and earned Bachelors and Masters degrees in Civil and Environmental Engineering from Massachusetts Institute of Technology. His areas of focus are biosolids management, energy optimization, water reuse and wastewater treatment and has worked on a variety of projects in those areas on both coasts of the US. He is a member of WEF, the WateReuse Association, the American Society of Civil Engineers and the American Membrane Technology Association.



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ID: 117
Submitted: 2012-12-14
Last Updated: 2012-12-14
Title: Taking Waste Out of WAS: Sludge Pretreatment for Beneficial Uses
Student: No

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Topic(s): Biosolids

Keywords: Biosolids, Sludge Pretreatment, Digester Gas, Supplemental Carbon, Denitrification, Anaerobic Digestion

Abstract: The waste activated sludge (WAS) from biological treatment processes at wastewater treatment plants (WWTPs) has typically been regarded as a waste product and can require substantial processing to efficiently dispose of this material. With the emerging view of WWTPs as resource recovery facilities and a continuing desire to optimize their operations, alternative uses for WAS are generating more interest. Pretreatment of WAS can be implemented at wastewater treatment plants to achieve a variety of goals. Typically these goals are to increase volatile solids destruction, increase digester gas production or to generate a supplemental carbon source to fuel the denitrification process.

This paper will review two pilot testing case studies of a pulsed electric field pretreatment technology at two treatment facilities, each with a different goal. The first case study is with the Philadelphia Water Department at the Southwest Wastewater Treatment Plant. This is a 194 mgd facility with an interest to generate more digester gas that would be beneficially used to offset operational costs at their sludge drying facility as well as a reduction in sludge to be subsequently dewatered, dried and receive final disposal. Two digesters of the twelve existing digesters are being isolated to receive a blend of primary sludge and pre-treated WAS to allow the unit gas generation resulting from the pretreatment to be compared to the gas generation under the baseline conditions. Ultimately, an economic analysis will be performed to determine if the pretreatment technology generates sufficient benefits to justify the costs of its installation and operation.

The second case study is at the Henrico County (Virginia) Water Reclamation Facility. Strict effluent discharge requirements for this facility related to Chesapeake Bay restoration efforts require denitrification. For the specific characteristics of the wastewater at this facility, this process requires a supplemental carbon source to drive the denitrification reaction. Current operations utilize a glycerin product for this application but there is a potential to use the same WAS pretreatment technology on thickened and un-digested WAS to release bioavailable carbon from the WAS and introduce it to the anoxic zones of the biological treatment process to replace this significant chemical addition and potentially result in a cost savings. This potential benefit has to be weighed against the potential negative impacts. This application has the potential for significant process impacts if not implemented correctly due to the return of additional solids to the biological treatment process and the possibility to increase the ammonia loading to the treatment facility. The pilot testing monitoring plan includes an assessment of these specific considerations to ensure that there are no adverse impacts on the final effluent from the facility.

These two pilot testing studies represent significant potential for wastewater treatment plants to optimize their operations and reduce overall costs by maximizing their use of materials generated through the treatment process. The available pilot testing results will be presented and will be used to demonstrate if the technical and economic conditions should be considered for other projects.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 11KB
© Release (3): *not uploaded*

Reviewer(s):
- Jim Pelton, Pelton Environmental Products
- Michelle Hatcher, CDM Smith

Biography: Alexander Krämer

Alexander Krämer is employed with Parkson Corporation, an engineering company focused on water and wastewater treatment technologies. He has over 13 years of professional technical sales experience and worked at Thermo-System, located in Stuttgart Germany as a Project Designer, before joining Parkson in 2010 to provide additional technical support from project design to project completion.

Alexander is a Master Tradesman and holds a Bachelor's degree in Trade and Commerce from the IHK in Munich, Germany.

Alexander is also a Master Yachtsman and in his free time, enjoys participating in sailing regattas.

Contact information for Alexander can be found below:

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Submission

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ID: 88

Submitted: 2012-12-13

Last Updated: 2012-12-13

Title: Sustainable Biosolids Treatment Solution at Kent County, DE

Student: No

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Topic(s): Sustainability

Keywords: Drying, Fuel, Biosolids, Sludge, Solar, Waste, Sustainability, Energy, CO2

Abstract: The Kent County Regional Wastewater Treatment Facility (KCRWTF) adopted the Natural Step as its sustainability framework. Under the framework, four system conditions must be met. These are:
1. Reduce and eventually eliminate our contribution to the systematic accumulation of materials from the earth's crust.
2. Reduce and eliminate our contribution to the systematic accumulation of substances produced by society.
3. Reduce and eliminate our contribution to the ongoing physical degradation of nature.
4. Reduce and eliminate our contribution to conditions that systematically undermine people's ability to meet their basic needs.

The KCRWTF was the first wastewater facility in the country to be certified to the ISO 14001 Environmental Management System, the OSHAS 18001, Occupational Health and Safety Management System and the National Biosolids Partnership's (NBP) Environmental Management Systems standards. In 2009, the Environmental Health and Safety Management System (EHS-MS) was modified to incorporate the Natural Step framework requirements. The concepts can then be translated into four sets of objectives. These are:
1. To reduce the dependence on fossil fuels and rare precious metals.
2. To reduce the use of non-biodegradable manmade chemicals.
3. To not destroy the natural environment.

4. To satisfy basic human needs by promoting employee health and safety.

Under the ISO 14001 standards, a set of objectives and targets must be prepared to reduce the environmental footprint of an organization, the KCRWTF has developed such a set and provided tasks to meet the objectives and targets and expanded the management plan to address sustainability issues. One of the tasks was to install a Solar Biosoilds Dryer.
The KCRWTF treated its biosolids by dewatering it to 20% solids content using a belt filter press, adding lime to stabilize the biosolids and drying it additionally in thermanl dryers that use a heat transfer fluid, which is heated using natural gas-fired boilers and finally land applying the Class A product on local farms as a soil amendment.
In order to be more sustainable, the KCRWTF chose to install the Parkson Thermo-System® Active Solar Dryer. The design by Green Stone Engineering added a unique passive solar heating system with a supplemental natural gas-fired boiler. The solar heaters heat up glycol, which is circulated through a heat exchanger to a water system that is installed beneath the concrete floor built into the floor of the Active Solar Dryer. The solar water heating system was manufactured by Solar Panel Plus and consisted of 66 of their units. The installed system consists of 3 greenhouse structures that are basically a pilot plant and expected to treat 10-15% of the total biosolids quantity generated at the KCRWTF. The Thermo-System® process is now produces an 85% solids Class A product. The last 2 years were used to determine the effectiveness of the process, the ultimate use of the biosolids and the number of additional greenhouses needed to completely treat all generated biosolids. The ultimate use of the biosolids will be either as a daily cover for a local landfill or as a coal substitute fuel in a cement kiln. The cost of the system was around $4 million including the solar heating system. The system has saved an estimated metric ton of CO2 through the reduction of the use of natural gas as a drying fuel and the transportation of the dried biosolids soil amendment to many farms located throughout Delaware.

Comments: Optional Topic Area: -> Biosolids

Files: Presentation (1): *not uploaded*
Bio (2): 19KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Martha Segal, Metro Water Services

Hunter Long is an Assistant Engineer with Hazen and Sawyer in Raleigh, NC and has over three years of experience with wastewater treatment process planning and design. His work has included wastewater process modeling, wastewater process sampling, developing biosolids master plans, designing solids handling facilities, and evaluating on-site biogas utilization. He received a BS in Civil Engineering from the University of Illinois at Urbana-Champaign and a MS in Environmental Engineering from North Carolina State University.

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ID:	100	
Submitted:	2012-12-14	
Last Updated:	2012-12-14	
Title:	Sometimes Average isn't Good Enough: Understanding the Impact of Variability on Energy Recovery from Digester Gas	
Student:	No	
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Topic(s): Biosolids

Keywords: anaerobic digestion, combined heat and power, digester gas

Abstract: This technical paper and presentation will share results from an evaluation of digester gas utilization at the Muddy Creek Wastewater Treatment Plant (MCWWTP), Winston-Salem, NC. The evaluation revealed the importance of considering daily variation in digester gas production on the economic viability of on-site energy production.

The MCWWTP uses digester gas to heat boilers which produce hot water for anaerobic digestion process heating and facility heating. Excess digester gas not required for process heating may be used to fuel two (2) reciprocating internal combustion engine (RICE) driven blowers. The RICE driven blowers are preferentially operated during week day on-peak demand periods to offset blower electricity use. The facility's electricity bill is divided into distinct on and off peak periods for the winter and summer with separate charges for energy consumption and monthly peak electricity demand. The on-peak demand charge has accounted for approximately 30 percent of the plant's monthly electricity bill over the past three years and provides a strong incentive for the facility to reduce electricity costs by running the RICE driven blowers during the whole of the on-peak demand period. At the time of this evaluation, one of the RICE driven blowers was not operating and required an estimated $125,000 capital investment to return the RICE to service. The purpose of this study was to evaluate the electricity savings associated with operating one or two RICE driven blowers and the potential savings from installing heat recovery equipment.

Historical data for digester heating demand and digester gas production was fit to cumulative distribution curves for each month using CRYSTAL BALL® software. A Monte Carlo simulation analysis was then prepared for each of the digester gas utilization scenarios to determine the electricity savings for each scenario.

Had the average monthly digester gas production been used in the economic analysis rather than cumulative distribution curves, the analysis would have predicted an additional $48,000 annual electricity savings (an increase in savings of 50%) due to the ability to consistently off-set the on-peak demand charge. This additional savings would have a significant impact on the facility's decision to invest in new, or recapitalize existing, digester gas utilization equipment. This paper and presentation will; address additional long-term biogas utilization scenarios at the MCWWTP, expand on the causes and effects of variation in digester gas production, and discuss the importance of using Monte Carlo type simulation to address the variability inherent in anaerobic digestion and digester gas utilization.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 11KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Jim Pelton, Pelton Environmental Products
- Michelle Hatcher, CDM Smith

SPEAKER DATA FORM

NAME: Neal D. Stubblefield, P.E.

TITLE: PRACTICE LEADER – COLLECTION & DISTRIBUTION

COMPANY: JACOBS ENGINEERING GROUP

SHORT PERSONAL RESUME SUITABLE FOR INTRODUCTION: **Mr. Stubblefield is national practice leader for collection & distribution for Jacobs' North American Water Infrastructure Group. He's responsible for technical guidance, quality, services roll-out and overall business development for a group comprised of over 100 professionals located in the U.S. and Canada focused on "pipelines" related work. In addition he's a senior project manager on buried infrastructure, pump station and tank projects with a specialty in condition assessment of pressure mains. He's a mechanical engineering graduate of the Georgia Institute of Technology, a long distance runner and avid cyclist.**

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ID: 102

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Reducing the "Stress" in Prestressed Concrete Cylinder Pipe Rehab, Repair and Replacement : Success with Large Diameter Pipe

Student: No

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Topic(s): Engineering and Construction

Keywords: carbon fiber, condition assessment, PCCP, rehabilitation, steel liner, wire related events

Abstract: With ever increasing pressure on "bottom line" performance of water utilities, many municipal managers, engineers and operators are dealing with challenges presented by prestressed concrete cylinder (PCCP) failures stemming from faulty pipe manufacturing processes from the mid-1970s to mid-'80s. Type 4 prestressing wire in PCCP pipe from that era has been identified as a prime culprit in many high profile, catastrophic failures and continues to be the focus of condition assessment, corrosion monitoring and "renewal" efforts intended to preempt additional failures.

In concert with condition assessment efforts by these utilities, three projects are presented showing different approaches to remediating the pipe both as a response to

failure and as preventive measures:
• Lake Tawakoni Raw Water Main Repairs/Replacement, Dallas Water Utilities, TX - Following wire break inspections led by Pressure Pipe Inspection Co. (now Pure Technologies) in 2004, a series of repairs (including point repairs and outright pipe replacement) were facilitated including emergency work by DWU operations and 3 contracts covering 17 miles of the 84" PCCP line.
• Finished Water Main Repair, Cobb County - Marietta Water Authority, GA - A nagging leak in an 84" PCCP main (installed in 2002) on CCMA's Quarles Water Treatment Plant site in 2010 led to manned entry and video investigation revealing severe pipe deflection (due to poor installation conditions as opposed to faulty manufacturing) and resulted in adding joint seals to both the PCCP main and a smaller 54" ductile iron main.
• Water Transmission Main Rehabilitation, San Diego County Water Authority, CA - A $780 million program focused on rehabilitation of 66" to 96" diameter PCCP water transmission has included both projects using carbon fiber lay-up as short term repair measures and welded steel liner insertion as a long term solution based on condition assessment and ongoing monitoring.
This paper focuses on planning and construction activities that were designed to expedite getting these pipelines back into service quickly with the least disruption to utility customers and the general public.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 23KB
© Release (3): *not uploaded*

Reviewer(s):
- Keith Coombs, Louisville Water Company
- Bart Potts, Louisville Water Company
- Daniel tegene, Louisville Water Company

Christopher J. Keil, P.E.

Education

B.S. Civil/Environmental Engineering - University of Cincinnati, Ohio, 1997

Professional Registration

Professional Engineer in Kentucky, Ohio, and Alabama

Field of Expertise

Water Distribution and Treatment Planning, Design, and Construction; Wastewater Collection Design and Construction; Computer Modeling; Contract Administration and Project Management

Positions Held

Strand Associates, Inc.®	1997 - Present	Project Manager
Metropolitan Sewer District of Greater Cincinnati	1996	Engineering Co-op
U.S. Environmental Protection Agency	1994 - 1995	Engineering Co-op

Professional Experience

- **Water Treatment Plant Design** experience includes design and management of both surface water membrane filtration and conventional treatment plants including coagulation, flocculation, sedimentation, filtration, chemical feed, and pumping facilities. Plant capacities have ranged from 3 mgd to 15+ mgd. Designs have included entirely new facilities, retrofits, and expansion of existing facilities.

- **Water Supply Engineering** experience includes modeling of hydraulic, surge, fire protection, and water quality analyses of both large citywide and rural county water distribution systems and designing and managing pump station and water main extension projects.

- **Wastewater Conveyance** experience includes design and management of individual and system wide pump station projects, force main and odor control facilities, performance of hydraulic analysis, assisting in design of sanitary sewer projects, and operation and maintenance evaluation of pumping stations.

- **Wastewater Treatment Plant Design** experience includes pumping stations, disinfection processes, trickling filters, influent flow measurement, and laboratory layout of new facilities and expansions, as well as development of monthly operations reports.

- **Construction Observation Treatment Plant** experience includes 18 months serving as site engineer during the construction of a 10-mgd membrane filtration plant. Water main experience includes site representation for a municipal water main construction project.

- **Stormwater and Drainage** experience includes sanitary and storm sewer drainage studies, preliminary surveying, field investigation and solution development for drainage improvements. Field investigations required extensive communications with the public.

- **Laboratory** experience includes laboratory and pilot plant studies involving the removal of inorganics and particulates from drinking water and collection, and analyzation of water samples for free chlorine, pH, and orthophosphate.

STRAND ASSOCIATES

Christopher J. Keil, P.E.

Professional Affiliations

- American Society of Civil Engineers (President, Louisville Branch; Vice President, Kentucky Section)
- National/Kentucky Society of Professional Engineers (Professional Development Committee Chair)
- American Water Works Association (AWWA)

Awards and Honors

- Chris was recognized by the Governor of Kentucky for the outstanding service provided during design and construction of the Logan Todd Regional Water Commission Water Treatment Plant
- 2006 Kentucky Section ASCE Young Engineer of the Year
- 2010 Louisville Branch ASCE Distinguished Service Award

Professional Presentations

"Meeting the High Water Mark: KAW Enhances Customer Service Through System Improvements", presented at KY/TN AWWA/WEA Water Professionals Conference (July 11, 2006) and Kentucky Water and Wastewater Operators Association Operators Conference (March 26, 2007)

"Pooling Resources to Stove Off Drought: KAW Provides Expanded Water Supply to Meet Central Kentucky's Needs", presented at KY/TN AWWA/WEA Water Professionals Conference (July 14, 2009)

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Submission

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ID: 122
Submitted: 2012-12-14
Last Updated: 2012-12-14
Title: Central City's Regional Water Supply Enhanced Through System Improvements
Student: No

Author 1:
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Topic(s): Engineering and Construction
Keywords: water treatment plant, reduce cost, innovative,

Abstract: Central City's Regional Water Supply Enhanced Through System Improvements
Chris Keil, P.E. & Mike McGhee P.E.

Background

The City of Central City is a regional supplier of potable water to the cities of Central City, Drakesboro, and Sacramento as well as two water districts in Muhlenberg County. The existing WTP, which draws water from the Green River, was designed as a modified lime-softening facility in 1969 and was expanded in the early 1980's. Plant age and changes in acceptable design standards have stressed the WTP's capabilities while

generations of increased demand have maximized the WTP's intended capacity. Strand Associates, in conjunction with McGhee Engineering, worked with Central City to increase the capacity of the WTP from 4 MGD to 7 MGD while replacing equipment and facilities that were approaching the end of their useful life. This presentation will discuss the innovative ideas to cost effectively develop improvements, the various project challenges encountered during design and construction, as well as the solutions developed to overcome those challenges.

Why Would This Interest WPC Attendees?

The Central City WTP Improvements represents a project that many would consider a straight-forward engineering project until studied under the light of the following challenges and successes:
• Maintaining service to all its customers, including 3 wholesale accounts, during multiple plant shut-downs at a WTP that is at 95% capacity.
• Utilizing the existing WTP site footprint with its challenging terrain while increasing potential production capacity by 3.5 times.
• Reducing design element costs by 75% through innovative design and reuse of existing facilities.
Other Key Project Elements:

• Detailed survey of other existing WTP's using the Green River as a water source. The survey focused on treatment processes, procedures, challenges and methods to overcome them, and recommendations for improved performance. This information was used to help select the treatment alternative for Central City.
• Utilization of fiber-reinforced plastic (FRP) reinforcing in the existing intake structure to accommodate new, heavier vertical turbine pumps. FRP reinforcing was used in lieu of more costly alternatives.
• New facilities were constructed to address the harsh environment and access challenges to existing electrical, pumping, and chemical feed equipment.
• Innovative reuse of existing contact clarifiers in a pretreatment process during periods of more challenging treatment conditions.
• Filter modifications developed to increase capacity and address existing deficiencies.
• Conversion of existing settling basin into new flocculation basins, saving space and significantly reducing construction costs.
• Improved operational flexibility and control through the installation of a comprehensive SCADA system and alternative treatment options
• Reduced O&M costs by improving environment, metering, and electrical efficiencies

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 43KB
© Release (3): *not uploaded*

Reviewer(s):
• Keith Coombs, Louisville Water Company
• Bart Potts, Louisville Water Company
• Daniel tegene, Louisville Water Company

Andrew Lynn is the water business team leader for Garver in Tennessee. He has over 19 years of experience in water and wastewater planning, design and construction. He is a board certified environmental engineer. Andrew has a bachelor's of science in Civil engineering and a Master's of Science in Environmental Engineering. In his free time, Andrew enjoys spending time with his three children.

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ID: 176

Submitted: 2012-12-16

Last Updated: 2012-12-16

Title: Providing Safer, Softer Water while Enhancing Historic Big Spring Park - All on an Expedited Schedule

Student: No

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Topic(s): Engineering and Construction

Keywords: Water Treatment, Softening, Membranes, Ultrafiltration, Reverse Osmosis, Membrane Piloting, 3-D design

Abstract: For residents of Tuscumbia, Alabama, enhancing the look of historic Big Spring Park was a welcomed benefit of the new water treatment plant slated to provide safer, softer water to their homes, schools, and workplaces. The Tuscumbia project, due to its location, shares many characteristics with municipalities and water suppliers in middle Tennessee and serves as a good example of what could be implemented for those entities.
The City's raw water supply, Big Spring, is a 24-mgd spring situated in the middle of historic Tuscumbia. Local residents enhanced the park setting with an ornamental waterfall, fountains, and light show; however, the city's nearby water treatment plant

required expansion and upgrades to meet increasing peak demands and citizen desire for softer water. While overall water quality is good from Big Spring, hardness levels average around 220-mg/L $CaCO_3$ which is 60-80% higher than values typically targeted. Driven by limited space and concerns with construction sequencing, the City endeavored to construct a new softening treatment plant just a few blocks away-on a site overlooking Big Spring Park.

With the goal of increasing production of softer water within an architecturally fitting structure, the City approved conceptual plans for a 4.0-mgd split stream UF and RO plant, expandable to 6.0-mgd. The proposed improvements included new raw water pumping, pretreatment, UF, split stream RO for softening, clearwell, high service pumping, as well as new chemical, laboratory, and admin facilities. Schedule was critical, existing facilities were in need of improvements, and meeting increasing water demands was a primary goal. However, membranes required piloting for design confirmation and regulatory approval. Working on an expedited schedule, the City and their engineer, Garver, developed a plan to proceed with design of the overall plant facilities while further evaluating membrane options. Garver solicited detailed information from three membrane manufacturers ranging from proposed flux, to chemical and energy consumption, to costs. Information was tabulated and analyzed, cost analyses were compiled, and a report was prepared recommending a single manufacturer for further negotiations and piloting.

A detailed pilot plan was prepared, and the entire process train was piloted-including pretreatment with plate settlers, UF, and RO. Following a 30-day demonstration period at the proposed flux rate, UF flux was incrementally increased and permeability monitored. Thru piloting, a 30% increase in flux was demonstrated, thereby reducing the number of required membranes and ultimately capital cost.

Following piloting, the City, engineer, and manufacturer confirmed design flux, coordinated scope of supply, and negotiated final pricing. By this time, design of other plant facilities was complete, leaving only final design of the membrane facility remaining. Due to the large amount of interconnecting piping and ancillary systems, Garver utilized 3D design of the membrane facility, which increased the speed and accuracy of coordination with membrane manufacturer, interdisciplinary design features, and production of construction documents. Construction of the facility was completed in July of 2012.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 13KB
© Release (3): *not uploaded*

Reviewer(s):
- Keith Coombs, Louisville Water Company
- Bart Potts, Louisville Water Company
- Daniel tegene, Louisville Water Company

This session will provide an update on the newest regulatory rules and requirements relating to Drinking Water in Tennessee. The speaker will also discuss upcoming and pending rule changes as well as how communities can comply.

The speaker will be a Staff member from the Tennessee Department of Environmental Control. This person will be familiar with the newest regulations and pending regulations as they will have most likely been involved in the formation of them. The actual speaker will be determined by TDEC at a later date based on travel and availability schedules.

This session will provide an update on the newest regulatory rules and requirements relating to wastewater/clean water in Tennessee. The speaker will also discuss upcoming and pending rule changes as well as how communities can comply.

The speaker will be a Staff member from the Tennessee Department of Environmental Control. This person will be familiar with the newest regulations and pending regulations as they will have most likely been involved in the formation of them. The actual speaker will be determined by TDEC at a later date based on travel and availability schedules.

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ID: 16

Submitted: 2012-11-02

Last Updated: 2013-04-09

Title: Tennessee's Biosolids Rules

Student: No

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Topic(s): Biosolids

Keywords: Biosolids

Abstract: This paper will discuss the recently adopted Biosolids Rules for the State of Tennessee and will explain in detail the process followed for the development and implementation of these new rules. The discussion will focus on the provisions of the new State Biosolids Rules which will primarily follow 40 CFR Part 503 with some exceptions. The exceptions will be such things as additional setbacks, a more detailed agronomic rate determination and verification, and electronic reporting. All of the rationale, pros and cons behind each exception will be provided. Additionally, statements will be included from EPA officials relative to these exceptions in the context of state rules being "more restrictive" than the federal Part 503 regulations.

The paper will discuss the public participation in the state biosolids rule making process. The public notice, the subsequent series of public hearings, comments and response to comments will be discussed in detail.

Also included in the presentation will be perspectives from the State of Tennessee Biosolids Coordinator who has been involved with biosolids recycling issues for almost forty (40) years and for more than a quarter of a century as a regulator.

The paper concludes by looking into the future in Tennessee to envision what life will be like working under the new biosolids rules with regard to the general permit for the land

application of biosolids and the option to issue an individual permit.

Comments:

Files: Presentation (1): 26KB
Bio (2): 23KB
© Release (3): 517KB

Reviewer(s):
- Paul Maron, Strand Associates
- Jim Pelton, Pelton Environmental Products

Robert G. O'Dette, M.S., P.E.
Tennessee Department of Environment and Conservation
Division of Water Resources
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Robert.Odette@TN.GOV

- Professional Engineer with over 40 years of experience in wastewater treatment and residuals management (more than 25 years as a regulator).
- Presented over 100 technical papers on 5 continents.
- B.S. and M.S. in Civil (Environmental) Engineering
- Past President and WEF Director for the KY-TN WEA.
- Won a Special National EPA Award for Biosolids in 1996 for Public Acceptance and Outreach Programs.
- Past Chair of WEF's Residuals and Biosolids Committee.
- Charter Member of the National Biosolids Partnership.
- Testified before the United States Congress relative to the benefits of biosolids recycling.

Why We Increasingly "Look to the Catchment to Save the Stream"—A Review

Robert J. Hawley, Ph.D., P.E. **Katherine R. MacMannis, E.I.T.**
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A growing consensus of international experts is approaching the challenge of stream restoration via watershed-scale stormwater control programs as opposed to an exclusive focus on reach-scale habitat construction (e.g. see Booth, 2005; Walsh et al., 2005; Roy et al., 2008; Meyer et al., 2009; Walsh et al., 2009; or Palmer et al., 2010; collectively cited well over 1,000 times, among many other widely cited papers). However, there has been resistance to such a catchment-scale approach from many stream restoration practitioners. The purpose of this presentation is to provide a review of the latest interdisciplinary research supporting a more integrated, watershed-scale approach, including research from our KY-TN region. It will also highlight opportunities where such an approach overlaps with common stormwater, water quality, and flood control management programs that many utilities already run. It will conclude by presenting research needs and data gaps that KY-TN professionals could work to fill with future well-designed projects and monitoring programs.

Author Bios:

Bob Hawley has a B.S., M.S., and Ph.D. in Civil Engineering and is the Principal Scientist at Sustainable Streams, LLC. He is a licensed P.E. with 10 years of professional/research experience in the field of rivers/watersheds and 46 publications including 7 peer-reviewed journal articles. He serves as a contributing reviewer for the *Journal of Hydrology, Journal of the American Water Resources Association,* and *Environmental Management,* and is an invited charter member of WEF's Stormwater

Committee. Dr. Hawley enjoys teaching, spending time outside, and relaxing with his family and friends.

Matt Wooten holds a B.S. and M.S. in biology from Marshall University in Huntington, WV, has spent the last 15 years studying aquatic communities as a means of monitoring water quality, and is currently employed with the Northern Kentucky Sanitation District No. 1 (SD1) as an aquatic biologist. He has authored/co-authored peer reviewed manuscripts, technical papers, reviewed USEPA guidance documents, presented at numerous conferences, and in 2007, he was named the Young Scientist of the Year by the Cincinnati Society of the Scientist and Engineers. Matt is an avid outdoorsman and enjoys spending time with the family.

Katie MacMannis graduated Magna Cum Laude from the University of Dayton with a B.S. in civil engineering and is currently working as a project engineer at Sustainable Streams, LLC. Her professional career has covered a variety of stormwater, stream system, and watershed planning projects, including experience in research and design of stormwater best management practices for water quality enhancement and channel protection. Katie enjoys spending time with family, traveling and exploring new places, and serving her community.

Elizabeth Fet holds two B.S. degrees in zoology and environmental science from Marshall University in Huntington, WV, and is currently finishing her M.S. in biology, also from Marshall. Her experience has focused on water quality assessments of the main stem and tributary streams in the Ohio River Basin. Liz enjoys hiking, camping, kayaking and most things outdoors.

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Submission

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ID: 30

Submitted: 2012-11-26

Last Updated: 2012-11-26

Title: Why We Increasingly "Look to the Catchment to Save the Stream"—A Review

Student: No

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Topic(s): Watershed Management

Keywords: stormwater, stream restoration, watershed management

Abstract: A growing consensus of international experts is approaching the challenge of stream restoration via watershed-scale stormwater control programs as opposed to an exclusive focus on reach-scale habitat construction (e.g. see Booth, 2005; Walsh et al., 2005; Roy et al., 2008; Meyer et al., 2009; Walsh et al., 2009; or Palmer et al., 2010; collectively cited well over 1,000 times, among many other widely cited papers). However, there has been resistance to such a catchment-scale approach from many stream restoration practitioners. The purpose of this presentation is to provide a review of the latest interdisciplinary research supporting a more integrated, watershed-scale approach, including research from our KY-TN region. It will also highlight opportunities where such an approach overlaps with common stormwater, water quality, and flood control management programs that many utilities already run. It will conclude by presenting research needs and data gaps that KY-TN professionals could work to fill with future well-designed projects and monitoring programs.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 30KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

SPEAKER INFORMATION

SPEAKER: Thomas E. Waters, P.E., LEED AP

BIOGRAPHY:

Mr. Waters is located in O'Brien & Gere's Louisville, Kentucky office. He has 5 years of experience in water resources and water and sewer infrastructure planning for large and small utilities. He has MS and BS Degrees from Lehigh University.

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Submission

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ID: 169

Submitted: 2012-12-16

Last Updated: 2013-03-20

Title: Integrating Green and Sustainable Practices into Waterworks Facilities

Student: No

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Topic(s): Sustainability

Keywords: green, ssutainable, wind energy, solar, LEED

Abstract: The American Water Works Association identified that in the 1970's there were about 750 open, treated water reservoirs in water distribution systems. Under the Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), the US Environmental Protection Agency identified that drinking water reservoirs that are "open" to the atmosphere are susceptible to possible contamination, specifically disease-causing microorganisms. Many large and small utilities throughout the country have initiated long-term plans to cover the reservoirs, discontinue or replace the reservoir with a covered tank, or disinfect the water leaving the reservoir. After a thorough review of a variety of regulatory compliance options, including installation of UV disinfection and covering the existing reservoir, the Metropolitan Water Board in central New York decided the optimum approach for its

reservoir was to replace the existing reservoir with two 15-million-gallon water storage tanks.

The Metropolitan Water Board (MWB) is the wholesale supplier of drinking water to several entities in central New York including the City of Syracuse. The MWB system draws water from Lake Ontario, which is treated at its 50 million gallons per day (mgd) water treatment plant in Oswego and then pumped through over fifty miles of large diameter transmission mains to its customers. The MWB system has three reservoirs that are used for transmission storage.

The new 15 MG tanks are 350-ft in diameter and are being constructed south of the existing earthen reservoir. The MWB viewed this project as an opportunity to demonstrate its leadership role in promoting use of best practices for green infrastructure, energy, and environmental design, and construction management to improve the sustainability of its projects. The design of the water storage facilities and upgrades to the 72-mgd centralized transmission pumping station incorporated the following energy and sustainability measures which will be outlined in the presentation:

- Green Infrastructure – Site Development and Stormwater Management: One of the primary objectives of the project is to manage the site constraints and limit disruption of natural hydrology, reducing impervious cover and increasing site infiltration. Examples include:
» Preserving as much of the existing 4.2 acres of wetlands as possible (to preserve ecological functions/values and provide a continued visual buffer between adjacent property owners and on-site facilities).
» Minimizing the volume of earth materials leaving the site to reduce associated transportation/disposal impacts and GHG emissions.
» Redirecting waters to maximize infiltration of stormwater into soils onsite and minimize offsite runoff by utilizing open vegetated swales to convey stormwater runoff where practical.
» Utilizing state-of-the-art, green infrastructure technologies throughout the stormwater system design such as bio-swale catch basin connections and bio-retention area catch basin
connections. The vegetation for the bioretention systems will be mowable and require minimum maintenance.
» Incorporating the construction of 0.8 acres of new wetlands.
» Eliminating surplus parking spacing and resurfacing existing parking spaces with porous pavement.
» Eliminating a loop road to increase green space on the site.
» Installation of 1.6 acres of vegetative roofing on the water storage tanks was considered but will not be installed due to superior performance of ground based solutions.

- Wind Energy: A wind profile for the project site was used to assess the potential for development of an alternative energy source using wind power. The site was characterized as a below average wind resource, and was therefore deemed not practical.

- Solar Energy: The use of solar power was evaluated based on available incentive programs and the electrical power needs at the site. The tank design includes provisions for installation of up to 2 MW of passive solar panels on the tank roofs. It is anticipated that this will be implemented under a power purchase agreement after completion of the tanks.

- LEED: Criteria from the U.S. Green Building Council's (USGBC) Leadership in Energy & Environmental Design (LEED) rating system for evaluating the application of Sustainable Site and Green Building practices were applied to the project, which included:
» Asphalt recycling
» Reuse of existing granular underdrain material
» Green concrete
» Green power
» Regional materials
» Solar lighting

» Construction waste management
» Recycled content

- Energy Conservation: A detailed energy audit was used to support the replacement of four 800-Hp single speed pumps with four 500-Hp variable speed pumps to improve operational flexibility and reduce electrical costs by over 25 percent.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 27KB
© Release (3): 57KB

Reviewer(s):
- Paul Maron, Strand Associates
- Martha Segal, Metro Water Services

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Submission

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ID: 137

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Sustainability Success! Maximizing savings through Integrated Water Management

Student: No

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Topic(s): Sustainability

Keywords: Integrated Water Management, sustanability, wastewater reuse

Abstract: Lincoln Memorial University faces the challenge that many educational institutions face today; how to economically embrace rapid growth in a dwindling economy. The University has experienced 13% growth on campus in the last two years, adding students and buildings at as quickly as possible. As many other facilities have experienced, with rapid growth it is often difficult for current infrastructure to keep up.

The University was managing water, wastewater, and stormwater separately, and each were affected by this student growth. The water supply is treated on campus, and provided through a cave located in Cumberland Gap, Tennessee. Currently, there is an issue with water supply on campus, and irrigation demand drives the University to spend

approximately $100,000 per year to purchase water from an adjacent utility district. The wastewater on campus is sold to the adjacent town of Harrogate, at over $150,000 per year, where it is transported 13 miles over mountains to the town of Tazewell. Not only does this require significant energy consumption, it also removes over 150,000 gpd of water from being returned to the dwindling supply of the cave network. The University is also faced with a new tap fee of $221,000, and unexpected cost. Stormwater on campus is not detained for any use; it passes through campus and returns to the cave network.

By removing the typical approach of "pigeonholing" these elements, LMU is able to integrate their water management on campus, save money, and prepare for future growth. The university can treat wastewater on site, reuse the effluent for irrigation and save over $250,000 per year in fees. They can retain stormwater, and blend with non-treated water to supplement irrigation needs during times of low student populations on campus. This campus transformation has less than a 7 year payback period, and doubles the capacity of current infrastructure on campus, allowing for future growth.
Topics to be addressed by the paper:

- Economical effects of Integrated Water Management
- Environmental effects of Integrated Water Management
- Educational effects of Integrated Water Management
- How this can apply to municipalities, corporations, and other educational facilities

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 65KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Martha Segal, Metro Water Services

Edward Wade, P.E. is the Chattanooga office manager for Lamar Dunn & Associates. In his career he has assisted in the program management of two cities under mandated wastewater system upgrades, which included the modeling and rehabilitation of over 2.5 million feet of sewer. He has assisted in the program management of a $76 million transportation improvement program. He enjoys fishing and hunting with his wife on their family farm in Georgia.

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Submission

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ID: 99

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Talk to Me - How to Engage Employees in Customer Communications

Student: No

Author 1: First Name: Kelley

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Alternate Contact: 502.569.3695

Topic(s): Public Information

Keywords: communications, customers, employee training

Abstract: Everyone has something to say - - every employee has an opinion about a project, a rate increase, the taste of the water or even what color should be on the fleet. Every employee has a life outside of their work which means they interact with friends, family, neighbors, church members, club associates, etc. every week.

While opinions matter, getting all employees on the same page for customer communications can elevate the utility's presence in the community on multiple levels.

Background and Opportunity: Traditionally, the responsibility of customer communications has fallen to the Public Information department of a utility. While the ultimate job of developing and implementing the message should be part of this department's mission, all employees have a stake in how customers perceive the utility and receive information.

Over the past two years, Louisville Water has worked to reinvent its customer communication efforts that engage all employees. The results are a more educated group of "ambassadors" who can represent Louisville Water's values to the community.

The effort focuses on two areas: first, the "big ideas" – talking points for initiatives and high-profile projects; secondly, cross-functional information – what do employees need to know about an area in which they don't work in. More importantly, what do they need to

know to answer customer questions?

Results: To tackle the "big ideas," Strategic Communications, developed one-to-one communication opportunities that included the President/CEO, executive leadership team and managers. Bi-annual conversations at each location present a snapshot of the company operations; small-group conversations at each location dive deeper into details. The company's weekly newsletter began an ongoing profile on Louisville Water's history and innovation that included connections to current initiatives. The communications plan also includes a q/a sheet or one-line talking points for large-scale projects, such as a rate increase or water main break. This communications planning was an important tool in 2012 when Louisville's Mayor asked Louisville Water and MSD to consider consolidating.

For the cross-functional aspect, Strategic Communications worked with the training department to develop "Louisville Water 101 - What to Say when your Friends and Neighbors Ask Questions." This interactive experience explored the company's history, the high-profile projects and some easy-to-relay answers to frequently asked questions. The initial two sessions filled quickly and the Communications group is working to continue the effort in 2013. In addition, a peer-to-peer training opportunity allows employees to spend an hour with a meter reader, a GIS technician or shadow a Cal Center representative.

While we're still fine-tuning the method and working to reach all employees, the initiative has already produced results: employees who feel empowered to answer a question and share the mission of Louisville Water.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 213KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

Kelley Dearing Smith

Kelley Dearing Smith is Louisville Water Company's Manager of Strategic Communications. In her 14-year career at Louisville Water, Kelley has developed education initiatives, strategic partnerships and communication efforts that focus on water's role in a community. She manages the company's media, marketing and public relations' programs and has written numerous articles on Louisville Water's history. In 2010, she authored a book to highlight the company's 150th anniversary.

Prior to Louisville Water, Kelley served as Assistant News Director and Executive Producer for WHAS-TV. A native of Fleming County, Kentucky, Kelley is married with two children. She holds a Bachelor of Arts Communications' degree from Eastern Kentucky University.

The KY/TN AWWA Customer Service Committee is one of 21 standing committees of the section and will host/moderate this session. The Customer Service Committee is comprised of members from Kentucky and Tennessee utilities. Dwinna Vance serves as the Committee Chair. The CS Committee works to provide training and programs to customer service professionals in the latest technology and services that help anticipate customer's needs, streamline business processes to best serve customers and improve efficiency.

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Submission

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ID: 78

Submitted: 2012-12-13

Last Updated: 2013-04-19

Title: Dealing With The Difficult Customers

Student: No

Author 1:
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Topic(s): Customer Service

Keywords: Dealing With Difficult Customers/Round Table Discussion

Abstract: We all know that dealing with difficult customers isn't easy, it has to be worked at. The pressure you experience on the jub can be greatly reduced by being confortable with your ability to deal with conflict. This "Round Table Discussion" will allow participants to learn new techniques and skills to use when dealing with difficult circumstances. The Customer Service Committee will act as facilitators and allow participants the opportunity to share what they know about this topic.

Comments: The KY/TN AWWA Customer Service Committe will be presenting this Round Table Discussion. Dwinna Vance, Chairperson, Rusty Collinsworth, vice chair.

Files: Presentation (1): 106KB
Bio (2): 10KB
© Release (3): 300KB

Reviewer(s):
- Paul Maron, Strand Associates
- Keith Coombs, Louisville Water Company

Ace Pipe Cleaning Inc.
Bio Bruce Jameson

Company: Ace Pipe Cleaning, Inc.
Name: Bruce Jameson
Title: Regional Manager

Bruce Jameson is the Regional Manager of Ace Pipe Cleaning, Inc., a division of the National Carylon Corporation. Mr. Jameson has over 17 years of experience in the cleaning and inspection of Wastewater and Stormwater pipes and appurtenances. His experience in Inspection Technologies includes 688,000 L.F. of Laser/Sonar/HDCCTV Inspections, CCTV Inspection, Sonar Inspection and Pipe Cleaning. Mr. Jameson has performed projects throughout the United States. During Mr. Jameson's tenure Ace Pipe Cleaning crews have Cleaned and Inspected over 49 million feet of pipe, from 4" to 96" in diameter utilizing various Inspection Technologies and cleaned pipe utilizing Hydraulic and Mechanical cleaning as well as 20,000 P.S.I Waterblasting. Mr. Jameson is a member of NAASCO, W.E.F, WEAT and UCTA and ASCE.

Memberships and Certifications

P.A.C.P/M.A.C.P Certification #U-208-4260, American Society of Civil Engineers, Texas Water Environment Federation, Water Environment Federation, Hazwopper Certification 2011, Confined Space Entry and Rescue, OSHA Construction Standards 2011- Hazardous Waste Operator 2011

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Submission

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ID:	91
Submitted:	2012-12-14
Last Updated:	2013-03-18
Title:	"Lesson learned -Largest Single Multi Censor Sewer Inspection Project in the United States"
Student:	No

Author 1:

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Topic(s): Collection Systems

Keywords: Largest Single Multi Sensor Sewer Inspection Project In the U.S

Abstract: KY/TN abstract submittal from Ace Pipe Cleaning Inc.
"Lesson learned Multi-Sensor Inspection Technology Fort Worth Texas 250,000 L.F.+

"Largest Single Multi-Sensor Project in the United States" amassing over 250,000 L.F. of 3-1 Inspections complete to date. Total Fort Worth project size 550,000 L.F.
The City of Fort Worth's Wastewater collection system includes more than 255 miles of large diameter interceptor sewers 24-inches in diameter or greater. The City has recognized the need to determine the condition of these vital large diameter sewers and develop recommendations for a long term capital improvement plan. As a result of these needs the City has initiated an Interceptor Condition Assessment Program (ICAP) for the large diameter interceptor sewers. This program is currently planned to have duration of six years. One of the primary objectives of ICAP is to assign a score to each pipe segment that represents its condition. The estimated Remaining Useful Life of a pipe segment is based on the pipe condition score. The pipe wall thickness from the pipe specification data establishes the original inside diameter of each pipe segment. The laser profiling measures the amount of wall thickness loss. The difference between the inspected inside wall location and the original inside wall location is used to calculate the inspected wall loss. The inspected wall loss or remaining wall thickness is used to assign pipe segment condition scores. The remaining wall thickness may vary along the length of the pipe segment depending on the rate of corrosion along the pipe segment. This paper will discuss the technology utilized by Fort Worth along with the benefits of the ICAP program. Some of the major benefits include reduced capital improvements, reduced reactive maintenance and cleaning costs, and enhanced understanding and knowledge of assets status and the remaining useful life cycle of the assets. This presentation will show some of the "lessons learned", findings, extraordinary deployments, unusual objects found and the opportunities for the further understanding of corrosion loss for the next 4 years of the program.

Ace Pipe Cleaning Inc.
Bruce Jameson
817-401-3639

Bio- Bruce Jameson- Ace Pipe Cleaning Inc.
Bruce Jameson- Regional Manager of Ace Pipe Cleaning, Inc. 17 years of and 43,000,00 L.F. of experience in Inspection Technologies includes combination Laser/Sonar/HDCCTV Inspections, CCTV Inspection and Pipe Cleaning. Memberships include NAASCO, W.E.F, WEAT and UCTA and ASCE. In Mr. Jameson's spare time he enjoys coaching youth Football and Select Baseball.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 30KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Charles Poskas, ARCADIS
- John Ricketts, URS Corporation

BIO Information

Course instructor's name and qualifications:

Name Thomas Lindner Title Sales Support Manager Occupation 20+ years in Sale Management

Company Employed by Badger Meter, Inc. Member AWWA

Business Address 938 Hidden Ridge Drive Milford, OH 45150 Contact Phone 513-576-0687

Educational and Experience Background as applicable to teaching this course
BA in Economics from the University of Cincinnati
Badger Meter, Inc. AMR Specialist 9 years

Tom is a Sales Support Manager in the Central Region for Badger Meter, Inc. (BMI). Badger Meter has employed him since March 1, 2004. Tom Lindner has many years experience in customer service, training, technical support, marketing, project management and sales management. Currently is responsible for 3 Direct Sales Managers, 1 National Account Manager, and 9 Distributors, in 9 States. Tom Lindner has led Badger Meter in managing seven distributors in three successful years of Orion sales and installation project management for distributors and utilities within the market. Tom has organized Badger Meter and Third Party personnel to implement installation projects of its Orion product. Tom has also been Project Manager for Galaxy the AMI product for Badger Meter.

Tom Lindner has taught courses in metering systems, meter sizing and selection and maintenance, as well as automatic meter reading for water works organizations in the United States.

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Submission

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ID: 192

Submitted: 2012-12-28

Last Updated: 2013-04-24

Title: Making Your Meters Smarter.... Advanced Metering Analytics (AMA)

Student: No

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Alternate Contact: Kayla Schultz, Sales Support Coordinator, kschultz@badgermeter.com

Topic(s): Other

Keywords: AMI

Abstract: Traditional AMI networks collect large amounts of metering data used primarily for billing purposes. To understand the metering data, a utility must run a myriad of reports and try to mine the data to find the exception conditions that they are concerned with. An Advanced Metering Analytics system offers proactive utility analytics based on the interval metering and exception data that is collected. Using analytics templates designed specifically for water utility operations, the utility can truly find proactive efficiency with their metering data.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 38KB
© Release (3): *not uploaded*

Reviewer(s):

- Keith Coombs, Louisville Water Company
- Amy Kramer, Northern Kentucky Water District

Parkson
Treating Water Right

Name: Tony Edwards

Title: MaximOS Product Specialist

Education: Tony received his Bachelors of Business Administration from Southeastern Oklahoma State University after competing four years in collegiate Division I-A and II-A baseball. In 1996, Tony was a member of the Wichita State Shockers who competed in the College World Series in Omaha, Nebraska.

Career Summary: As a Product Specialist, Tony's focus is on branding, improvement and marketability of the MaximOS™ product line, and supporting the sales network of Regional Sales Managers and Representatives who focus on direct sales with Parkson's future end-users, engineers, and contractors.

Tony began his water and waste water career with MIOX Corporation, the designer and manufacturer of MaximOS™, in New Mexico after 7 years as a Texas public school teacher and athletic coach.

In June of 2011, Tony relocated from MIOX Headquarters in Albuquerque, New Mexico to Parkson Headquarters in Fort Lauderdale, Florida.

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Submission

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ID: 12

Submitted: 2012-10-26

Last Updated: 2012-10-26

Title: On-Site Generation: Not Just Disinfection

Student: No

Author 1: First Name: Tony

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Topic(s): Drinking Water Quality

Keywords: On-Site Generation, OSG, Disinfection, Disinfection By-Products Reduction

Abstract: On site generation is a technology that has drastically improved in the last 10 years and is a safe, green and low cost alternative means of disinfection for a water supply systems. On site generation can be either a superior mixed oxidant or the industry standard 0.8% sodium hypochlorite. Both are generated by the simple feed stock of salt, water and power. Approved by EPA and follow the same standards of chlorine, mixed oxidant chemistry has provided water municipalities with chlorine residual enhancement, biofilm control, taste and odor improvement, DBP reduction, and chemical savings by microflocculation in conventional water treatment plants. Research from across the country has shown that mixed oxidants are able to penetrate the polysaccharide substrate that biofilm uses to attached to pipe distribution walls where standard chlorine and bleach chemicals could not. Additional studies by EPA have determined that ozone and chlorine dioxide is not present in mixed oxidants. Recent evidence from laboratory research indicate that mixed oxidants include H_2O_2 and other reactive oxygen species such strong oxidizing free radicals - hydroxyl radical,

superoxide, and chlorine radicals. Research on the composition continues; but the evidence on the chemical and
biocidal behavior continues to show, as it has for the past 20 years, that MOS is a superior oxidant to bleach alone.
The presentation will discuss the water quality improvements and the operational savings mixed oxidants has been able to provide to water and wastewater utilities.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 209KB
© Release (3): *not uploaded*

Reviewer(s):
- Jim Pelton, Pelton Environmental Products
- RENGAO SONG, LOUISVILLE WATER
- Preston Pendley, Hardin County Water District No. 1
- Brent Tippey, HDR

Bios for Speakers

Submission ID: 127
Title: Liquefying the FOG with Advanced Asset Management
Authors: Anthony Marconi, Saeed Assef, Sean Craig

Anthony "Tony" Marconi, PE is Preventive Maintenance and Support Services Manager at the Louisville & Jefferson County Metropolitan Sewer District. He has over 10 years of experience in water resources management, planning, analysis, and sewer and stormwater system maintenance. Mr. Marconi is a graduate of the University of Louisville with a Bachelor of Science and Master of Engineering in Civil Engineering and a Masters of Business Administration.

Saeed Assef is Director of Infrastructure and Flood Protection for the Louisville & Jefferson County Metropolitan Sewer District. He has over 30 years experience in the planning, design, and construction industry in both private and public practice. Since joining MSD, he has been involved in all aspects of Civil, Structural, Operations Process, Infrastructure and Flood Protection related planning, design and construction projects and regulatory issues. Mr. Assef is a graduate of the University of Louisville with a Bachelor of Science and Master of Engineering in Civil Engineering.

Sean Craig, EIT is a Project Administrator in the Infrastructure and Flood Protection (I&FP) Division of the Louisville and Jefferson County Metropolitan Sewer District. He leads a multitude of engineering and maintenance programs for the I&FP department related to sewer inspection, cleaning, maintenance, asset management, and Consent Decree related activities. Mr. Craig is a graduate of the University of Louisville with a Bachelor of Science and Master of Engineering in Civil Engineering.

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Submission

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ID: 127

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Liquefying the FOG through Advanced Asset Management

Student: No

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Topic(s): Collection Systems

Keywords: Colleciton Systems, FOG, PACP, CMOM, Advanced Asset Management

Abstract: Fats, Oils and Grease (FOG) in a sanitary sewer system can be a maintenance nightmare

and a major regulatory issue if left unchecked. Louisville MSD has an aggressive pre-treatment program for eliminating sources of FOG but there are still areas within MSD's collection system that require routine maintenance to eliminate the build-up of FOG that can limit capacity and ultimately lead to overflows. This presentation will focus on the aspects of MSD's preventive maintenance program and advanced asset management system that were used to implement a Chemical Grease Treatment program. Key points of the presentation will include identifying and verifying sewer lines that have a buildup of grease using PACP inspection data, using a jetter truck to coat the sewer with a grease liquefier that breaks down the grease and allows it to flow downstream under normal flow conditions, and performing a set amount of post-application PACP inspections to assess effectiveness. Dosing levels for the chemical grease treatment along with lessons learned will also be discussed.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 11KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- John Ricketts, URS Corporation
- Brent Tippey, HDR

Kimberly Seidelmann is an Engineer for Malcolm Pirnie, the Water Division of ARCADIS. She has over six years of experience in the wastewater treatment field and has been a key team member in the design of the Lancaster Water Pollution Control Facility.

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ID: 82
Submitted: 2012-12-13
Last Updated: 2012-12-13
Title: CSO Reduction using Express Sewers and Satellite Treatment
Student: No

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Topic(s): Collection Systems
Keywords: CSO, membrane, express sewer

Abstract: Typical of many Midwestern cities, Lancaster, Ohio was originally constructed using a combined sewer system to service the city. As the city has grown, separated sewer systems have been implemented in the areas of newer construction, with the separated system discharging into the combined systems prior to treatment at the water pollution control facility (WPCF). Regulatory requirements to reduce combined sewer overflows (CSOs) and improve treatment lead to development of the city's master plan and eventual construction of express sewers to convey the separated sewage to a "satellite" WPCF, maintaining the separation of the sewage system, reducing CSOs, and improving the quality of the treated effluent. In addition to treating the existing separated sewer system, the newly constructed "satellite" WPCF is readily expandable to accommodate additional growth on the city's east side.

The new "satellite" WPCF and associated pump station are designed to treat a 2.0 mgd average daily demand with a peak capacity of 6.0 mgd. An equalization basin at the new WPCF provides an additional 1 MGD of storage. The processes selected allow the facility to operate with minimal operational manpower.

Biological treatment in the new WPCF is accomplished using 0.1 μm, hollow-core membranes and a Vertical Loop Reactor™ (VLR) oxidation ditch. Mixed liquor from the VLRs is pumped to the membrane tanks where negative pressure pulls filtrate through

the membranes. A low pressure-high output ultraviolet (UV) disinfection system is available for final treatment of the effluent prior to oxidation with cascade post-aeration steps.

A Cannibal® sludge reduction system reduces the final volume of sludge produced at the new WPCF with a system of controlled dissolved oxygen levels and interchanging of solids. A fine screen and grit removal system remove non-degradable trash, fine grit, and inerts from the system during the Cannibal process. The wasted sludge is sent to a dewatering centrifuge prior to being landfilled.

The "satellite" WPCF is the first facility in the United States using this treatment scheme at a single treatment plant. Startup of the facility occurred in early 2011. This presentation will cover the design criteria and process description for this facility along with startup and current operating data.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 10KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Charles Poskas, ARCADIS
- John Ricketts, URS Corporation

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ID: 218

Submitted: 2013-01-04

Last Updated: 2013-01-04

Title: Nashville's Washington CSO Control Facility - Issues, Solutions, Construction Opportunites and Performance Results

Student: No

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Topic(s): Engineering and Construction

Keywords: Issues, Solutions, Construction Opportunites, Performance, Lessons Learned

Abstract: Abstract for the 2013 KY-TN WPC Conference
Nashville's Washington CSO Control Facility– Issues, Solutions, Construction Opportunities and Performance Results
Paul Stonecipher P.E.1; Robert Stolt P.E.1; Greg Ballard, P.E.2; Brent Freeman P.E.2
1 AECOM, 220 Athens Way, Suite 200, Nashville, TN
2Metro Water Services, 1600 Second Avenue N., Nashville, TN
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Washington CSO Control Facility
The Washington CSO Control Facility is located on the east bank of the Cumberland River in core downtown Nashville adjacent to a CSX Railroad Bridge and just north of the Tennessee Titan's LP Field and Stadium. The facility receives combined sewage flow from a 2,346 acre service area and three tributary aged combined sewers: 132-inch brick, 84-inch RCP and 48-inch RCP. The 3 sewers converge in a new junction chamber and flow is conveyed approximately 900 feet through a new 12-foot x 12-foot precast concrete box culvert to the facility. Flows at the facility range from approximately 4 mgd dry weather to over 650 mgd for a 100yr storm event. CSO events were occurring 50 to 60 times per typical year for the site prior to MWS investment of approximately $17 million in improvements. Washington contributed to over 70% of the annual duration of CSO's for Nashville and was approximately 50% of the total annual volume of CSO. The purpose of the Washington CSO Control Facility is three-fold:
a) First and most impactive to the combined tributary system and Cumberland River water quality, the elevation of the collective 142 feet of overflow weir gates in the floatables removal chamber causes storm flows to backup in the influent box culvert and upstream combined sewers. This condition allows the combined sewage from storm events to surcharge and be stored within the existing combined sewer network thus reducing, and quite often preventing, combined sewer overflows to the Cumberland River.
b) Second, mechanically cleaned 1-inch spacing bar screens remove large solids from the dry weather flow path and protect the downstream siphon under the river for a system screening function.
c) Thirdly, a 100-foot long x 17-foot wide x 20-foot deep floatables removal chamber is provided in order to create a quiescent zone for storm flows which allow floatable materials to rise the surface and be trapped in the chamber by a floatables baffle before overflowing 18 actuated dynamic weir gates, thus preventing the floatables from being discharged to the river. The weir gates
2
allow control of the solids in the flowstream by rising velocity control across the extensive length. Following the storm, the trapped floatables and solids are removed from the flow by the dry weather mechanical bar screen.
The latter two functions of the CSO control facility are consistent with EPA's Nine Minimum Controls Strategy for Combined Sewer Flows. Control No. 2 is stated as "Maximum use of the collection system for storage". Control No. 6 is stated as "Control of solid and floatable materials in CSOs".
Extensive modeling work was conducted to determine the reduction in volume and frequency of combined sewer overflows at the following design storms: 12/year (1.07"/24 hr.), 8/year (1.36"/24 hr.), 4/year (1.92"/24 hr.), 2/year (2/37"/24 hr.), 1-year
(3.02"/24 hr.), 2-year (3.39"/24 hr.), 5-year (4.50"/24 hr.), 10-year (5.23"/24 hr.), 25-year
(6.16"/24-hr.), 100-year (7.53"/24-hr.). For the design storms having a frequency of 1-year storm and less, the overflow reduction was significant and is considered to be a major accomplishment of this project. For design storms larger than 1-year, the

reduction in overflow volumes was not as great, but still notable.
This Presentation will be to first inform attendees of the various issues of design ranging from site considerations to outfall design for the river discharge across a broad range of flows. The implemented solutions to the issues and the project evolution for construction will be explored to impart the value engineering actions implemented and difficult range of design parameters. Emphasis and core efforts will be to impart the construction opportunities encountered such as micropile construction for foundations and a major construction method shift for a railroad spur crossing for the box culvert by open cut. The operational startup issues encountered will be presented and experiences with equipment such as catenary screens and the combined sewer debris stream including tree trunks in the flow. The operational issues with multiple weir gates and ultrasonic level sensing instruments will be presented. These and others will be presented as "Lessons Learned" from the actual construction of this project. Concluding the Presentation will be the approximately 1 year of operational system experience, facility and equipment performance and impact to Nashville CSO discharge metrics. In short, this is perhaps a comparable facility project for combined sewer, functions and equipment that has applications hereafter other parties could learn from with a large range of flows and difficult project parameters improving the water quality environment.

Comments:

Files: Presentation (1): 9KB
Bio (2): 8KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

PAUL STONECIPHER, PE

Associate Vice President

Mr. Stonecipher is an AECOM national practice leader for sewer collection system rehabilitation and very versed in many forms of project and program management. He serves as a senior technical advisor to many AECOM projects. Mr. Stonecipher is also responsible for the design of water distribution systems, water storage, booster pumping stations, water system planning, wastewater collection and transmission facilities, sewer rehabilitation, and storm water conveyance systems. He has served as program manager for the Nashville overflow/bypass abatement program and was responsible for the management of municipal wastewater and water projects from inception to construction, overseeing the planning, design and construction of projects by engineering staff. He has served as project manager for several major multimillion dollar sewer improvement projects for MWS, including Washington CSO Facility, Whites Creek WWTP Disinfection Improvements and the Nashville Long Term Control Plan. Mr. Stonecipher has prepared and presented studies at national conferences and has published articles in national trade magazines. He currently serves as the Design Manager for the Clean Water Nashville overflow abatement program management team

He was a graduate of Tennessee Technological University in 1974 and has practiced pipeline design nationally from his Nashville office base. He is a member of the KY-TN WEF Collection Systems committee. An industry exception, he is a 38 year employee of the same firm, albeit corporate name changes. A licensed engineer since 1979 in several states, he started in construction oversight advancing to design and management of multimillion dollar complex projects concurrently. He still loves the "dirt" and construction aspects of a project to a successful culmination for a client with the challenges of doing it technically different and better while being cost conscious to improve the environment in the way a project "should' be done.

Stephen H. King, P.E., BCEE
Senior Associate
Hazen and Sawyer, PC
227 French Landing Drive, Suite 420
Nashville, TN 37228

Stephen King serves as senior associate and project manager for Hazen and Sawyer in their Nashville office where he manages various water and wastewater projects ranging from planning to design and through construction.

CREDENTIALS

Registered Professional Engineer - TN and KY 1989
Board Certified Environmental Engineer (BCEE)

EXPERIENCE - 28 Years

8/12 – Present	Senior Associate/Hazen and Sawyer
9/03 – 8/12	Principal/Senior Project Manager/CDM- Nashville
3/02 – 9/03	Director of Nashville Operations/Senior Engineer DBS & Associates Engineering, Inc.
4/01 – 2/02	Environmental Services Manager/ HNTB Corporation - Nashville
9/97 – 4/01	Senior Environmental Engineer - Associate Gresham, Smith & Partners - Nashville
10/96 – 8/97	Environmental Services Manager/ HNTB Corporation - Nashville
8/95 – 10/96	Chief Engineer/Griggs & Maloney, Inc. - Murfreesboro
2/94 – 8/95	City Engineer/City of Brentwood
1/92 – 2/94	Office Manager/Senior Engineer/ Elrod-Dunson, Inc. Lexington, KY
4/85 – 1/92	Project Engineer/Elrod-Dunson, Inc., Nashville
8/84 – 4/85	Environmental Engineer Tennessee Department of Environment and Conservation
EDUCATION	University of Tennessee - Knoxville Bachelor of Science in Civil Engineering 1984

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Submission

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ID: 14
Submitted: 2012-10-29
Last Updated: 2012-10-29
Title: Wastewater Screening Improvements at the Moccasin Bend WWTP
Student: No

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Topic(s): Engineering and Construction
Keywords: Screening, moccasin bend, wwtp

Abstract: ABSTRACT_ WASTEWATER SCREENING IMPROVEMENTS AT THE MOCCASIN BEND WWTP _ALICE CANNELLA_STEPHEN H. KING.

Title: WASTEWATER SCREENING IMPROVEMENTS AT THE MOCCASIN BEND WWTP

Main Author: Stephen H. King
Employer of Author: Hazen and Sawyer
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Abstract Selection: General Topics; Engineering and Construction

Wastewater Screening Improvements at the Moccasin Bend WWTP
This presentation will explain the current challenges with the existing influent wastewater screening system and why these challenges are magnified when flows exceed 120 mgd at the influent relief pump station. Topics covered will explain advantages of the proposed influent screening improvements including the following: SSOs reduced in volume and frequency; number of screens reduced from nine (9) to three (3); improved operation at the influent relief pump station (conversion to a wet well); simplified and repeatable sluice gate control at the influent pump station and at the influent relief pump station to control flow; change operational strategy at the influent pump station and at the influent relief pump station; eliminate problems associated with the existing horizontal screen at the influent relief pump station; increase the screened flow from 210 mgd to greater than 230 mgd; monetary capital cost savings due to the reduction in the number of screens (9 to 3); and improved screening removal efficiency. Recommended screening improvements will allow for all wastewater entering the WWTP to be screened in lieu of the current practice which allows for bypassing of screening during high flows. The presentation will also demonstrate the advantages of 3D modeling through a "walk through" of the proposed influent screening facility.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 13KB
© Release (3): *not uploaded*

Reviewer(s):
- Keith Coombs, Louisville Water Company
- Bart Potts, Louisville Water Company
- Daniel tegene, Louisville Water Company

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Submission

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ID: 52

Submitted: 2012-12-10

Last Updated: 2013-03-18

Title: Nutrient Removal in Small Flow Systems

Student: No

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Topic(s): Small Systems

Keywords: Small Flows; Nutrrient Removal; BNR; demographics; Total Nitrogen; Total Phophorus,

Abstract: Small Flow Wastewater Treatment Systems are designed to treat wastewater produced by municipal sources with populations of less than 2500. This corresponds to design flows of less than 500,000 GPD. It is a fact that small flow wastewater treatment applications make up a majority of wastewater treatment applications in the United States. Demographic research indicates that as many as 75% of all municipalities in this country can be classified as generating small flow wastewater streams. These smaller flows were historically given less stringent discharge limits but with new regulatory requirements being implemented, these limits are now being tightened. This presentation will discuss the requirements that small flow systems are now facing. New design approaches are being taken to provide standard treatment system designs capable of biological nutrient

removal for small flow systems. Using standard systems that meet the requirements for a range of small flows has proven to be a cost effective approach for municipalities and engineers with limited budgets. Model standardization reduces engineering requirements which lowers the cost to produce these systems. Additionally, the use of standard footprints with common wall design reduces the amount of sitework and concrete required, lowering construction costs.

Designs that provide nutrient removal capability not only meet the lower effluent regulations but also provide a savings in operational costs. Internal recycle design allows for oxygen recovery by increasing denitrification. Utilization of chemically combined oxygen in the form of nitrite/nitrate lowers the overall aeration demand for the system, making the system energy efficient. Also available are low cost, automatic control systems that can control the aeration system output to that equal to the oxygen demand. The result is a compact small flow system that provides maximum energy efficiency. Correspondingly, the control system offers hands free operation of the treatment system. This is essential small communities that have a small workforce. Typically, these innovations have been reserved for large flow applications. Now this economy of design and operation is being brought forward to the small flow market.

This paper will present the process design considerations and site plans for secondary BNR treatment systems for several ranges within what is considered small flow design.

Comments: BIOGRAPHY
Mr. Olson hold a B.S. Degree in Environmental Science from Lake Superior State University and is a
Professional Engineer and certified operator in the States of Wisconsin and Michigan. He has over 34 years
of experience in the design and management of municipal and industrial water and wastewater treatment
systems. For the last 7 years he has been employed by Siemens Water Technology and has been involved
with the design of 100's of biological wastewater treatment systems throughout the United States and
the world.

Files: Presentation (1): *not uploaded*
Bio (2): 36KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Matthew Williamson, Littlejohn Engineering Associates, Inc.

Biographical Speaker information

Session: KY / TN Joint WEF Meeting - Lousivile
Topic: Nutrient Removal in Small Flow Systems

Speaker Information:
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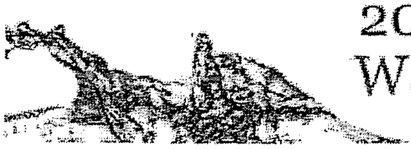
Mr. Olson has 36 years of professional experience in the field of wastewater treatment system design and operation. in both municipal and industrial applications. He is a professional engineer in Wisconsin and worked as a consulting engineer there for over 11 years. He is also a top level certified wastewater treatment system operator in both Michigan and Wisconsin and has over 8 years of direct operations experience. The following is a brief summary of his professional background

Previous experience at Siemens: Water Technologies: Senior Process Engineer responsible for the design of biological wastewater treatment systems throughout the world

Education: BS – Environmental Science - Lake Superior State University, Sault Ste. Marie, MI
Honors and Awards: Past Chair – WI Section, Central States Water Environment Federation
Membership & Registration: Registered Professional Engineer - State of Wisconsin
Class A Certified WWTP Operator – State of Michigan
Class 4 Certified WWTP Operator – State of Wisconsin
Class F-3 Certified Waterworks Operator -- State of Michigan
Member – Water Environment Federation

Mark Strahota is a Principal Engineer with Hazen and Sawyer in the State College, PA office. He has eight years of experience in the water and wastewater engineering field and is a registered professional civil engineer in California and Pennsylvania. He received a Bachelor's Degree in Civil Engineering from the University of Cincinnati and a Master's Degree in Environmental and Water Resources Engineering from the University of Texas at Austin. His focus is primarily in the wastewater field for Hazen and Sawyer in both process design and facility design.



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ID: 128

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Process Optimization at SBR Plant Results in Improved Nutrient Removal

Student: No

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Topic(s): Wastewater Plant Operations

Keywords: Nutrient Removal, SBR, Optimization, BioWin

Abstract: The Gregg Township Municipal Authority (PA) owns and operates a 1.26 MGD capacity sequencing batch reactor (SBR) plant that currently receives an average flow of approximately 0.6 MGD. The plant is located on the west branch of the Susquehanna River, and is therefore subject to Chesapeake Bay Tributary Strategy nutrient limits. A plant expansion project completed in 2010 installed two new SBR tanks to achieve nutrient removal; yet since startup of the new plant they have struggled to achieve the expected effluent nutrient concentrations. Concerns included the inability to match aeration capacity to low loading levels, the inefficiency of sodium aluminate addition preceding biological phosphorous removal, and a lack of control in influent bioselector.

Working with plant operations, field trials, and process sampling led to recommended operational changes. As part of the sampling program a calibrated BioWin model was developed to evaluate long term considerations for capital improvements. An initial sampling event established baseline conditions for the influent flows and loads and plant performance. The baseline data was used to develop a calibrated BioWin model to evaluate changes in seasonal and influent conditions. Subsequent recommended process changes were implemented one at a time, with additional sampling after each change to evaluate the impacts. The process changes included:

1. Changes to the phase times to reduce blower usage and improve energy efficiency at the plant.
2. Reduction in the dissolved oxygen (DO) setpoint at the end of the REACT FILL phase to accomplish simultaneous nitrification and denitrification (SNDN).
3. Changes to the timing and location of sodium aluminate feed for optimal chemical usage.

The recommended process changes resulted in several benefits to GTMA, including a 25% reduction in aeration to the SBR tanks. In addition, removal of total nitrogen (TN) and total phosphorus (TP) improved by up to 40% and 30%, respectively, with no capital improvements.

In the future, the calibrated BioWin model can be used to evaluate potential capital improvements as influent flows and loads increase and as the nutrient credit trading market varies. One of these recommendations includes structural changes to modify the use of anoxic selector zones on the upstream end of the SBR tanks. The anoxic zones, if arranged properly, could dramatically improve biological phosphorus removal and create additional nutrient credits for the Authority.

Comments: Primary Author is a WEF and AWWA Young Professional

Files: Presentation (1): *not uploaded*
Bio (2): 10KB
© Release (3): *not uploaded*

Reviewer(s):
- Mark Sneve, Strand Associates
- Brad Derrick, DLZ
- Michelle Hatcher, CDM Smith

PRESENTER

Nigel O. Grace, PE, BCEE
Brown and Caldwell

PAPER TITLE

Going the Last Mile – Achieving Stage 2 DBPR Compliance in Consecutive Systems and Problem Areas in the Distribution System

CREDENTIALS

- Over 20 years experience in environmental engineering with major emphasis in water supply, quality, water treatment, and residuals management.

EXPERIENCE

2011 - Present
Vice President
Brown and Caldwell

EDUCATION

- M.E., Environmental Engineering, University of Florida, 1989
- B.S., Chemical Engineering, University of Florida, 1986 Graduate Degree

EXPERIENCE SUMMARY

Mr. Grace is Vice President at Brown and Caldwell. His experience covers several areas of environmental engineering with major emphasis in water supply, quality, water treatment, and residuals management. In his free time, he enjoys coaching a Junior Bible Quiz team at his church and visiting with the elderly in retirement homes.

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ID: 136

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Going the Last Mile - Achieving Stage 2 DBPR Compliance in Consecutive Systems and Problem Areas in the Distribution System

Student: No

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Topic(s): Drinking Water Quality

Keywords:

Abstract: Drinking water utilities in the U.S. were required to begin meeting the Stage 2 Disinfectants and Disinfection Byproducts Rule (DBPR) maximum contaminant levels (MCLs) for total trihalomethanes (TTHM) and the sum of five haloacetic acid species (HAA5) beginning in April 2012. As has been well-publicized, the Stage 2 DBPR does not change the MCLs for TTHM or HAA5, but does change the manner in which compliance is determined. Compliance will be based on locational running annual averages (LRAA) at compliance monitoring locations intended to represent areas with high TTHM and HAA5 concentrations.

The majority of previous discussions of Stage 2 DBPR compliance alternatives have focused on "in-plant" solutions. That is, strategies to be implemented at a water treatment plant to reduce distribution system disinfection byproduct (DBP) concentrations. These strategies predominantly include enhanced DBP precursor removal technologies, such as granular activated carbon, ion exchange, or nanofiltration, or alternative disinfectants, such as chloramines. While effective, in-plant solutions may not be necessary in every case.

Distribution system optimization and treatment of the impacted area may be sufficient and more cost-effective than many of the in-plant solutions which have previously been the focus of discussions regarding Stage 2 DBPR compliance. For example, if one small area of the system poses potential compliance challenges, it can be much more economical to focus on that area of the system, rather than implement a system-wide impact. Focusing on a specific area of the system also helps to minimize the potential for unintended consequences associated with system-wide solutions, such as, corrosion control impacts, nitrification, and taste and odor.

In addition, in-plant solutions may not always be possible. Consecutive systems rely on their wholesale provider to provide them water of substantial quality to meet drinking water regulations. For most parameters, that is relatively straightforward. However, DBP concentrations can continue to increase throughout the consecutive distribution system. In such a case, it may not only be more practical or economical to focus on solutions for the consecutive system rather than in-plant solutions, but it might be the only option available.

This paper focuses on "distribution system strategies" - effective, economical, and practical solutions - to comply with the Stage 2 DBPR. It will include recent Water Research Foundation (WRF) research and case studies from throughout the U.S. of innovative strategies being used by drinking water utilities to comply with the Stage 2 DBPR. The topic is extremely timely for those systems that will struggle to comply with the new rule or who have yet to fully grasp the potential impacts of the rule to their system.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 148KB
© Release (3): *not uploaded*

Reviewer(s):
- Jim Pelton, Pelton Environmental Products
- RENGAO SONG, LOUISVILLE WATER
- Josh Cravins, WASCON, Incorporated

Eric Zhu, Ph.D., P.E.
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CREDENTIALS

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EXPERIENCE

10/06 - Present	Research Scientist Water Quality and Research Department Louisville Water Company
3/03 - 10/06	Senior Engineer and Assistant Manager University of Cincinnati on-site contract group at US EPA, Cincinnati, OH
10/99 – 03/03	Research Associate Department of Civil and Environmental Engineering University of Cincinnati, Cincinnati, OH
1989 - 1992	Environmental Engineer Chinese EPA, Beijing, China

EDUCATION

B.S.	Environmental Engineering	Tsinghua University, Beijing, China
Ph.D.	Environmental Engineering	University of Cincinnati, Cincinnati, OH

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ID: 196
Submitted: 2013-01-02
Last Updated: 2013-01-02
Title: Emerging N-DBP Challenges and Reduction of NDMA at Louisville Water Company
Student: No

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Topic(s): Drinking Water Quality

Keywords: Emerging contaminants, NDMA, reduction

Abstract: Chloramination has been a good alternative to chlorine disinfection for minimization of the formation of regulated disinfection byproducts (DBPs), such as THMs and HAAs. However, chloramination may increase exposure to nitrogenous DBPs, such as N-nitrosodimethyl amine (NDMA) and other nitrosamines. These chemicals are being considered by EPA for future regulation due to their health risks.

As many utilities using chloramines, NDMA was detected under EPA's under Unregulated Contaminant Monitoring Rule 2 (UCMR 2) program during 2009-2010. LWC has a tradition of being proactive with respect to meeting water quality regulations and customer expectations. Although NDMA is not being regulated yet, LWC has initiated a

comprehensive research project to 1) better understand the occurrence and formation of NDMA in LWC waters; 2) determine treatment technologies feasible to LWC conditions; 3) test and apply treatment strategies in minimizing NDMA in LWC waters. Some of these studies are being conducted in collaboration with Water Research Foundation. This research involves comprehensive monitoring, bench-scale investigation, pilot testing and full-scale demonstration of feasible treatment option.

Preliminary results have identified two major sources of NDMA precursors - wastewater derived chemicals in source water (Ohio River) and certain water treatment chemicals (e.g., PolyDADMAC). Several potential strategies in minimizing NDMA precursors and its formation potential are being tested and the results are very promising. Major finding so far include

• Riverbank filtration (RBF) is very effective in minimizing NDMA precursors and can remove NDMA formation potential by 70-75% under LWC's RBF conditions.

• Optimizing PolyDADMAC doses and managing pre-chlorination practice are most practical options for utilities using conventional treatment processes.

• Active carbon (e.g.,PAC) is also a promising option under certain conditions.

The methodology and findings from this work can be used as a road-map for other water utilities in addressing similar N-DBPs issues.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 29KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

Blake Warner is a process engineer for Kruger Inc. and his area of focus is high rate ballasted clarification for municipal drinking water and wastewater applications. He graduated from Purdue University with a BS in Civil Engineering. In his spare time, Blake enjoys tennis and home improvement projects.

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Submission

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ID: 41

Submitted: 2012-12-07

Last Updated: 2013-04-17

Title: Reducing the Cost of DBP Precursor Removal with Ballasted Flocculation and PAC Recycle

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Topic(s): Drinking Water Quality

Keywords: Powdered Activated Carbon, Disinfection By-Products

Abstract: Powdered Activated Carbon (PAC) has been utilized for decades in water treatment to remove taste and odor causing compounds. With the implementation of the Disinfection By-Products (DBP) rules, PAC has also been recognized for aiding compliance with these rules through removal of natural organic matter (NOM), as well as other DBP precursors. A typical treatment plant will dose and subsequently waste PAC after a single pass through the treatment process; this method of PAC dosing is inefficient because a vast majority of the PAC adsorption sites are not utilized due to a lack of contact time with the process stream. Conversely, ballasted flocculation with PAC recycle allows for repeated contact of the PAC adsorption sites with influent water, providing enhanced NOM removal while lowering operation costs compared to single pass PAC dosing. Pilot data from numerous studies has empirically confirmed PAC recycle process design and the ability to more efficiently use PAC than single pass systems.

Lifecycle analysis has also indicated cost-benefit and value-added for implementing ballasted flocculation with PAC recycle when compared to similar technologies such as GAC contactors and ion exchange resins.

In order to implement the PAC recycle process on a typical ballasted flocculation system, a PAC mix tank is added upstream of the coagulation, flocculation and settling tanks. The PAC mix tank allows contact between the influent stream and PAC, and the subsequent coagulation and flocculation processes then incorporate the PAC into ballasted floc. Ballasted floc are removed from the treatment stream via lamellar tube settling tank

where recirculation pumps convey the floc to hydrocylones for ballast separation; the ballasting agent is deposited back into the flocculation stage while the PAC/sludge is directed into the PAC mix tank. A small dosage of "fresh" PAC is continuously added to the influent water to replace spent PAC, which is wasted in order to maintain system mass balance.

Comments:

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Reviewer(s):
- Jim Pelton, Pelton Environmental Products
- RENGAO SONG, LOUISVILLE WATER
- Josh Cravins, WASCON, Incorporated

Kristi M. Schnell, P.E.

ENVIRONMENTAL ENGINEER

An Associate with Gresham, Smith, and Partners (GS&P), Kristi has more than seven years of experience designing wastewater pumping stations, wastewater treatment plants, collection systems, and water treatment plants. She assisted with the design of the 17th Street and London Avenue Canal Pumping Station in New Orleans following Hurricane Katrina. Additionally, when the city of Nashville experienced historic rainfall and subsequent flooding in Tennessee in 2010, Nashville's K.R. Harrington Water Treatment Plant was surrounded and submerged, Kristi worked on GS&P's team to help Metro Water Services (MWS) and the City to get this 90 MGD WTP back in operation within 30 days. She also assisted in the flood mitigation and hazard mitigation proposal submissions to FEMA.

One of her career's highlights on the wastewater side was providing engineering and design services for the Bowling Green Municipal Utilities (BGMU) Wastewater Treatment Plant Upgrade in Bowling Green, Kentucky. This project included a new headworks, sequencing batch reactors, ultraviolet disinfection system with post aeration, aerated sludge holding tanks, thermal drying of biosolids, and process instrumentation controls and SCADA communication system.

Based on her many accomplishments, she was named a top five finalist in the National Society of Professional Engineers (NSPE) "New Faces of Engineering" recognition program. She has served on the Tennessee Society of Professional Engineers Nashville Chapter Board for the past five years and currently serves as president. Kristi is also active within the KY-TN Water Environment Association on the Wastewater Technology Committee and Young Professionals Committee. She went through the Young Leaders Council training and holds a board position at Fannie Battle Day Home for Children, one of the oldest non-profit organizations in Nashville.

Kristi is a graduate of the University of Louisville with both a Bachelor Degree and Masters of Engineering in Civil and Environmental Engineering, as well as a Registered Professional Engineer in Kentucky and Tennessee.

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Submission

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ID: 170

Submitted: 2012-12-16

Last Updated: 2013-03-12

Title: Thermal Drying to Achieve Class A Biosolids – A Case Study in Bowling Green, Kentucky

Student: No

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Topic(s): Biosolids

Keywords: biosolids, Class A, BGMU, Therma-Flite, indirect drying

Abstract: Summary of Project
Bowling Green, Kentucky, home of the Chevrolet Corvette and Western Kentucky University, is the third largest city in the Commonwealth of Kentucky supporting a population approaching 60,000. Bowling Green is located a couple hours south of Louisville and about an hour north of Nashville, Tennessee. Water and wastewater services in Bowling Green are provided by Bowling Green Municipal Utilities (BGMU) which owns and operates a 15 MGD Sequencing Batch Reactor (SBR) wastewater treatment plant (WWTP). Residential, commercial, and industrially pretreated wastewater is collected and conveyed to the treatment plant from the City of Bowling Green and outlying areas of Warren County. Treated effluent is subsequently discharged to the Barren River.

The SBR facility began operation in June 2012, replacing an antiquated 10.6 MGD aerated biofilter plant. Growth and more stringent effluent requirements were the primary drivers for the WWTP upgrade. The SBR process was selected to address site constraints and provide the ability to achieve biological nutrient removal (BNR) to reduce nitrogen and phosphorus concentrations in the effluent. The waste activated sludge (WAS) generated by the new SBR process required the addition of a long-term and sustainable biosolids management practice. For this project, mechanical dewatering and indirect thermal drying producing a Class A product was selected.

Residuals Management – Then and Now

Management of residuals prior to the WWTP upgrade included mechanical dewatering of co-settled waste sludge from primary clarifiers and hauling the dewatered cake (~30 % solids) approximately 50-miles one way to the Ohio County Balefill. The previous operation did not provide stabilization or pathogen reduction for the co-settled wastes, which was a unique blend of primary waste sludge, WAS, and solids sloughed from the plastic media aerated biofilters. The co-settled waste sludge generated by the old WWTP was pumped directly from the primaries to a dewatering centrifuge and then hauled to the balefill.

The SBR process provided BNR capabilities to meet higher quality effluent standards. During the early phases of planning for the WWTP upgrade, consideration was given to continue BGMU's residuals management practice. Several factors had to be assessed to move forward with a comprehensive, long-term biosolids management plan:

As an activated sludge process, generation of WAS by the SBR process would be significantly greater by volume than waste sludge generated by the old co-settled process; thereby increasing transport costs;

The dewatering characteristics of WAS with no primary would be poorer than residuals containing primary sludge - producing less solids and more water would be hauled to Ohio County for disposal;

Increasing costs for transportation and tipping fees - this was troubling for BGMU after fuel costs escalated and the balefill increased tipping fees over the previous few yeas without prior notice; and,

Lack of a long-term commitment by the owners of the Ohio County Balefill to accept BGMU's residuals.

A decision matrix was developed to evaluate criteria required to satisfy all parties of due diligence before a final biosolids management plan could be executed. Feasibility of Class B biosolids was evaluated, and after careful evaluation it was determined that disposal constraints primarily due to extensive karst topography in the Bowling Green area, limited acceptance of Class B in the local area, and regulatory reporting requirements made producing a Class B product a less attractive long-term biosolids management option.

The first task of the long-term Class A biosolids management assessment involved a review of available technologies and practices for medium sized biosolids generators. See Table 1 for the findings of this research. In order to further narrow the options that would receive detailed scrutiny, a comprehensive secondary matrix of conditions was defined and assigned weighting factors. The selection criteria are included in Table 2. The results of the weighting criteria eliminated the microwave and composting technologies primarily for high energy costs and extensive land area requirements, respectively. The next evaluation phase involved a detailed comparison of thermal drying and alkaline stabilization technologies, see Table 3. Each of the processes and technologies were compared to landfilling using a 20-year life cycle cost analysis and a cost per dry ton to produce a Class A product. The baseline defined for the evaluation was the capability to produce 12.5 dry tons per day (first year of operation) to 20.5 dry tons per day (year 20) at 18% solids. Commissioning of selected thermal dryer process began in June 2012. Initial performance tests have been very promising while consistently producing a 90% dried product. Performance testing will continue through September 2012. Daily operational performance data will be available and included in this presentation in May 2013.

Table 1: Class A Options

Alkaline Stabilization (RDP)	Microwave (Burch BioWave)
Thermal Drying	Engineered Composting

Table 2: Selection Criteria

Land Requirements	Market and Proximity
Usable, Green, and Sustainable Product	Physical Characteristics of the Product
Use of Existing Structures and Equipment	National Experience
Constructability	Sidestream Quality

Sensitivity to Air Temperature / Climate   Operating Requirements and Complexity
Maintenance Requirements and Intensity   20-Year Life Cycle Cost (Capital and O&M)
Process Flexibility / Adaptability   Expandability
Project Phasing   Odor / Corrosion Control

Table 3: Class A Vendors

ThermaFlite BioScru	Andritz Belt Dryer
Kruger Belt Dryer	Komline-Sanderson Paddle Dryer
RDP Technologies	Landfill (Baseline Condition)

The Final Selection Process
Each technology was extensively evaluated. The next step of the evaluation was to determine which process would produce an affordable and consistent, marketable Class A biosolids product for BGMU. Pros and cons for each manufacturer were developed and site visits to view the various technologies were scheduled and conducted for BGMU personnel in 2008. During the site visits, BGMU staff discussed O&M of each dryer with the facility's staff.

BGMU's O&M staff visited four sites: Winchester, KY, for RDP; Shakopee, MN, for Kruger; and, Mason, OH, for Komline-Sanderson. During that time, the Therma-Flite dryer in Yakima, WA was not operational but a pilot unit was available. For 45-days, BGMU staff had hands-on exposure to this technology. The dryer in Yakima was visited in 2009 when it became fully operational. There were no US installations for Andritz in 2008 (however as of 2009 there are US installations, but none were visited). By the end of the site visits, RDP was eliminated, primarily due to the reduced beneficial reuse with regard to the available market.

Preliminary life cycle costs for the thermal dryer processes produced favorable results - depicting costs ranging from $256 to $307 dry tons per day as compared to landfilling at $314 dry tons per day (see Figure 1). In July 2009, BGMU decided to proceed with the indirect drying process and began to pursue funding opportunities. GS&P issued the Request for Proposals on behalf of BGMU in October 2009 to the four short listed dryer manufacturers. See table 4 for the RFP requirements. Kruger and Andritz decided, during the RFP process, not to submit due to exceptions to meet the performance specification. Komline-Sanderson and Therma-Flite's proposals were opened in November 2009. Both proposals were evaluated on the criteria listed in Table 5. Life Cycle costs for the two manufacturers are shown in Table 5. ThermaFlite's capital costs were $1M (15% lower) and the life cycle costs were $0.6M (2.5% lower). Based on the scoring matrix, Komline-Sanderson outscored Therma-Flite by 8/10 of a point, even though Therma-Flite had lower costs. However, at the end of the evaluation BGMU decided to utilize their executive power and awarded the dryer contract to ThermaFlite.

Figure 1: Cost per Dry Ton

Table 4: RFP Criteria

List of Exceptions	Greenhouse Gas Guarantee
Life Cycle Cost Analysis	Guaranteed minimum dry solids content
Natural Gas Usage (MMBTU/lb H2O evap.)	Electric Usage (kW-hrs)
Water Usage (gpm)	Annual Maintenance
Recommended Spare Parts	Classification Requirements
Guaranteed Schedule for Delivery	Bid Bond

Table 5: RFP Evaluation Criteria

Evaluation Criteria	Max Score	Therma-Flite	Komline-Sanderson
Proposed Cost	50.0	50.0	48.8
Compliance with Technical Specs	25.0	25.0	25.0
Location of Technical Service Facilities	10.0	10.0	10.0
Installation References	15.0	13.0	15.0
TOTAL	100.0	98.0	98.8

Capital Cost $6,993,487 $8,102,557
Life Cycle Cost $23,702,201 $24,282,226

Conclusions
BGMU's story is not unique; evaluation of Class A technologies resulted in an attractive and affordable option. What is unique about BGMU's story is the involvement and cooperation of all the different utility departments in the decision making process. BGMU's management listened to the operations and maintenance staff and let their input lead the decision making. What is also unique about BGMU's story is that they have Model 001 of an indirect drying technology that is gaining speed in the municipal market. Because Therma-Flite had not been in the municipal market, during design, both Metro Nashville and Louisville MSD were consulted about their biosolids systems. Lessons learned in both situations were valuable during the design process. BGMU plans on selling the final product to local farmers and held an "open house" to get the farmer's input on the product. The interest in the "BGreen" product is gaining momentum as operation of the dryer moves out of the startup phase.

Comments:

Files: Presentation (1): 35KB
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Reviewer(s):
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- Jim Pelton, Pelton Environmental Products
- Michelle Hatcher, CDM Smith

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Submission

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ID:	110
Submitted:	2012-12-14
Last Updated:	2012-12-14
Title:	Using Biosolids as Part of the Closure Cap for the City of Chattanooga
Student:	No

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Topic(s): Biosolids

Keywords: Biosolids, Engineering and Construction, Research, Reuse, Stormwater Management, Sustainability

Abstract: Using Biosolids as Part of the Closure Cap for the City of Chattanooga Birchwood Pike MSW Landfill, Area 2 to Enhance Development of the Vegetative Cover

William Johnson, P.E., Mathew Snyder, E.I.T., Brian Givens, P.E.
ARCADIS U.S., Inc., Chattanooga, Tennessee
The City of Chattanooga, Tennessee

One of the oldest problems with landfill capping is the development of and maintenance of the vegetative part of a landfill cap.
Almost all closures require a minimum of 6 inches of material suitable for growing vegetation be placed as the final part of a landfill closure cap. In the past, this portion of the cap, while one of the most important steps, is performed in the least engineered manner. From maintenance perspective, having a well-developed vegetative cover on the landfill is extremely important as it armors and protects the cover soils from erosion.
The importance of a good vegetation cover in reducing the long-term cost of maintenance of a landfill cap by better control of erosion induced the City of Chattanooga to pursue a way to enhance the vegetative cover at this Class I Municipal Solid Waste (MSW) Landfill.
Studies have shown that the amendment of soils with biosolids will increase the development of vegetation on poor soils. Based on these previous works, the City along with ARCADIS U.S., Inc., decided to use the biosolids produced at the City's own Moccasin Bend WWTP facility to amend the soils for the cap at the City's landfill.
The City's landfill is comprised of approximately 32 acres of synthetically lined permitted footprint. The area has been receiving waste for more than 14 years. This paper will present the results of the use of biosolids as an additive to the protective cover material for the closure cap for the Birchwood Pike MSW Landfill, Area 2.
The paper will present the following:

- Data on the development of the biosolids presenting a qualitative analysis of the material;
- Information on the processing of the biosolids at the Moccasin Bend WWTP discussing processing such that a Class A and/or Class B biosolids are produced;
- Logic for selection of the material actually used on the site;
- Technical data on the actual loading rates used for the site;
- How the material was incorporated at the site; and
- Results of the addition of the biosolids compared to a test site location which demonstrates the positive effects of amending capping soils with biosolids...

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): *not uploaded*
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

Douglas E. Kimbler
Bio

Doug's career spans over 20 years in the water and wastewater industries. He began with a B.S. in Chemistry from Western Kentucky University in 1985. He went on to earn an M.S. in Organic Chemistry from Western Kentucky University in 1989.

In Doug's first years out of college he worked in various industries gaining experience in industrial wastewater. In his career at Bowling Green Municipal Utilities Doug worked with the Water Treatment Plant, Wastewater Treatment Plant, and distribution and collection systems. This varied experience has provided Doug with a broad perspective on utility operations and the water industry in general.

Doug's current position at BGMU is Superintendent of Treatment Plants. In this position, he is responsible for managing the Water and Wastewater Treatment plants as well as distribution and collection systems maintenance for the City of Bowling Green, KY. These systems include a 30 MGD water treatment plant and distribution system, a 12 MGD wastewater treatment plant and collection system and 30 water and wastewater system personnel. He oversees all aspects of water and wastewater system operations, assisting the Systems Manager with planning and budgeting for the division.

Doug is married to Cindy; they have two sons. The oldest, Lucas, will be a senior in high school this year and Joshua will be a sophomore. His nights are occupied with assisting with homework, shuttling his sons to various sports and band events, and keeping up with the WKU Hilltoppers. Doug is an active member of AWWA and WEA. Contributions to the family scholarship fund are gratefully accepted and appreciated.

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Submission

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ID: 215

Submitted: 2013-01-04

Last Updated: 2013-01-04

Title: Going Green - How Bowling Green got into B.S. Part 2

Student: No

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Topic(s): Biosolids

Keywords: Biosolids, Green

Abstract: During its recent plant renovation and expansion, Bowling Green Municipal Utilities decided to invest in a biosolids dryer. This paper, a follow-up to one presented at the 2012 WPC conference in Memphis wil briefly review the decision process behind installing a biosolids dryer. It will then focus on start-up issues including personnel training, dealing with potential customers/farmers, and public relations with the community.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 25KB
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Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

2013 KY / TN Water Professionals Conference

Topic Category: Collection Systems

Title

Study-Design-Build: Owner, Engineer and Contractor Working Together!

Cost and Time Efficient Methodology to Identifying, Prioritizing and Repairing Sanitary Sewer Deficiencies

Presenter Bio

Leigh Cerda is a Senior Project Manager with Burgess and Niple, Inc. and holds a Bachelor of Science Degree in Civil Engineering from the University of Texas at Austin. With more than 20 years' experience in water and wastewater systems, she has served as project manager/engineer for inflow/infiltration studies, sanitary sewer evaluation surveys, overflow abatement/regulatory compliance programs and water and wastewater rehabilitation design and construction projects. Leigh has extensive experience in applying and specifying system monitoring and assessment methods and rehabilitation technologies and has presented nationally on the subjects of water and wastewater system assessment and rehabilitation throughout her career. Leigh is a practicing yogi (yoga practice) and a dedicated dance mom.

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Submission

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ID: 104

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Study-Design-Build: Owner, Engineer and Contractor Working Together!

Student: No

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Topic(s): Collection Systems

Keywords: Collection Systems. Sanitary Sewer Evaluation Studies, Inflow and Infiltration, Trenchless Rehabilitation, Study, Design/Build

Abstract: 2013 KY / TN Water Professionals Conference
Topic Category: Collection Systems

Title
Study-Design-Build: Owner, Engineer and Contractor Working Together!
Cost and Time Efficient Methodology to Identifying, Prioritizing and Repairing Sanitary Sewer Deficiencies

Presentation Introduction

The Design/Build concept has historically been applied in the design and construction of vertical and horizontal infrastructure including buildings, underground piping and roadways. In a design/build project, infrastructure to be designed and ultimately constructed is identified through a separate study, such as a Sanitary Sewer Evaluation Study in identifying wastewater collection system deficiencies. The Study/Design/Build concept combines the study, design (rehabilitation) and construction phases of a project to be performed by a team of one engineering firm and one contractor working together in one contract with the owner to identify and remedy system deficiencies with pre-set goals to gage overall achievement (structural rehabilitation, hydraulic restoration and/or inflow and infiltration reduction).

Presentation Summary
Design/Build projects are implemented throughout the industry with the goal of the contractor working with the engineer throughout the design and construction process. The team works under one contract with the project owner in providing design and construction services to the project. Design-build is also referred to as design/construct and is an alternative project delivery method to traditional design-bid-build, where separate contracts are required for design and construction. Infrastructure to be designed and constructed is typically identified through a separate study conducted by others (engineering firm). While design/build allows for a unified flow of work from design to construction, achieving the goals of the design/construction identified in the system study can be difficult due to the separation of the study and design/build phases. Owners are tasked with transferring the study results completed by one engineer to the design engineer/contractor team, often resulting in a loss of system knowledge/information and difficulty in implementing and measuring goals established in the study phase.

Study/Design/Build requires the partnership of one engineer and one contractor through the study to construction process. The engineer identifying the system deficiencies works with the contractor who will be tasked with implementing the resultant recommendations. The effectiveness of the program is evaluated through established goals (structural failure reduction, hydraulic capacity improvement and/or inflow and infiltration reduction) measured by a post construction method of evaluation such as post monitoring of pipe failures and overflows reported (structural/hydraulic capacity restoration) or flow monitoring (inflow and infiltration reduction) and compared to pre-construction measurements. With a pre-study established budget and schedule for study through construction, the study/design/build team prioritizes all identified system deficiencies to ensure maximum benefit to the system in achieving the project goals time and cost efficiently.

Hardin County Water District No. 1 (District) owns and operates four (4) distinct utility systems. These include the original water utility (urban and rural) founded in 1952, the Fort Knox sanitary and storm sewer systems, and the Radcliff sanitary sewer utility. The Fort Knox sanitary and storm systems were privatized by the U.S. Government in 2005 and awarded to the District. The Fort Knox sanitary system service area includes approximately 83 miles of sanitary sewer and 2,540 manholes. The Fort Knox Wastewater Treatment Plant (WWTP) is designed for average daily flow of 6 MGD and a peak flow of 14 MGD. In recent years, the average daily flow has been 1.0 to 1.5 MGD, with peak flows during rain events regularly exceeding 12 MGD.

The Study/Design/Build project performed in the Fort Knox sanitary sewer system was initiated to reduce wet weather induced peak flow to the Fort Knox Wastewater Treatment Plant. The project Team was tasked with the performance of a Sanitary Sewer Evaluation Study (SSES), development of rehabilitation and repair recommendations, prioritization of recommendations, and completion of construction activities and construction oversight. SSES tasks include system flow and rainfall monitoring, manhole inspections, smoke testing, dye testing, closed circuit television inspection and line cleaning. NASSCO PACP/MACP practices and procedures were applied in the investigation and analysis phases of the SSES. Construction methods being applied include open cut and trenchless methods for pipe and appurtenances.

In this presentation, study/design/build concepts will be discussed as utilized in the Fort Knox Sanitary Sewer System from the initial sanitary sewer evaluation study phase, to prioritization of findings, through the construction and post construction status as well as project lessons learned.

Project Status
The Fort Knox Sanitary Sewer System Study Design/Build project was awarded in February 2012. The Study and Prioritization phases were completed October 2012 and the Construction/Rehabilitation phase was initiated August 2012. Identified pipe and appurtenance rehabilitation and repairs are currently estimated at over $2.2 Million, with construction activities currently underway through a partnership of the Contractor (TSI) and the Owner (Hardin County Water District No. 1 and Veolia) and with oversight by the Engineer (B&N).

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Comments:

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Reviewer(s):
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- John Ricketts, URS Corporation

Rhonda Collins is a Civil Engineer at DLZ Kentucky Inc. She has over six years of experience assisting with the design of civil engineering projects. She enjoys spending her free time finding new places to visit with her kids.

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Submission

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ID: 118

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Fusible PVC versus HDPE: Direct Bid Comparison in a Sewer Rehabilitation Project.

Student: No

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Topic(s): Engineering and Construction

Keywords: sewer rehabilitation, fusible PVC, HDPE, competitive bid cost

Abstract: The Frankfort Sewer Department (FSD) is undertaking an intensive investigation and rehabilitation program within its sewer system. This program is in effect to eliminate recurring Sanitary Sewer Overflows (SSOs) as required by the City of Frankfort, Kentucky Wet Weather Consent Judgment. FSD used the Myrtle Ave. Gravity Sewer Phase II project to evaluate the use of Fusible PVC pipe in comparison to HDPE pipe for the design phase and for competitive bidding.

The Myrtle Ave. Gravity Sewer Phase II Project was originally designed to rehabilitate 2,831 linear feet of sanitary sewer using 10 inch to 12 inch HDPE pipe. FSD wanted to use this project to evaluate the use of Fusible PVC. The design evaluated the difference in the pipe thicknesses and sizes that would be required in the design according to the differences in HDPE and Fusible PVC pipe material. This design comparison indicated that both pipe materials met current specifications and that smaller pipe sizes using Fusible PVC pipe could be used within the project to obtain similar results this project required. FSD chose to compare actual competitive bidding for both designs. Using Unit Price Bidding, the base bid consisted of the original design for HDPE pipe with an alternate bid used to evaluate the cost of using the required Fusible PVC pipe.

A comparison of the bids for each type of pipe material was performed and will be provided, along with a discussion of the factors used to evaluate the bids results for FSD, and an evaluation of factors that affected the costs of installing each pipe material type was conducted as a part of this study.

Two distinctive bids were received for this project; however, similar differences in unit prices were seen in both bids for the use of HDPE compared to Fusible PVC pipe. This evaluation allowed FSD to determine which pipe material would benefit the City the most for other projects within their system currently being designed for gravity sewer rehabilitation.

Comments: this presentation would also be applicable under collection systems

Files: Presentation (1): *not uploaded*
Bio (2): 14KB
© Release (3): *not uploaded*

Reviewer(s):
- Bart Potts, Louisville Water Company
- Matthew Williamson, Littlejohn Engineering Associates, Inc.
- Daniel tegene, Louisville Water Company

PRESENTER

Henry R. Derr, PE
Brown and Caldwell

PAPER TITLE

Inspection, Condition Assessment and Rehabilitation of Pressure Pipelines

CREDENTIALS

- 40 years experience in water and wastewater planning, design, and construction

EXPERIENCE

2007 - Present
Senior Associate
Brown and Caldwell

2002– 2007
Senior Associate
Hazen and Sawyer

1977 – 2002
Up to Vice President
Metcalf and Eddy

1973 - 1977
Engineer
Elson T. Killam Associates

EDUCATION

- Bachelor of Science in Civil Engineering, Duke University, 1971
- Master of Science in Environmental Engineering, Duke University, 1973

EXPERIENCE SUMMARY

Mr. Derr has over 40 years of experience in the planning, design and construction of water and wastewater facilities with a focus on the use of trenchless technologies for pipeline inspection, construction and rehabilitation. He is a Senior Associate with Brown and Caldwell and is the firm's technical leader for trenchless technologies in the Mid Atlantic Region. The Derr's spent over 16 years living and working overseas in the Middle East and northern Africa.

Brown AND Caldwell

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ID: 139
Submitted: 2012-12-14
Last Updated: 2012-12-14
Title: Inspection, Condition Assessment and Rehabilitation of Pressure Pipelines
Student: No

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Topic(s): Engineering and Construction
Keywords:

Abstract: Technologies and procedures for the inspection, condition assessment and rehabilitation of gravity pipelines are well established. Similar tools and procedures for pressure mains, whether wastewater force mains or potable water mains, are less advanced. The development of inspection methods and especially the inspection technologies needed to provide quality condition assessment data on pressure mains only began in earnest about five years ago although some specific tools have been available longer than that. In that time, there has been considerable progress made in pressure main inspection and, more recently in the development of condition assessment tools. In the same period, there has been a modest amount of progress in technologies for the rehabilitation of pressure mains, and especially in the in-situ rehabilitation or replacement of pressure mains.

This paper will provide an overview of the technologies and procedures currently available for pressure main inspection, condition assessment and rehabilitation. The paper will briefly list the technologies and methods available on the market today and will then focus on those technologies which experience has shown to provide effective and reliable results.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 149KB
© Release (3): *not uploaded*

Reviewer(s):
- Bart Potts, Louisville Water Company
- Matthew Williamson, Littlejohn Engineering Associates, Inc.
- Daniel tegene, Louisville Water Company

This session will provide an update on the newest regulatory rules and requirements relating to Drinking Water in Kentucky. The speaker will also discuss upcoming and pending rule changes as well as how communities can comply.

The speaker will be a Staff member from the Kentucky Division of Water. This person will be familiar with the newest regulations and pending regulations as they will have most likely been involved in the formation of them. The actual speaker will be determined by TDEC at a later date based on travel and availability schedules.

This session will provide an update on the newest regulatory rules and requirements relating to wastewater/clean water in Kentucky. The speaker will also discuss upcoming and pending rule changes as well as how communities can comply.

The speaker will be a Staff member from the Kentucky Division of Water. This person will be familiar with the newest regulations and pending regulations as they will have most likely been involved in the formation of them. The actual speaker will be determined by TDEC at a later date based on travel and availability schedules.

This session will provide an update on the national trends related wastewater and clean water regulations. This session will focus on the big picture direction US EPA and the federal government is headed in the coming years and how it might affect communities.

Alan Victory is the Chairman of the Water Environment Federation's Government Affairs Committee. In this role he interacts regularly with members of Congress, the Executive branch and key federal agencies such as the EPA.

Jason Brooks joined Lamar Dunn and Associates as a Principal in September 2012. He is a graduate of Maryville College, the University of Tennessee, and Tennessee Tech University. He began his career with the Knoxville Utilities Board spending 15 years in utility management and moved to consulting engineering in 2011. As a consulting engineer, Jason has worked with municipal clients in Nashville, Memphis, Chattanooga, Knoxville, Morristown, and Oak Ridge on developing programs and processes to improve their utility operations. He is a registered Professional Engineer in Tennessee.

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ID: 163

Submitted: 2012-12-15

Last Updated: 2012-12-15

Title: Reducing flows to a combined sewer system using sustainable, green infrastructure – what's your plan?

Student: No

Author 1:
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Topic(s): Sustainability

Keywords: Combined Sewer System, Green Infrastructure, Sustainability, Triple Bottom Line

Abstract: The City of Chattanooga, Tennessee is preparing a Green Infrastructure Master Plan that will set forth how "green infrastructure" will be applied to the combined sewer system (CSS) plan. The goal of the Plan is to assess the areas in the combined sewer system and identify control measures such as plant/soil systems, permeable pavement, stormwater harvesting and reuse, or native landscaping to store, infiltrate, and evapotranspirate stormwater to reduce wet-weather flows to the CSS. The following types of controls are expected to include bio-retention, wetlands, green roofs, and permeable pavement, rain barrels, and cisterns. Each proposed project will be evaluated from an economic, environmental, and community perspective (triple bottom line).

Master Plan Components
- Specific green infrastructure controls measures that best apply to City of Chattanooga
- Comprehensive land use policy for land owned by the City of Chattanooga
- Public participation process
- Implementation schedule including a process for setting priorities of projects

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 10KB

© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Martha Segal, Metro Water Services

Systematic CSO Sewershed Evaluation for Cost Effective and Optimal use of Green Infrastructure

Jason Dempster, EIT
Job Title: Project Administrator
Employer: Louisville MSD
Address: 700 West Liberty Street
City: Louisville
State: KY Zip: 40203 Country: US
Phone: 502 540 6386
E-mail: Jason.Dempster@louisvillemsd.org

Biographical Information :

Experience: 8 years – Water and wastewater engineering, 2 1/2 years with Louisville MSD.
Education – BS from the University of Louisville – University of Louisville
Job Responsibilities as it Relates to the Topic: Works in Nine Minimum Controls, Management of Green Infrastructure Projects, and works on public education and outreach for Project WIN (the department managing programmatic activities for compliance with the Consent Decree). Many years of past experience of hydraulic modeling both combined and sanitary sewers.

Bio per standards

Jason Dempster works as an engineer for Lousiville MSD. He puts much of his time toward managing green infrastructure projects as well as working to implement MSD's LTCP projects. He has 8 years of experience in Water and Wastewater Engineering. In his free time, Jason enjoys teaching and coaching Brazilian Jiu Jitsu.

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ID: 184

Submitted: 2012-12-19

Last Updated: 2012-12-19

Title: Systematic CSO Sewershed Evaluation for Cost Effective and Optimal use of Green Infrastructure

Student: No

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Organization: Louisville MSD

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Topic(s): Sustainability

Keywords: Cost Effective Green Infrastructure CSO abatement and optimal sewershed approach source control

Abstract: PURPOSE

In 2005 Louisville and Jefferson County Metropolitan Sewer District (MSD) entered into a Consent Decree with the United States Environmental Protection Agency (EPA). In 2009 MSD submitted the Integrated Overflow Abatement Plan (IOAP) to address Sanitary Sewer Overflows (SSOs) as well as Combined Sewer Overflows (CSOs). As part of the IOAP, MSD performed a benefit/cost analysis for each overflow location to determine the highest value overflow reduction project in an average rainfall year. In order to reduce CSO frequencies, MSD modeled solution alternatives for CSO abatement and then completed a cost benefit analysis for each alternative to determine the solution with the best benefit cost ratio. The best projects were implemented into the Long Term Control Plan. Many of these projects involve large storage basins that capture overflows at the end of the pipe. As a part of the IOAP, MSD also committed to incorporate green infrastructure to help downsize the downstream gray infrastructure where this situation was cost effective. MSD defines green infrastructure as projects that capture storm water before it enters the Combined Sewer System (CSS) and allow it to infiltrate into the ground. Gray infrastructure is defined as those projects that capture or reduce overflow volume and frequency through conveyance and storage of water once it has entered the MSD sewer system. The purpose of this paper is to show how MSD analyzed CSOs and

various metrics associated with those CSOs in order to determine where green infrastructure can be implemented the most economically to lower the overall cost of CSO abatement.

BENEFITS

In order to test the effectiveness of various green infrastructure projects, MSD committed to install 19 green demonstration projects. Twelve projects were completed in 2010, with an additional 7 installed in 2011; in addition many stipend projects have also been implemented. These projects have allowed MSD to determine the cost, effectiveness, and appropriate specifications within the CSS for green infrastructure. From this information, MSD developed a Green BMP Manual and other standards for green infrastructure. The green demonstration projects have had flow monitors installed that measured outflow so that the overall effectiveness during different storms can be determined. From the information gathered from the green demonstration projects we developed a storm water capture tool for green infrastructure practices. This tool allows us to approximate how effective various green infrastructure projects will capture storm events as well as the capture percentage within a typical year. MSD has also used a combined sewer hydraulic model to identify the CSO sewersheds in which green infrastructure projects are the most effective at reducing the frequency and volume of downstream CSOs. By using these tools we are able to determine in which CSO basins green infrastructure projects can reduce overall costs the most.

CSO Sewershed Evaluation

Not all CSO sewersheds are the same. Each of the CSO sewersheds can have varied responses to rainfall. Because of the many differences in these sewersheds, the gray infrastructure projects in MSD's LTCP are quite varied. In order to characterize each CSO basin, there are key indicators that have been examined to determine how effective a green infrastructure project can be in each CSO sewershed. Some of these indicators are total contributing area, percent of impervious area, and level of control event rainfall size for each CSO basin. In addition, in-system characteristics are derived from a calibrated Infoworks CS combined sewer model. These characteristics include: peak flow rate of the level of control overflow event, low (dry) flow conveyance capacity of the CSO and the surcharge state of the low flow line. Using these indicators, MSD is able to have a more focused approach in its green program. This approach allows us to estimate the total amount of upstream area that would need to be captured with green infrastructure in order to eliminate the overflows during the control event. Differential cost estimates of downstream gray infrastructure project costs with and without each CSO gave MSD values of reduced conveyance costs and reduced storage costs for each CSO. Taking a ratio of the reduction in costs for eliminating an overflow for the control event versus the total amount of area capture needed to eliminate an overflow gave us a value for each basin for a sq.ft of upstream capture within each basin. These values have been mapped and help MSD target the highest value CSO basins first for implementing green infrastructure and ultimately save MSD ratepayers' money.

STATUS OF COMPLETION

The tools MSD uses to evaluate green infrastructure projects have already been developed and many of the most promising CSO basins are currently being evaluated to determine the optimal amount of green infrastructure in each CSO area to reduce overall cost while meeting the goals outlined in the Long Term Control Plan. MSD has proposed a modification to the IOAP to eliminate a gray CSO project with a suite of green projects. It is anticipated that a majority of these projects will be implemented prior to May 31, 2013.

CONCLUSION

By evaluating and implementing green practices in conjunction with analyzing the characteristics of CSO sewersheds, overall IOAP costs for Combined Sewer Systems can be greatly reduced. In one evaluated CSO area, the proposed gray project is being eliminated with green by meeting the same level of control at one third of the gray cost.

Comments:

Files: Presentation (1): *not uploaded*

Bio (2): 16KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Martha Segal, Metro Water Services

Brandon Vatter Bio

Brandon is a Senior Project Manager and Watershed/Wet Weather Technology expert for Hatch Mott MacDonald located in the Cincinnati, Ohio office. Brandon's work is currently focused on affordable water quality - integrated watershed management to obtain the optimum public investment to improve water quality.

Brandon was the former Director of Planning and Design for Sanitation District No. 1 of Northern Kentucky. Brandon was one of the main architect's of SD1's innovative Watershed Plans that combines gray, green, and watershed-based controls in order to comply with the Clean Water Act and balance affordability with measurable water quality improvement. This watershed-based approach will save the ratepayers of SD1 nearly $2 Billion as compared to a traditional CSO and SSO approach.

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ID: 77

Submitted: 2012-12-13

Last Updated: 2012-12-13

Title: How to Implement Integrated Planning to Achieve Affordable Water Quality

Student: No

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Organization: Hatch Mott MacDonald

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Topic(s): Watershed Management

Keywords: Integrated Planning, affordability, optimized investment, water quality

Abstract: A worldwide recession has delayed essential infrastructure investments across the country. Regulatory demands for Clean Water Act (CWA) Compliance—including nutrient removal, Sanitary Sewer and Combined Sewer overflow reduction, stormwater water quality controls and even dry weather pollutant sources —are exerting major capital investment cost impacts on local and regional wastewater and stormwater utilities. Coupled with the need to upgrade aging infrastructure to maintain utility services, how do we balance our CWA requirements with customer affordability and measurable water quality improvement? Today's regulatory landscape and financial realities demand a new approach to investment priorities and funding sources.

As the relationship between wet weather and in-stream water quality deterioration has been demonstrated, new mandates for water quality improvements have resulted from EPA and environmentalist legal actions. Many communities have been legally challenged to address their respective water quality impairments through major infrastructure projects—many investing billions to achieve compliance. Unfortunately, it seems that no sooner is one issue or pollutant source addressed other water quality pollutant sources and issues are raised and mandatory abatement ordered by Federal and state regulators increasing the cost of water quality compliance to the point of unaffordability for many communities.

Key national leaders and public officials are putting forth new strategies—from new funding programs— to redefining the federal affordability guidelines—to concepts to "integrate" water quality management compliance programs to maximize benefits for the investment. EPA has long recognized the benefits of improving the nation's waterways using a holistic approach (EPA 2002), most recently launching an Integrated Planning framework (EPA 2012) that is intended to provide Utility managers with the flexibility they need to prioritize their investments across water, wastewater (including combined and sanitary sewer overflow abatement) and stormwater. While most everyone agrees that Integrated Planning makes sense to perform, should project priorities be based solely on making progress towards meeting infrastructure goals, such as reduced number of CSO activations, or is there a better way to set these priorities using in-stream water quality benefits? For example, if I spend $10 million on a project, how many more days of in-stream water quality improvement will I get? What if I spend $100 million on infrastructure improvements and see no improvement in water quality?

The focus should be on a pragmatic methodology to determine and measure watershed health, establish a watershed health strategy, and identify and prioritize projects to improve watershed health and in-stream water quality, including how the local stakeholders can be engaged in the process and how the methodology can be used to set project schedules that reflect today's economic reality.

If the ultimate goal of all regulatory enforcement is improved in-stream water quality, and meeting water quality standards, the direct relationship of water quality improvement to affordability should be the focused regulatory metric. This strategy is called the "Integrated Water Quality Affordability Program" or "Affordable Water Quality." The goal should be to achieve continuous water quality improvement at the lowest possible cost per increment of water quality improvement not solely on gallons of CSO reduced, SSO eliminated or stormwater discharged. The focus of the Affordable Water Quality program is direct investment in only those improvements that have measurable and tangible benefits to water quality improvement (and thereby public health). This Integrated Affordable Water Quality solutions program integrates management of wastewater, stormwater, and other source pollution abatement directly with the development of nominally affordable spending plans to optimize the rate of investment to achieve in-stream water quality improvement and standards compliance. The time is now to bring these historically separate concepts together under one program and move away from the traditional approach of "Spend money and the water quality may get better" to "We know what we need to Spend at an Affordable Rate in order to Maximize Improvements to In-stream Water Quality."

The audience will learn how to develop an affordable water quality based strategy based on USEPA's integrated planning framework and USEPA's substantial and widespread socio-economic impact analysis for addressing the multiple sources of pollution and multiple CWA obligations. The audience will learn how to successfully combine affordability with measureable in-stream water quality improvement in order to develop an affordable combination of green, gray and watershed-based controls to maximize improvement to water quality and public health.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 28KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Mark Sneve, Strand Associates

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ID: 144

Submitted: 2012-12-14

Last Updated: 2013-01-22

Title: Public Information Roundtables

Student: No

Author 1: First Name: Glen
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Note: Kelley Dearing-Smith will be taking Glen Thomas' place as moderator

Contact Author: Author 1

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Topic(s): Public Information

Keywords: Public Information

Abstract: Abstract Selection
As part of the public information track for the WPC, the Public Information Committee would like to conduct between one and three "roundtable" discussions of various communications topics, including:
Media Relations
Social Media
Crisis Communications
Communications Plans

These could be done as two-per session or stand alone sessions. Each would involve a panel of at least three AWWA member utilities, discussing their methodologies, communications plans, strategies and lessons learned. There would be ample time for Q&A as well.

Finally,

Objectives:
1. Attendees gain best practices knowledge from peer utilities.
2. Informal Q&A sessions would allow attendees to gain insight to particular problems.
3. For the communications plan portion, attendees could leave with framework of a plan,

or ideas to hone their existing plan.

Comments:

Files: Presentation (1): 26KB
Bio (2): *not uploaded*
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Amy Kramer, Northern Kentucky Water District

Kelley Dearing Smith

Kelley Dearing Smith is Louisville Water Company's Manager of Strategic Communications. In her 14-year career at Louisville Water, Kelley has developed education initiatives, strategic partnerships and communication efforts that focus on water's role in a community. She manages the company's media, marketing and public relations' programs and has written numerous articles on Louisville Water's history. In 2010, she authored a book to highlight the company's 150th anniversary.

Prior to Louisville Water, Kelley served as Assistant News Director and Executive Producer for WHAS-TV. A native of Fleming County, Kentucky, Kelley is married with two children. She holds a Bachelor of Arts Communications' degree from Eastern Kentucky University.

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ID: 8

Submitted: 2012-10-24

Last Updated: 2012-10-24

Title: Sewer Structure Restoration

Student: No

Author 1:
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Topic(s): Collection Systems

Keywords: Sewer Structure Restoration

Abstract: Description: Our sewer systems are failing to perform to the EPA's standards, and the two (2) main contributors are groundwater infiltration and hydrogen sulfide-induced corrosion. Cementitious liners, epoxy liners, and the combination of both are the most structural, infiltration eliminating, corrosion resistant systems in the industry. The aforementioned liner systems are also the most economic means of rehabilitating our sewer structures when placed in the correct environment.

Abstract/Presentation:

Manholes are of the greatest importance when designing a municipal sanitary sewer rehabilitation program. Because of the massive amounts of groundwater that can infiltrate just one sanitary sewer manhole structure, manhole rehabilitation should be considered a high priority. Manholes can also be subjected to high volumes of hydrogen sulfide, which can severely deteriorate a structure to the brink of collapse.

A material(s) selection/design criteria process will help you design a more economic manhole rehabilitation project by selecting the appropriate material(s) best suited for that environment.

Regardless of what some product manufacturer's commonly employ, one single

product/system (even if it is stand-alone) is most likely not the best suited/most economic means of rehabilitating all of your manholes/sanitary sewer structures. There are many different environments in the sewer system, all of which can be rehabilitated, though one product or system is most likely much more suitable/economic over another product.

Utilizing a material(s) selection/design criteria format when designing a manhole rehabilitation project will help municipalities:

1- Utilize the most appropriate material(s) for that environment with which the structure is subjected.

2- Eliminate all groundwater infiltration and hydrogen sulfide-induced corrosion.

3- Help municipalities save money by not over/under estimate the environment of the structure with which it is rehabilitating.

Comments:

Files: Presentation (1): 90KB
Bio (2): 42KB
© Release (3): *not uploaded*

Reviewer(s):
- Charles Poskas, ARCADIS
- Preston Pendley, Hardin County Water District No. 1
- Katie Nolan, Gresham, Smith and Partners

QUADEX
SEWER RESTORATION PRODUCTS

BIOGRAPHY OF SAM WISENER

EXPERIENCE

Sam Wisener has over 6 years of experience in the marketing and application of trenchless technologies utilized to rehabilitate, restore and protect underground structures. Sam's focus and expertise is in the lining and coating of large sewer structures with cement and epoxy.

EDUCATION

Sam has a Bachelor of Science from the University of Arkansas at Monticello. Sam was also a member of Sigma Tau Gamma fraternity and played 4 years of football at the university while serving as captain of the team in 2004.

MILITARY

Sam served 8 years in the Arkansas Army National Guard. Sam was deployed to Iraq from Winter 2003 to Spring 2005 where he was utilized as a machine gunner.

Gianfranco Maragno is the Team Leader for the Hydrovex CSO product line within John Meunier, Inc.. With over five years of CSO design experience, he was an intricate part of the Newark, NJ CSO screening projects. Hobbies include playing ice hockey and Formula 1 racing.

Luigi Zecchin is a Principal Construction Manager for Arcadis US, Inc. Luigi was the project manager during construction of the Herbert and Verona CSO screening facilities and has managed the construction of over 3 dozen CSO screening and netting facilities for various municipalities in the Northern New Jersey Area.

Mark Del Bove is Vice President for Arcadis, U.S., Inc. Mark is the project director for planning, design and construction phases of the City of Newark's Solids/Floatables Control Measures Program for the City of Newark and has directed numerous CSO planning, design and construction projects for the firm nationwide.

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ID: 28

Submitted: 2012-11-21

Last Updated: 2013-04-17

Title: NOVEL FLOATABLE ABATEMENT TECHNOLOGY IN NEWARK, NJ (VERONA AVENUE AND HERBERT STREET OVERFLOW STRUCTURES)

Student: No

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Topic(s): Other

Keywords: CSO, overflow abatement, floatables control

Abstract: The presence of floatables in Combined Sewer Overflows (CSO's) represents an aesthetically unpleasant surface pollution which negatively affects the receiving body of waters, such as lakes rivers, astuaries or coastal waters. The USEPA has documented approximately 11,000 overflow sites in 1,100 cities and towns across the US. Abatement of floatables from these overflow points is one of the Nine Minimum Controls required under the April, 1994 EPA CSO Control Policy (EPA, 1994).

Two of these overflow points, Verona Avenue and Herbert Place, are located just West of MacCarter Highway in Newark, NJ. Situated within 1.5 miles from each other, both overflow sites discharge directly into the Passaic River during a wet weather event. After exhaustive engineering studies to evaluate multiple screening technologies, a novel floatable screening technology was selected by Malcolm Pirnie/Arcadis. The OS-LP (Overflow Screen-Low Profile) was ultimately selected for its high linear overflow capacity (maximum capacity of 13 CFS/ft) compared to the small installed footprint and was a perfect fit for the Newark application, facing the very limited freeboard available. The optimized hydraulics created by the upstream hydraulic ramp maintains a maximum output while the screen position greatly minimizes headloss caused by screening accumulation on the bars. The weir mounted OS-LP captures debris using an arched horizontal ½ inch bar screen and a rotating rake arm. The captured screenings are sluiced in a collecting trough back to the sewer line downstream from the overflow chamber. Another interesting feature of the OS-LP is the reduced maintenance requirements due to its simplistic design.
The Herbert Place and Verona Avenue screens were installed in 2008 and 2009 respectively. The Herbert Place screen was designed for an overflow rate of 119 MGD, while Verona Avenue was designed for an overflow rate of 103.4 MGD. The full presentation will contain performance data from both overflow sites.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 18KB
© Release (3): 92KB

Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

Parkson
Treating Water Right

Name: Tony Edwards

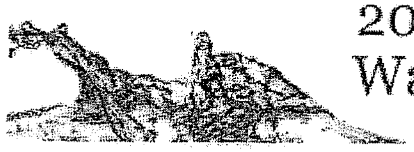
Title: MaximOS Product Specialist

Education: Tony received his Bachelors of Business Administration from Southeastern Oklahoma State University after competing four years in collegiate Division I-A and II-A baseball. In 1996, Tony was a member of the Wichita State Shockers who competed in the College World Series in Omaha, Nebraska.

Career Summary: As a Product Specialist, Tony's focus is on branding, improvement and marketability of the MaximOS™ product line, and supporting the sales network of Regional Sales Managers and Representatives who focus on direct sales with Parkson's future end-users, engineers, and contractors.

Tony began his water and waste water career with MIOX Corporation, the designer and manufacturer of MaximOS™, in New Mexico after 7 years as a Texas public school teacher and athletic coach.

In June of 2011, Tony relocated from MIOX Headquarters in Albuquerque, New Mexico to Parkson Headquarters in Fort Lauderdale, Florida.



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Submission

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ID: 12

Submitted: 2012-10-26

Last Updated: 2012-10-26

Title: On-Site Generation: Not Just Disinfection

Student: No

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Topic(s): Drinking Water Quality

Keywords: On-Site Generation, OSG, Disinfection, Disinfection By-Products Reduction

Abstract: On site generation is a technology that has drastically improved in the last 10 years and is a safe, green and low cost alternative means of disinfection for a water supply systems. On site generation can be either a superior mixed oxidant or the industry standard 0.8% sodium hypochlorite. Both are generated by the simple feed stock of salt, water and power. Approved by EPA and follow the same standards of chlorine, mixed oxidant chemistry has provided water municipalities with chlorine residual enhancement, biofilm control, taste and odor improvement, DBP reduction, and chemical savings by microflocculation in conventional water treatment plants. Research from across the country has shown that mixed oxidants are able to penetrate the polysaccharide substrate that biofilm uses to attached to pipe distribution walls where standard chlorine and bleach chemicals could not. Additional studies by EPA have determined that ozone and chlorine dioxide is not present in mixed oxidants. Recent evidence from laboratory research indicate that mixed oxidants include H_2O_2 and other reactive oxygen species such strong oxidizing free radicals – hydroxyl radical,

superoxide, and chlorine radicals. Research on the composition continues; but the evidence on the chemical and
biocidal behavior continues to show, as it has for the past 20 years, that MOS is a superior oxidant to bleach alone.
The presentation will discuss the water quality improvements and the operational savings mixed oxidants has been able to provide to water and wastewater utilities.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 209KB
© Release (3): *not uploaded*

Reviewer(s):
- Jim Pelton, Pelton Environmental Products
- RENGAO SONG, LOUISVILLE WATER
- Preston Pendley, Hardin County Water District No. 1
- Brent Tippey, HDR

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Submission

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ID:	76
Submitted:	2012-12-13
Last Updated:	2012-12-13
Title:	Diagnosis and correction of hydraulic inefficiencies can improve wastewater system performance
Student:	No

Author 1:
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Topic(s): Wastewater Plant Operations

Keywords: CFD, hydraulics, processs efficiency, O&M costs

Abstract: Hydraulic inefficiencies in wastewater treatment and conveyance facilities can impair treatment and increase O&M costs. Some examples of flow related problems include unbalanced flow distribution, poor mixing, inaccurate online monitoring leading to incorrect chemical feed, high velocity gradients where process requires more quiescent conditions, and tank dead zones resulting in ineffective treatment. Municipalities can consider use of desktop computational fluid dynamic (CFD) modeling to identify and resolve operational problems due to flow related factors. This presentation provides several case studies for CFD evaluation of wastewater system components with operational issues including unbalanced flow distribution, incomplete chemical mixing, short-circuiting in process tanks and improper chemical sensor placement. For each case study, insights for design improvements and/or operational guidelines for wastewater system facilities will be described. NOTE: SEE EXPANDED ABSTRACT (UPLOADED FILE)

Comments: Author has sumbmitted two similar abstracts. Both involve applications in CFD modeling; one presents case studies for water treatment facilities and one presents case studies for wastewater treatment facilities.

Files: Presentation (1): 176KB
Bio (2): 8KB
© Release (3): *not uploaded*

Reviewer(s):
- Mark Sneve, Strand Associates
- Brad Derrick, DLZ
- Michelle Hatcher, CDM Smith

Biography

Dennis Greene, PhD, PE
O'Brien & Gere Engineers
dennis.greene@obg.com

Dr Greene has 24 years of experience in water/wastewater engineering, including over 12 years experience with computational fluid dynamics (CFD) modeling. He has applied CFD to analyze, design and troubleshoot wastewater treatment facilities, including pump stations, bioreactors, clarifiers and disinfection systems. He has also applied CFD to evaluate water treatment facilities including flocculators, sedimentation basins, granular media filters, chlorine contactors and UV disinfection systems.

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Submission

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ID: 115

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: The Benefits of Incorporating Antecedent Moisture Conditions in Collection System Models

Student: No

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Topic(s): Collection Systems

Keywords: modeling, antecedent moisture, RTK method

Abstract: This presentation is a case study of how incorporating antecedent moisture conditions in a model can significantly planning for cost effectively implementing a Consent Decree. The case study is focused on the Municipal Sanitary Authority of New Kensington (MSANK), a medium-sized sewer authority located just northeast of Pittsburgh, PA. As part of the terms of its Consent Decree, MSANK installed over 100 flow meters for a one year period and then used that data in developing a comprehensive collection system model.

The RTK method was initially selected for modeling how stormwater enters the collection system. This is a commonly used methodology that uses three synthetic hydrographs to describe the rapid, medium and slow responses of stormwater entering the collection

system. The limiting aspect of the RTK Method is there is typically limited flexibility in changing the RTK response throughout the year. In this case flow meter data indicated that the rapid and medium responses were fairly consistent, but the slow stormwater response varied dramatically throughout the year. Slow stormwater responses varied by as much as a factor of five during the year, meaning that adopting a single R-value in the model would result in unacceptable model calibration.

At this point the modeling approach was changed to apply RTK for the rapid and medium responses, but groundwater modeling functionality for the slow response. This change of approach enabled a better model calibration and requiring smaller scale improvements for Consent Decree compliance than if a fixed, conservative R-Value was used. This case study demonstrates that incorporating antecedent moisture conditions into a collection system model can result in better model calibration and potentially save significant money collection system improvements.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 26KB
© Release (3): *not uploaded*

Reviewer(s):
- Charles Poskas, ARCADIS
- John Ricketts, URS Corporation
- Katie Nolan, Gresham, Smith and Partners

Bruce Shipley has been the General Manager of the Henderson Water Utility for the past nine years and has more than forty years professional experience. Much of Bruce's engineering career was centered on water, sewer and stormwater utility issues in Colorado. He is an avid hiker and backpacker.

Paul Maron is a project manager with Strand Associates. Paul's work has focused primarily on wet weather issues such as overflow abatement, I/I control, sewer rehabilitation, and Clean Water Act compliance. He and his wife live in Louisville, KY with their dog Brady.

Andrew Esarey is a project engineer with Strand Associates. Andrew's work has primarily centered around hydraulic modeling of water and wastewater systems. He enjoys reading and spending time with his wife and two dogs.

Mr. Moore has been involved in various aspects of water resource engineering for over 12 years. For the last eight years he has been primarily focused on the modeling of stormwater, wastewater and open channel systems. He has been particularly interested in how modeling, computer science techniques and related technologies such as GIS are now being integrated in new ways to change how we think about making better water decisions. He has applied optimized modeling and decision-making approaches to everything from large urban collection systems to small municipal authorities.

Mr. Batroney has been involved in various aspects of collection system modeling for the past five years. This experience has included the entire process from model building to calibration/validation and final the use of the model to right size potential system improvements. He is highly proficient in collection system modeling and has developed models for collection system from large, urban systems to smaller municipal systems.

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ID: 95
Submitted: 2012-12-14
Last Updated: 2013-04-09
Title: Innovative Approaches in the Development of Henderson Water Utility's
Student: No

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Topic(s): Collection Systems

Keywords: CSO, Modeling, LTCP, Regulatory, Consent Decree

Abstract: As part of a joint State-Federal Consent Judgment, the Henderson Water Utility (HWU)

was required to prepare and submit a CSO LTCP to mitigate the environmental impact of CSOs on the Ohio River. HWU has been aggressively pursuing CSO mitigation efforts since 1995 using a straight-forward approach that focused on sewer separation efforts and reducing flow through the congested combined sewer system. With this as the basis, Strand and HWU began creating the LTCP with the same simple, straight-forward mindset that resulted in numerous cost-savings, inventive demonstrations of compliance, and a shortened development schedule.

This presentation will focus on the unique aspects associated with the development of the LTCP, such as:

• The use of modified United States Environmental Protection Agency CSO LTCP-EZ forms for small communities that resulted in reduced documentation burdens but met a high degree of confidence in the ability of the plan to succeed.

• The creation of two spreadsheet based models representing the two major portions of the HWU combined sewer system (CSS). Each of the two spreadsheet models were modified to represent the HWU CSS as it operated in 1995, 2008, and 2018 to illustrate the estimated percent capture of the unmodified CSS (1995), the system as it is today (2008), and the system after all CSO related projects are complete (2018).

• The spreadsheet based models can be put together in a significantly shorter time frame and with less calibration data than a hydro-dynamic model such as SWMM and were inherently more conservative with estimates of CSO reduction.

• Utilization and simulation of 60-years of actual historic rainfall data in the spreadsheet models to determine the average estimated CSO volume instead of delving into the development of a potentially controversial 'typical year' of rainfall to simulate system performance.

• Close coordination with State and Federal regulators through all steps of the LTCP development and approval that led to high spirit of cooperation and trust amongst everyone involved.

HWU's approach can serve as an example for other small communities and demonstrate that alternative methods to LTCP development and compliance can result exceptional results. The presentation will also include information on the implementation of the LTCP and an update on how it has evolved since it was approved.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 18KB
© Release (3): 1.4MB

Reviewer(s):
- Charles Poskas, ARCADIS
- Preston Pendley, Hardin County Water District No. 1
- Katie Nolan, Gresham, Smith and Partners

EXPERIENCE

Dr. Bell is a Principal engineer with CDM Smith, with over 16 years of experience in research, selection, design and optimization of water and wastewater processes. Kati's research is focused primarily on implementing new technologies and improving conventional processes to meet increasingly stringent regulatory limits on both water and wastewater disinfection across the country. In addition to her research, Kati has been involved in UV disinfection projects that sum to over 1.6 billion gallons per day of project work.

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ID: 31

Submitted: 2012-11-28

Last Updated: 2013-04-19

Title: Considerations for UV Equipment Procurement - Understanding Project Lifecycle Costs

Student: No

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Topic(s): Finance

Keywords: UV disinfection, wastewater, lifecycle costs

Abstract: With uncertainty regarding the requirements for future use of chlorine gas and potential future challenges associated with chlorinated disinfection by-products, wastewater facilities are proactively replacing both gas and liquid chlorine with UV disinfection to achieve bacterial discharge compliance. In order to cost-effectively implement UV at a specific site, it is important to understand the procurement process options for selecting, designing and implementing UV disinfection. While the traditional method of wastewater equipment procurement is contractor selection based on a complete set of construction documents, this may not be the best method for procurement of UV equipment due to significant differences in electrical, piping and physical size requirements of competing manufacturers' technologies. As a result, there have been a number of different UV equipment procurement methods that have been used successfully for wastewater applications in the US; there are advantages and disadvantages to each of these methods defined below:

Base Bid. Design is based on a single UV manufacturer and the equipment is procured by the general contractor from a single-named supplier in the bidding documents.

Contractor Selection. The design is based on equipment systems provided by two or more qualified UV manufacturers with equipment design criteria and facility layouts compatible with all specified systems.

Owner Pre-Purchase. This method involves a formal evaluation of competing UV equipment manufacturers through a Request for Proposal (RFP) and selection process in

advance of the project bid.
Owner Pre-Select. This method is similar to Owner Pre-Purchase, except that the bid price from the UV manufacturer is assigned to the general contractor upon award of the project, so that the owner is no longer contractually responsible for coordinating the work of the UV manufacturer.

The decision on the best equipment procurement method will be based on the available capabilities to manage the procurement and design process; additional considerations are the time sensitivity for project completion and level of risk tolerance. But, in any case, the method of evaluating the UV system bid should include provisions to account for differences in lifecycle costs of the various systems.
Often the capital costs of UV equipment will account for roughly half of the lifecycle costs of the process. As a result, it is important to capture cost information on the anticipated energy costs and replacement parts costs for of major components that should, at a minimum, include replacement lamps and ballasts. This paper will provide three case study examples and a discussion of the how an evaluated bid process can be used to conduct owner pre-selection of UV equipment to expedite the design schedule. In addition to shortening the design schedule, the pre-selection of equipment allows the design budget to be reduced to accommodate a single system design.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 23KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Martha Segal, Metro Water Services

PRESENTER
Eric D. Mayhaus
Brown and Caldwell

PAPER TITLE
The Hunt for Hidden Capacity: CFD Modeling for Secondary Clarifiers

CREDENTIALS

- 5 years experience in water and wastewater design, optimization, and construction

EXPERIENCE
2011 - Present
Environmental Engineer
Brown and Caldwell – Nashville, TN

2008–2011
Environmental Engineer
CDM – New York, NY

EDUCATION

- Bachelor of Science in Civil and Environmental Engineering
  University of Cincinnati, 2008

EXPERIENCE SUMMARY
Mr. Mayhaus is an environmental engineer with experience working in the water and wastewater field, with a focus on treatment plant design and optimization. He has worked on hydraulic design projects for municipal wastewater plants, pump stations, and groundwater well distribution. Eric worked in the New York City area for 3 years and has been in the Nashville area for the past 2 years as an engineering consultant for Metro Water Services and surrounding utilities.

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ID: 132
Submitted: 2012-12-14
Last Updated: 2012-12-14
Title: The Hunt for Hidden Capacity: CFD Modeling of Primary/Secondary Clarifiers
Student: No

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Topic(s): Wastewater Plant Operations
Keywords:

Abstract: One challenge that many wastewater treatment plants are facing today is handling wet weather flows during peak storm conditions. These flows can result in overflows within the sewer collection system and hydraulic and/or process failures within the plant. How can municipalities increase the capacity of their treatment plant without spending the capital investment of constructing new treatment units?

The answer is optimizing secondary clarifier performance, which is crucial to meeting treatment requirements due to wet weather flows that can cause high effluent suspended solids concentrations and elevated sludge blankets. As part of the Optimization study at the Central Wastewater Treatment Plant (WWTP) in Nashville, TN, a state-of-the-art computational fluid dynamic (CFD) model was successfully used as a diagnostic tool to predict secondary clarifier performance and to optimize plant performance. The Optimization study was tasked with maximizing wet weather treatment capacity as part of the Consent Decree, while minimizing construction of new treatment units.

For the Central WWTP, CFD models were run for the secondary clarifiers. The models were created by gathering field measurements, including Vesilind sludge settling parameters, floc aggregation and breakup rate coefficients, discrete particle settling velocities, and sludge compaction. These data were used to calibrate the models, which were validated by performing a series of clarifier stress tests. The clarifiers were tested in

the field until failure, gathering solids data throughout to accurately determine what the existing capacity was, and how different loadings [flow, return activated sludge (RAS)] would affect the clarifiers.

During this project, hydraulic and biological model analysis indicated that the maximum wet weather capacity of the existing plant was approximately 340 million gallons per day (MGD). However, after detailed secondary clarifier CFD modeling, capacity of the plant was able to be increased to 440 MGD by recommending simple modifications to the internal clarifier mechanisms, which included changing flocculator center well sizes and the installation of new canopy baffles.

The best assessments for capacity improvements come from process models supported by field measurements. CFD modeling for Central WWTP indicated that wet weather capacity can be increased from 340 MGD to 440 MGD. Without CFD modeling, additional wet weather storage would have been required or additional clarifiers may have been constructed in order to reach the desired treatment capacity on site. Instead of spending excess capital cost on the additional clarifiers, the client was able to find additional capacity already available in the plant, accessible with only relatively minor upgrades to the clarifiers. The modeling effort brought significant value to Central WWTP Optimization project, and can bring value to any treatment plant in need of additional capacity.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 148KB
© Release (3): *not uploaded*

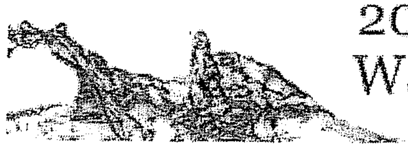
Reviewer(s):
- Mark Sneve, Strand Associates
- Brad Derrick, DLZ
- Michelle Hatcher, CDM Smith

Bio for Abstract 56

LFUCG West Hickman Creek WWTP Blower Upgrade Reduces Power Consumption

Tiffany Rank, P.E., Lexington Fayette Urban County Government
Jim Worten, Lexington Fayette Urban County Government
Mark Sneve, P.E., BCEE, Strand Associates, Inc.
Mike Davis, P.E., Strand Associates, Inc.

Mark Sneve is a project manager for Strand Associates and has 24 years of experience in wastewater treatment plant design. Mark led the blower improvements design for the LFUCG project. Mark enjoys family time with his wife and 13 year old daughter and they are planning to travel to Norway in August.



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ID: 56

Submitted: 2012-12-11

Last Updated: 2012-12-11

Title: LFUCG West Hickman Creek WWTP Blower Upgrade Reduces Power Consumption

Student: No

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Topic(s): Wastewater Plant Operations

Keywords: Blowers, Activated Sludge, Energy Savings

Abstract: The Lexington-Fayette Urban County Government (LFUCG) West Hickman Creek WWTP is undergoing a significant modernization project. One of the project elements is an upgrade to the blowers for both Zone 1 and Zone 2 aeration systems. This project considered current and future needs for blower capacity. Several alternate process configurations were evaluated in order to establish ranges of blower capacity.

The project was designed using two different types of blowers, a dual vane single-stage centrifugal blower and a high speed turbo compressor. The project design had to consider a number of critical success factors for each blower style. These considerations will be presented. Both blower types were competitively bid against each other and an economic evaluation was completed to select the most advantageous blower for the application.

The design also included an improved air delivery system to both balance air flow to the Zone 2 aeration tanks and automatically adjust the blower output to meet demands, thus optimizing energy usage.

Construction is underway and includes installation of two 540 HP turbo compressors for Zone 2 aeration and the relocation and refurbishment of two Zone 2 multi-stage centrifugal blowers to supplement Zone 1 aeration.

The power consumption was calculated for the existing Zone 2 blowers and compared to the new Zone 2 turbo compressors for a typical year of operation. The new blowers will save LFUCG over $100,000 per year.

This presentation will cover the following areas:
- Alternatives considered,
- Future needs evaluation,
- Alternative blower designs,
- Design challenges,
- Oxygen delivery and control system,
- Bidding alternate designs, and
- Power savings.

Comments: Presentation would be delivered by both Mark Sneve and Tiffany Rank.

Files: Presentation (1): *not uploaded*
Bio (2): 18KB
© Release (3): *not uploaded*

Reviewer(s):
- Jim Pelton, Pelton Environmental Products
- Brad Derrick, DLZ
- Michelle Hatcher, CDM Smith

David Shehee
Kentucky American Water
Superintendent, Water Quality and Environmental Compliance

David has over 20 years of experience in environmental compliance, including water and wastewater. He is a certified Class IV Drinking Water and Distribution Operator, and a Class II Wastewater and Collection System Operator in Kentucky. In his current role, he is responsible for water quality and environmental compliance for Kentucky American Water and its surrounding counties. He is also responsible for treatment and compliance at Kentucky American Water's two sewer plants. David is married (Amy) and has a son (Luke). He is involved in his local church, Bluegrass PRIDE, Water For People and Reforest the Bluegrass. He also helped develop Lexington's very successful "Med Toss" drug take-back program.

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ID: 217

Submitted: 2013-01-04

Last Updated: 2013-04-25

Title: Granular Activated Carbon - What are you using it for?

Student: No

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Topic(s): Water Plant Operations

Keywords: GAC, filtration, organics, HAA

Abstract: Granular Activated Carbon - What are you using it for?
by
David Shehee
Kentucky American Water

Granular activated carbon is used throughout the world as an effective means to help with taste and odor removal. Many utilities spend hundreds of thousands of dollars replacing their GAC at a frequency determined by a number of factors. The question is, what are you gaining by changing your carbon out to meet a certain iodine number?

This presentation will evaluate the GAC change out approach being evaluated by a large system that serves almost half a million people in central Kentucky. The discussion will include an evaluation of data typically used to determine change out frequency (e.g., iodine numbers, roughing factors, etc.), organic removal data (including Geosmin and MIB evaluations), and HAA data to support the need for less frequent replacement of the media. The real question is whether GAC ever needs to be replaced.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 24KB

© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Keith Coombs, Louisville Water Company

Nicholas E. Winnike, P.E.

CH2M HILL

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Mr. Winnike is a Professional Engineer and served as the project manager of the Advanced Treatment design and construction services projects. His career with CH2M HILL has spanned over 34 years including water and wastewater treatment, security, and conveyance studies and designs.

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ID: 93

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: First Year Operations of Advanced Treatment Facilities at the Northern Kentucky Water District

Student: No

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Topic(s): Water Plant Operations

Keywords: GAC, Taste and Odor, Disinfection by-products

Abstract: The Northern Kentucky Water District constructed Advanced Treatment (AT) facilities at its Memorial Parkway (MPTP) and Fort Thomas (FTTP) water treatment plants with completion in mid 2012. The AT facilities include post-filtration Granular Activated Carbon (GAC) contactors followed by Ultraviolet Light (UV) disinfection. The facilities were designed and constructed specifically to comply with the Disinfectant/Disinfection By-Products Rule, and to provide an additional disinfection barrier. GAC is considered "Best Available Technology" by the United States Environmental Protection Agency for the control of disinfection by-products. UV is regarded as an excellent, cost-effective process to control cryptosporidium contamination in drinking water. Similar design criteria for the GAC and UV facilities were adopted at each plant.

The initial capacity of the MPTP AT project is 10 MGD, but is easily expandable to 20 MGD. The MPTP facilities went on-line in March 2012. The capacity of the FTTP AT project is 44 MGD and the facilities on-line in July 2012.

The presenters will discuss system performance during the first year of operations including water quality data with respect to both regulatory requirements and taste and odor reduction when an MIB and geosmin episode occurred. Operations observations will be shared concerning contactor backwash cycles with respect to frequency of backwash and chlorine concentration in the feed water to the contactors. Finally a cycle of carbon regeneration will have been completed and observations will be presented on alternatives available for regeneration along with successes and challenges with the regeneration process.

Comments:

Files: Presentation (1): 17KB
Bio (2): 15KB
© Release (3): *not uploaded*

Reviewer(s):
- Keith Coombs, Louisville Water Company
- RENGAO SONG, LOUISVILLE WATER
- Josh Cravins, WASCON, Incorporated

Dr. Rengao Song

Dr. Rengao Song is the Manager of Water Quality and Research at the Louisville Water Company (LWC). He and his staff are responsible for managing water quality from the source (Ohio River) to customers' taps through three major programs including 1). Water Quality Compliance; 2). Water Quality & Treatment Research; and 3). Distribution WQ Management.

Rengao graduated from the Department of Civil and Environmental Engineering at the University of Illinois at Champaign-Urbana in 1996.

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Submission

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ID: 197

Submitted: 2013-01-02

Last Updated: 2013-01-02

Title: Louisville Water Company's Largest T&O Episode on Record

Student: No

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Topic(s): Drinking Water Quality

Keywords: T&O, monitoring, treatment response

Abstract: In December 2012, Louisville Water Company (LWC) surveyed 30 external customers.

According to the study, customers value the high quality of LWC's drinking water. In fact, when asked "what comes to mind when you think of Louisville Water?" the responses included: "great taste", "don't we have the best tasting tap water in the country?", "you don't need a lemon in your water here."

This is great news to LWC, as LWC has just experienced the most serious taste and odor (T&O) episode on record. In conjunction with the hottest year in history, LWC detected the highest level of the T&O compound MIB in the Ohio River on record. MIB is a naturally-occurring compound that can impart a musty/earthy odor to water at a concentration of ~6 ppt. In comparison to the MIB level of 112 ppt seen during the 1999 T&O event, we detected MIB at 178 ppt on July 21, 2012. Customers rely on the T&O of their water as the primary indicator of its safety. As such, T&O problems are perhaps the single greatest public relation issue utilities face. This paper summarizes LWC's 2012 T&O episode, which can serve as a roadmap on how to deal with their T&O issues.

Early Warning System (EWS): LWC operates its T&O EWS every year from April to November. The objective of the EWS is to provide early detection of a rise in T&O compounds in the river so that an effective treatment response can be implemented. In addition to T&O compounds, river flow and turbidity are monitored. As river flow decreases, a "10-4 rule" is observed: when river turbidity <10 NTU and flow <0.4 MPH, an elevated monitoring frequency and additional sampling is triggered.

The EWS works very well: On 07/18/2012, we detected an extremely high MIB level at Westport while there was no detection at Zorn and BEP. This detection immediately trigged the next step: Enhanced Monitoring during the Event.

Enhanced Monitoring during the Event (EME): Once a water quality event in the Ohio River is detected, EME is initiated. The primary goals for EME are to: 1) Determine treatment chemical doses, locations, and timing and 2) Notify Operations to plan for the required chemical inventory. When high levels of MIB are present in the river, both AM and PM samples are collected and analyzed as needed.

LWC monitored this T&O episode from Zorn PS at Ohio River Mile (ORM) 600 to Warsaw, KY at ORM 528: >60 miles upstream.

LWC also employs multiple tools to monitor T&O: Advanced SPME-GC-MS, T&O panel and algal community analysis.

PAC Selection: LWC selects certain treatment chemicals based on both cost and performance, including powdered activated carbon (PAC). This selection process is recognized as an industry-wide BAT and was presented by LWC in 2000.

The PAC selected works well: The Norit 20BF can remove ~90% of MIB at ~300 #/MG.
T&O Treatment Strategy: Once a specific PAC is selected, jar-testing is conducted to create PAC dose-MIB removal curves for several treatment conditions in the presence and absence of ferric chloride. The jar-tests are designed to simulate actual CHFP HRT conditions so that the results can be used to determine carbon doses based on raw MIB level, finished water MIB target, and PAC application locations.

The two-stage T&O treatment strategy is also utilized, another industry-wide BAT/BMP, after comprehensive study of carbon adsorption thermodynamic characteristics and kinetics as well as carbon mixing and settling properties, along with basin HRTs.

PAC Feeding System: LWC's plant engineering department has retrofitted the PAC feeding system. The new system is automated, reliable and capable of a high dosage capacity. A three-pump system is available to feed PAC at rate of 360 #/MG per pump at a plant flow of 100 MGD.

PAC Inventory Management: At the peak of PAC feeding during this T&O event, LWC needed two trucks of PAC every day. Due to the extreme weather conditions this year, most carbon suppliers were at maximum production capacity. LWC management and Operations staff worked successfully to ensure that only the most effective PAC was available for use. As a result, continuous carbon feeding has been maintained during the episode and the final water quality has been stable.

Timely Communication: A daily morning meeting was conducted. The coordination enabled the WQ & Operations staff to work on the same page. Timely communication was made to the public relations, purchasing department, and president/CEO.

Customer Complaints: After reviewing the customer complaint data, no T&O signal or even-driven calls were observed: the correlation between calls and date is perfect.

Comments:

Files: Presentation (1): 107KB
Bio (2): 13KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Amy Kramer, Northern Kentucky Water District

Biography
Abstract Title: Optimization of MWS' Distribution System: Juggling Water Quality, Reliability, & Fire Protection

Submission ID: 103

Jennifer Lind
Jennifer Lind is a professional engineer with CDM Smith in the Nashville, TN office. She has 7 years of experience in water distribution system hydraulic modeling. Jennifer is also currently the President of the Engineers Without Borders Nashville Professionals Chapter.

Leanne Scott
Leanne Scott has worked for Metro Water Services for 26 years – 4 years in the treatment plants, 6 years in the distribution / collection systems and 16 years in engineering planning. She is currently a Senior Engineer responsible for the Planning and System Improvement section of MWS.

Leanne is a registered professional engineer in the State of Tennessee and holds Grade 4 Water Treatment Operator, Grade 2 Water Distribution Operator and Grade 2 Wastewater Collection Operator licenses.

She is a member of the Water Environment Association and the American Waterworks Association. She is currently serving as the Past-President of the KY-TN WEA.

She received her B. S. degree in Chemical Engineering from Tennessee Tech University and her Masters degree in Engineering Management from the University of Tennessee.

Leanne has been married to Joe for 26 years and has 2 children, Rachel – 21 and Andrew – 18.

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Submission

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ID: 103

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Optimization of MWS' Distribution System: Juggling Water Quality, Reliability, & Fire Protection

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Topic(s): Distribution

Keywords: Optimization, hydraulic modeling

Abstract: Metro Water Services (MWS) recognized the need for a system-wide optimization plan which would not only take into account the traditional planning for customer and system growth and much needed infrastructure rehabilitation, but would also set forth a plan for achieving short- and long-term system goals associated with regulatory compliance, reducing operations and maintenance costs, increasing system reliability and redundancy all while minimizing capital expenditures and obtaining maximum value from their current and future distribution assets. When approaching such a daunting task for a distribution system, that includes 78 pressure zones, 2 water treatment plants, 53 booster pump stations, and 41 reservoirs delivering an average daily demand of 90 million gallons per

day (mgd) to over 600,000 customers, this type of holistic evaluation for system optimization is a substantial undertaking. This presentation will highlight the approach taken by MWS and CDM Smith to utilize stakeholder facilitation and the use of a reliable distribution system hydraulic model to derive a plan for MWS' future system development.

Distribution system modeling is increasingly becoming a standard tool for utilities of all sizes to aid in short-term and long-term infrastructure improvements, operation and maintenance decisions, water-age evaluation and source tracing. As a result, distribution system modeling serves as the foundation for the development of a comprehensive approach to evaluating and solving complex drinking water distribution system issues. Increasing attention on water security issues, climate change, and water supply planning, and the ever-changing water quality regulations are all driving utilities to adapt their management strategies to address these challenges from a more comprehensive planning perspective. CDM Smith and MWS will discuss how MWS' hydraulic model was utilized to evaluate the current operations, identify potential system deficiencies based on stakeholder developed goals and performance measures, and ultimately, to test and develop a long-term approach towards addressing these identified potential system problems.

This presentation will detail our approach for such a large effort highlighting the iterative process from the early stages of meeting facilitation to define the department's goals and system criteria through a series of workshops, to the hydraulic model analysis which focused on finding innovative and cost-effective solutions to meet these goals, to a final prioritized list of future MWS operational modifications and capital projects that resulted in the most beneficial approach to achieving system optimization.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 28KB
© Release (3): *not uploaded*

Reviewer(s):
- Keith Coombs, Louisville Water Company
- Amy Kramer, Northern Kentucky Water District

Presenter Biography:

Jeff Cruickshank (CROOK-shank) is a life member of AWWA with over 30 years of experience, including modeling studies of more than 70 water systems. He manages Hazen and Sawyer's Greensboro, NC, office which specializes in hydraulic modeling and supports the firm's Kentucky and Tennessee offices. Jeff is a registered professional engineer in Tennessee and several other states, and a very amateur golfer.

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Submission

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ID: 216
Submitted: 2013-01-04
Last Updated: 2013-01-04
Title: Planning a Regional Conversion to Chloramines
Student: No

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Topic(s): Distribution
Keywords: Chloramines, disinfectants, Stage 2 DBP Rule, hydraulic modeling

Abstract: The City of Greensboro, NC, recently switched the residual disinfectant in its water distribution system from free chlorine to chloramines. This conversion was part of the city's compliance strategy for the Stage 2 Disinfectants and Disinfection Byproducts Rule.

Greensboro's distribution system supplies nearly 300,000 people with water from several sources, including the city's two treatment plants and purchased water from the City of Reidsville, the City of Burlington, and the Piedmont Triad Regional Water Authority. The water treatment plants that supply Greensboro's purchased water also provide water to several other systems. All these systems converted to chloramines at the same time to avoid water quality problems associated with mixing residual disinfectants.

This presentation describes the planning and coordination that resulted in a successful disinfectant conversion. The presentation shows how hydraulic models identified Greensboro's mixing zones that receive water from more than one source. Water quality modeling animated the disinfectant front that moved through the distributions systems and determined travel times from each water treatment plant to the mixing zones supplied by multiple sources.

This information helped the water plants coordinate when to begin adding ammonia so

that chloraminated water from each source arrived at the mixing zones at about the same time. This synchronization minimized mixing of newer chloraminated water with older water disinfected with free chlorine.

The presentation also summarizes lessons learned from the project, including how to plan flushing related to the conversion process.

This presentation will help other utilities plan for conversion to chloramines, especially regional systems with several supply sources.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 10KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Keith Coombs, Louisville Water Company

2013 Water Professionals Conference
Title: Lower Second Creek at Woodland Trunk Sewer Project

Doug Douthat
Knoxville Utilities Board
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CREDENTIALS

13 years experience in water & wastewater utilities

EXPERIENCE

1/2007 – Present
Project Engineer
Wastewater Systems Engineering / PACE-10
Knoxville Utilities Board

8/1999 - 1/2007
Business Management Analyst
Knoxville Utilities Board

EDUCATION

B.S. Civil Engineering
University of Tennessee

Masters in Business Administration
University of Tennessee

Andrew Clark, P.E.
Barge Waggoner Sumner and Cannon, Inc.
865-386-1494
ajclark@bwsc.net

CREDENTIALS

Professional Engineer in the State of Tennessee, Virginia, North Carolina, South Carolina, and Georgia

EXPERIENCE

Barge Waggoner Sumner and Cannon, Inc.
1/2005-Present: Engineering Manager in Water Systems Engineering

Stevenson and Palmer Engineering, Inc., Smyrna, GA
2000-2005: Project Engineer

City of Johnson City, TN
Water and Sewer Services
1999-2000: Engineer

Phillips and Jordan, Inc., Knoxville, TN
1996-1999: Estimator

EDUCATION

Bachelor of Science – Civil Engineering, 1995
University of Tennessee, Knoxville

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Submission

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ID: 140
Submitted: 2012-12-14
Last Updated: 2012-12-14
Title: Lower Second Creek at Woodland Trunk Sewer Replacement Project - Lessons Learned
Student: No

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Topic(s): Engineering and Construction
Keywords: Lower Second Creek at Woodland

Abstract: 2013 KY/TN Water Professionals Conference Abstract

Lower 2nd Creek at Woodland Trunk Sewer Replacement Project Phase 2 -- Lessons Learned

The Knoxville Utilities Board (KUB) entered into a Consent Decree with the State of Tennessee, City of Knoxville, Environmental Protection Agency (EPA), and the Tennessee Clean Water Network in February 2005. Under the Consent Decree KUB is responsible for making improvements over a 10-year period by spending $50 million dollars per year on KUB's sewer system in order to reduce the number of sanitary sewer overflows (SSO's) in

the KUB system. Before the program began, KUB was spending approximately $12 million per year on the sewer system.
KUB hired Barge Waggoner, Sumner, and Cannon (BWSC) as the design consultant for the project. Mr. Andrew Clark, P.E., was the Engineer who developed the design. This project included the upsizing of 1,160 feet of 24" concrete pipe with 30" fiberglass reinforced pipe, installation of 690 feet of 30" ductile iron pipe inside of a 60" tunnel that crossed Second Creek, Norfolk Southern railroad tracks, as well as Knox Holston River Railroad ethanol unloading tracks. This project was adjacent to a Superfund site and presented many significant challenges. In addition to the permitting process involved with both railroad companies, KUB also had to work closely with the Knoxville Locomotive Works Site and the Sysco facility to facilitate construction on the project. The tunneling process proved to be very difficult and was originally designed to be a 72" hand mined tunnel. In addition, the original design called for 600 feet of 27" cured in place pipe (CIPP) for a sewer trunk line on the Knox Holston River railroad site. However, once construction began we determined this option was no longer available due to previously unknown existing conditions, but were able to turn to modified pipebursting/sliplining to eliminate infiltration under active railroad tracks. Another major issue we encountered was at the uppermost part of the project located at the toe of the Interstate 275 embankment. The new trunk line ties into a junction box that was buried on the edge of Tennessee Department of Transportation (TDOT) property, resulting in another issue that originally was not anticipated at the beginning of the project. Tunneling directly into the junction box prevented excavation of the interstate slope and significant disruptions to traffic.
The project was awarded to W.L. Hailey, Inc. on November 18, 2010 with a required substantial completion scheduled to be completed in 480 days on May 12, 2012. After multiple change orders and many challenges in the field the project is scheduled to be finally completed on December 29, 2012. KUB, BWSC, and W.L. Hailey faced many challenges with this project, but ultimately learned some valuable lessons.

Prepared by:
Doug Douthat, Knoxville Utilities Board
Andrew Clark, P.E., Barge Waggoner Sumner and Cannon, Inc.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 29KB
© Release (3): *not uploaded*

Reviewer(s):
- Bart Potts, Louisville Water Company
- Matthew Williamson, Littlejohn Engineering Associates, Inc.
- Daniel tegene, Louisville Water Company

Kay D. Ball
Louisville Water Company

Kay Ball is the Program Manager of Advanced Treatment Technologies for the Louisville Water Company. She has over 27 years of experience at Louisville Water in various positions in engineering and construction, leading the ATT/ Riverbank Filtration program for the last 15 years. She is married to Tim Ball and considers her greatest accomplishments are her five Children and three grandsons.

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Submission

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ID: 143

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Louisville Water Company's first sewer installation project (pre-merger!)

Student: No

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Topic(s): Engineering and Construction

Keywords:

Abstract: Transylvania Beach Road is a quiet neighborhood with homes along the Ohio River

Jefferson County that was marketed in the 1920's as excellent location for a beach/ summer home, in Northeast Jefferson County. The properties are bordered by the Ohio River, a gentleman's farm, and the Louisville Water B.E. Payne plant. The Riverbank Filtration Tunnel & Pump Station Project runs parallel to Transylvania Beach Road. As part of the permitting process for the Riverbank Filtration Tunnel & Pump Station project and for Wellhead protection, Louisville Water was required to provide a sewer to eliminate the antiquated septic/pits that would be a potential contaminate to the water supply.

This $2.7M sanitary sewer, force main, and drainage improvement project was paid for by the Louisville Water Company. The twenty-two residents have no assessment for the sewer nor were they required to pay for their individual service hook- up or abandonment of their existing septic system. This unique agreement with the property owners is a result of property negotiations but the advantage was borne by all. This benefit to the property owners led to even more interesting events during the construction. We dealt with everything from bats to eagles and a few other species that don't necessarily make the endangered list and this is all within the alignment for a new east-end bridge across the Ohio.

The presentation will detail the methodology MSD had available for new extension projects- no policy in place for a "sister utility" to perform an extension project. LWC and MSD revised the common practices of both organizations to adhere to both MSD and LWC policies. Other partnering occurred that made sense and ultimately saved resources. After years in the making, the Transylvania Sewer project is to be completed in January 2013, and with that, will mark the end of the construction of the $55 M RBF Tunnel & Pump Station Project.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 22KB
© Release (3): *not uploaded*

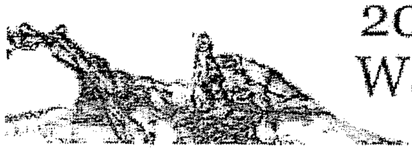
Reviewer(s):
- Keith Coombs, Louisville Water Company
- Bart Potts, Louisville Water Company
- Daniel tegene, Louisville Water Company

BIOGRAPHY FOR MICHAEL JACOBS

Michael Jacobs is a professional engineer for GRW Engineers in the Lexington KY office. He is a University of Kentucky graduate with 16 years of planning, design and construction administration experience in the utilities industry. While at GRW, he has primarily been involved in the water and wastewater industry including the planning and design of water distribution systems, wastewater collection systems, pumping stations, treatment facilities, and storage tanks. Mr. Jacobs's is an active member of the Ky Society of Professional Engineers, American Water Works Association and the Water Environment Federation.

BIOGRAPHY FOR JOE HAUBER

Joe Hauber is a professional geotechnical engineer with Thelen Associates, Inc., in their Northern Kentucky office in Erlanger. He received a Bachelor of Science degree in civil engineering in 2006 and a Master of Science degree in geotechnical engineering in 2007, both from the University of Cincinnati. He has worked for Thelen Associates for five years since completing his master degree. He was the 2011-2012 chair of the Geotechnical Group of the Cincinnati Section of the American Society of Civil Engineers and is the current vice president of the Northern Kentucky Chapter of KSPE. During his time at Thelen, Joe has worked on the design of several earth retention systems, in addition to the one discussed in the following presentation.



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Submission

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ID: 45

Submitted: 2012-12-10

Last Updated: 2013-03-19

Title: Versailles Raw Water Pump Station Slope Stabilization

Student: No

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Topic(s): Engineering and Construction

Keywords: Versailles Raw Water Pump Station Slope Stabilization

Abstract: The City of Versailles was faced with a potentially catastrophic slope failure situation at its raw water intake facilities located at river mile 85.27 in Pool 5 on the Kentucky River in Woodford County, Kentucky. Following the discovery of two soil destabilization areas or slides, the City hired GRW and Thelen Associates to evaluate the situation.

A geotechnical review of the riverbank indicated the slide areas were connected by tension cracks and the entire soil mass had moved, potentially threatening the City's facilities in the relatively near future.
The driving force of the slope failure was attributed to repeated saturation of the fine-grained alluvium soils, the rapid river draw down following heavy rains, and a flooding

event in early May 2010. The nature of the damage allowed the City to obtain emergency funding through the Emergency Watershed Protection (EWP) program, administered by the Natural Resources Conservation Services (NRCS).
With the possibility of losing the sole water source for more than 21,000 people countywide, the City acted quickly, working with GRW to formulate a design, secure funding, and complete the construction stabilization project, all while rainy weather and the river continued to further destabilize the soil. The team determined an effective stabilization method was to design and construct a drilled-shaft, tied-back retaining wall, specifically:

(23) - 48" diameter shafts drilled 30 feet into the ground and seated into solid rock.
(23) - 4' x 4' x 19' tall upper concrete head block formed and poured in place.
150 LF - 4' x 3' concrete beams. 1,862 SF - 8" thick precast concrete panels used as concrete lagging between the upper head blocks.
(23) – 87-foot long, drilled-rock anchor tie backs (axial design loadings of 485 kips and 575 kips).

Assessing the complexity of the project site, situated precariously close to existing raw water intake mains and pump station, was critical, as was looking for economical ways to accomplish the task. Working closely with the City, GRW and geotechnical consultant Thelen Associates prepared for the project using several innovative techniques such as designing a temporary working bench for easier site access and cost savings; the use of tremie pipe for more efficient concrete installation; the use of drilling shafts to avoid excessive excavation and shoring costs, and grouted rock anchor installation.

Further expediting the project was the hybrid design-build-type project delivery method in which a City-declared emergency allowed contractors to participate with the design team, producing an inherently value engineered design and compressing the time frame for substantial project completion.

The Versailles slope stabilization project not only provides a long-term way to protect the City's water source, it also offers a striking example how an engineering design can be used to mitigate the effect of natural disasters.

Comments:

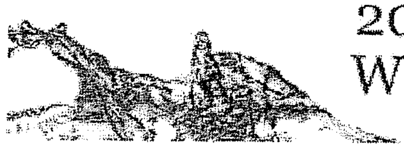
Files: Presentation (1): *not uploaded*
Bio (2): 38KB
© Release (3): 515KB

Reviewer(s):
- Keith Coombs, Louisville Water Company
- Bart Potts, Louisville Water Company
- Daniel tegene, Louisville Water Company

Note: Additional speakers may join if their schedules allow.

Bio: Jordan Basham

Jordan Basham is a graduate student at the University of Louisville. He is studying to obtain his degree in Civil Engineering with a focus on Water Resources. He worked as a co-op in the Louisville and Jefferson County Metropolitan Sewer District's Engineering Education Assistance Program (EEAP). In his spare time he enjoys computer games and exercising.



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Submission

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ID: 177

Submitted: 2012-12-16

Last Updated: 2012-12-16

Title: Reviewing the INTERNal components of a Co-op Program

Student: Yes

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Topic(s): Young Professionals

Keywords:

Abstract: A co-operative education program in an Engineering curriculum has the potential to benefit both the student and the organization with which he/she is employed. In a time when the economy is not its healthiest, hiring new employees (who generally have little experience) may seem low on the priority list. This presentation attempts to inform its audience of the benefits of a co-operative education program by highlighting testimonies from both co-op students and managers that have seen benefits by employing co-op students as well as a general overview of the program MSD has in place.

Note: This presentation will address:

- The basic structure of a typical co-op program
- Challenges & Experiences involved in employing Engineering Co-ops
- Lessons learned in hiring Engineering Co-ops
- Benefits gained in hiring Engineering Co-ops
- A Review of how hiring Engineering Co-ops affects the community

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 10KB
© Release (3): *not uploaded*

Reviewer(s):
- Amy Kramer, Northern Kentucky Water District
- Matthew Williamson, Littlejohn Engineering Associates, Inc.

Matt Kusnir bio:

Matt is project engineer with HDR in the area in the areas of potable water treatment, transmission system design and hydraulic modeling. Matt has worked on over 10 projects related to re-engineering of water plants or process optimization over the last 4 years with cumulative construction costs of over $30 million. Matt is a University of Kentucky graduate of civil engineering.

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Submission

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ID: 107

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Consent Judgment Leads to Increased Rates -- Blame EPA?

Student: No

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Topic(s): Finance

Keywords: EPA, system development, capacity fee, rate study, FOG surcharge

Abstract: Consent Judgment Leads to Increased Rates – Blame EPA?

Matt Kusnir, HDR
Benton Hanson, HDR

The Regional Water Resource Agency (RWRA) provides comprehensive wastewater services for Owensboro and the surrounding Daviess County. Since the agency's formation in 1992, steady growth has nearly tripled the amount of customers in the service area. Today, over 29,000 customers receive wastewater service provided by RWRA. While costs have risen significantly over the years, rates have only increased

marginally, leading to some of the lowest rates in the region. However, a recent Consent Judgment by the EPA has led RWRA to consider additional improvements, and to consider a different methodology to pay for these improvements.

In April 2012, HDR was retained by RWRA to investigate a rate increase to pay for increased improvements mandated through the EPA Judgment. Rather than increase the sewer service charge, paid by all customers, a new EPA Mandated Improvement Fee was considered, specifically to address the increased improvements that needed to be undertaken. In addition to investigating a new fee stemming from the Consent Judgment, HDR was asked to investigate additional adjustments to the current rate structure, including:

- Developing a Fats, Oils, and Grease (FOG) surcharge for industry
- Adjusting the System Development Fee formula, designed to recoup costs from new customers in specific service areas
- Re-calculating the Capacity Fee, designed for all new customers

This presentation will include the methodology and considerations behind the development of the new fees and the various feedback received from public stakeholders. In addition, lessons learned will be presented.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 10KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Martha Segal, Metro Water Services

Transferring a wastewater utility from City managed to a utilities board.
Lamar

The City of Morristown, Tennessee, and the Morristown Utilities System (MUS) have agreed to transfer the management, operations and maintenance of the City's wastewater utility from the Public Works department of the City to MUS. The City's Public Works department currently has the responsibilities for managing and operating the wastewater system. The collection system responsibilities are performed by the Public Works department with contracted operations and maintenance for the treatment works including pump stations and force mains. The City is under a Commissioner's Order from the Tennessee Department of Environment and Conservations.MUS is a separately chartered utility board which currently provides water, power, and a fibernet system to customers living in the City of Morristown. The transfer of the wastewater utilities will consolidate the rate funded utilities in Morristown under a single board and management structure allowing for better economies of scale. The wastewater assets will transferred in a phased approach allowing for overlap of responsibilities and better knowledge transfer during the process. The transfer of operational knowledge is a key factor in mitigating risk associated with this utility transfer.

The paper will discuss the planning process, challenges associated with the transfer, and lessons learned that could be applied to other similar transfers in other communities.

Factors that will be presented and discussed:

- Contractual arrangements, annexation, and negotiations
- Continuity of the Consent Order requirements
- Transition of employees and operational knowledge
- Financial transitions – debt, rates, capital
- GIS and computer maintenance management systems
- Other System records

Authors: Lamar Dunn, P.E.
Anthony Cox, City Administrator
Michael Howard, MUS

Bio

Lamar Dunn is the founder and a principal of Lamar Dunn & Associates. Lamar is a licensed professional engineering with a BS in engineering from Tennessee Tech and an MS in sanitary engineering from Vanderbilt University.

Tony Cox is the City Administrator for the City of Morristown.

Mike Howard is the Water Systems Manager for the Morristown Utility Systems.

A Detailed Look at Costs Associated with Green Stormwater Controls

Author: David Mason, P.E., D.WRE (CDM Smith - Franklin Office)

Author Bio:

Mr. Mason is an environmental and water resources engineer for CDM Smith with 12 years of experience in stormwater master planning, design, stormwater permitting, and stormwater utility development. He holds a B.S. in Civil Engineering from Virginia Tech and a M.S. in Environmental and Water Resources Engineering from the University of Texas. He is based out of the CDM Smith Franklin, TN office.

CDM Smith

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ID: 83

Submitted: 2012-12-13

Last Updated: 2012-12-13

Title: A Detailed Look at Costs Associated with Green Stormwater Controls

Student: No

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Topic(s): Stormwater Management

Keywords: green stormwater infrastructure costs

Abstract: In the last half decade, the use of green infrastructure (GI) for stormwater management has grown tremendously – often in conjunction with motivating factors such as property owners seeking LEED® certification for new and renovated buildings, compliance with regulatory actions such as Consent Decrees, or an increased awareness of the need for water conservation. Regardless of motivation, valuable information about GI is being generated at a rapid pace and documented in a growing list of databases. However, one key element is often missing--a detailed look at control-specific costs. Current stormwater best management practice databases frequently lack detailed costs for individual green stormwater controls. Why is so little reported on green infrastructure costs? What factors are driving the cost of green infrastructure? Is there truth to the

public perception that "green" is too expensive and study authors are thus hesitant to publish this information?

This study is unique in that the cost information is derived from a large program designed to explore the feasibility, including cost, of the use of green infrastructure for combined sewer overflow volume control. The study encompasses a wide range of green stormwater management practices in a variety of settings and at various scales. As all projects were part of the same program, the information was obtained in a consistent manner and is directly comparable. This reduces the uncertainty in the study's results and conclusions.

The focus of the study is to gain an understanding of costs to construct a broad range of green stormwater controls in multiple settings. Focal points include the unit costs for the individual types of GI controls, the differences between estimated and actual costs, identification of trends and driving factors for costs, and a preliminary look at the cost benefit associated with the projects as they compare to traditional "gray" projects.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 264KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

Mr. Campbell has been a professional engineer in the State of Kentucky since 1997. He acquired his Bachelors of Science in Engineering Science in 1993 from the University of Louisville Speed Scientific School and later completed his Masters of Engineering in Civil Engineering from the University of Louisville in 2005 along with a Certificate in Environmental Engineering that same year. He is a 2001 graduate of the Leadership PE program, and has been employed at Qk4 since 1991.

During his tenure at Qk4 he has worked as a design engineer in the water and wastewater arena, assisting in the areas of construction plan production, field surveying, cost accounting, storm water design, water distribution design, sanitary sewer design, treatment design, utilities relocations, facilities planning, construction support, construction inspection, and funding assistance. Most recently, Mr. Campbell has been responsible for project management and management of all Louisville water and wastewater operations for Qk4.

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ID: 114

Submitted: 2012-12-14

Last Updated: 2013-01-04

Title: Louisville Hill Road Stormwater Seperation Project

Student: No

Author 1:
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Alternate Contact: 502-649-5072

Topic(s): Collection Systems

Keywords: Stormwater Seperation

Abstract: The City of Frankfort Sewer Department recognizes the need to eliminate inflow of

stormwater into the separate sewers in its system. One area where the City has experienced the obvious negative impacts of stormwater entering its combined sewer system is in the Louisville Hill Road area of South Frankfort. The Ewing Street pump station experiences by-pass frequently at CSO #007 into the Kentucky River. The sewer department identified the source of a large portion of inflow to the pump station from the Louisville Hill Road drainage area. Nearly 100 acres of drainage area are collected by the storm sewers associated with the Roadway and routed directly into the combined sewers in South Frankfort. During a 5 month period, the City monitored approximately 25 million additional gallons received by the combined sewers in South Frankfort. The challenge for the project was determining the best opportunity for eliminating the inflow, and minimizing the impact to the businesses and residents in the project area.
The City selected Qk4 to complete the study of the situation and make a recommendation for the final design of the separation project. Qk4 identified potential corridors for the construction of a new pipeline to route the flow directly to the Kentucky River. The alternatives involved several complexities including traffic interruption, utilities conflicts, interaction with the flood protection system, and disruption to the residents, schools, and businesses of South Frankfort.
Working with the preliminary study information provided by the City and City staff knowledge of the existing sewers, Qk4 created cost estimates for each of the options along with a list of positive and negative impacts of each option. As a result of this study, the alternative to construct a new 48 inch storm sewer in Us 60 (Louisville Hill Road) was selected. Qk4 was retained to complete final design and construction inspection/administration. The project was successfully completed recently.
Since completing the project, FSD has already seen an impact of reduced run times at the Ewing Street pump station. FSD is installing flow monitors in the system to assist in the specific determination of flow reduction to the system. This project was completed successfully despite multiple challenges encountered during design and construction. The FSD was able to successfully work with the KYTC, Army Corps, KDOW, SHPO, and local residents and businesses to complete a project that had direct and immediate impacts to the sewer collection system in Frankfort.

Comments: This project can touch planning, monitoring, design, and construction during our presentation. If there is a particular discussion topic inside of stormwater seperation that we need to hit to help out the conference we can do that.

Files: Presentation (1): *not uploaded*
Bio (2): 10KB
© Release (3): *not uploaded*

Reviewer(s):
- Charles Poskas, ARCADIS
- Preston Pendley, Hardin County Water District No. 1
- Katie Nolan, Gresham, Smith and Partners

Bio for Derek Guthrie, P.E.

Derek is currently employed by HDR Engineering where he specializes in wet weather programs for stormwater and wastewater utility. He has over 34 years of experience in the field, including over 20 years at the Louisville Metropolitan Sewer District where he was Chief Engineer.

Bio for John Loechle, P.E.

John Loechle is employed by the Louisville Metropolitan Sewer District as a Technical Services Engineer. He has been employed by the Louisville MSD for 21 years. John is responsible for a variety of wastewater treatment plant improvement, sewer, pump station, and stormwater projects.

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ID: 129

Submitted: 2012-12-14

Last Updated: 2013-01-04

Title: National Priorities: The Flood Control Act of the Clean Water Act?

Student: No

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Organization: HDR Engineering
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Topic(s): Collection Systems

Keywords: combined sewer overflows, flood pumping stations

Abstract: The Flood Control Act of 1936 established the policies and procedures that today are still the marching orders for the U.S. Army Corps of Engineers (USACOE). The Clean Water Act in 1972 was the first formalization of requirements to achieve fishable and swimmable streams. Then some twenty-two years later, EPA was tasked with combined sewer overflow mitigation when it officially became a part of the Clean Water Act. Louisville MSD found that the requirements and objectives of these two heavyweight Congressional actions - separated by nearly six decades - presented some thorny conflicts. Louisville MSD's consent decree included requirements to resolve the water quality impacts created from the "by the book" operation of flood pumping stations built by the USACOE in the early 1950's.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 10KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- John Ricketts, URS Corporation
- Brent Tippey, HDR

Biography: Alexander Krämer

Alexander Krämer is employed with Parkson Corporation, an engineering company focused on water and wastewater treatment technologies. He has over 13 years of professional technical sales experience and worked at Thermo-System, located in Stuttgart Germany as a Project Designer, before joining Parkson in 2010 to provide additional technical support from project design to project completion.

Alexander is a Master Tradesman and holds a Bachelor's degree in Trade and Commerce from the IHK in Munich, Germany.

Alexander is also a Master Yachtsman and in his free time, enjoys participating in sailing regattas.

Contact information for Alexander can be found below:

Alexander Krämer

Parkson Corporation

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ID: 84

Submitted: 2012-12-13

Last Updated: 2012-12-13

Title: HARNESSING SOLAR ENERGY FOR BIOSOLIDS MANAGEMENT: A GREEN APPROACH TO DRYING

Student: No

Author 1: First Name: Alexander

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Topic(s): Biosolids

Keywords: CO_2, Solar, Drying, Biosolids, Sludge, Waste, Energy

Abstract: The high, and ever-rising costs associated with disposal of sewage sludge containing high moisture content have prompted waste water treatment plants to search for technologies capable of consistently drying sludge to 75% dry solids or greater. A commonly accepted technology in the United States for this has been gas-fired thermal drying. Although this type of dryer has proven to produce a high quality end product, literature has shown they require 70-100kWh of electrical energy plus 2.7 – 3.4 million BTU's of thermal energy per ton of water evaporated. The thermal energy consumption is typically generated by burning a fossil fuel like natural gas, which leads to high levels of CO_2 production. Using CO_2 emission numbers generated by the US Department of Energy for electrical generation and for burning natural gas, it can be calculated that, on average, gas-fired thermal dryers produce 0.24 tons of CO_2 per ton of water evaporated from sewage sludge.

An energy efficient sludge drying technology that has been popular for many years in Europe and has been growing in popularity in the United States is solar sludge drying. Since its introduction in Europe in the early 1990's, the technology has established a world-wide installation base of nearly 200 installations. Literature has shown that solar sludge dryers only consume 20-40kWh of electrical energy per ton of water evaporated from sewage sludge. The thermal energy needed for evaporation of water is provided by the sun, which produces energy that is free for all to use and produces no CO_2. This

leads to a 90% reduction in CO2 emissions when compared to gas-fired thermal dryers, or production of 0.02 tons of CO2 per ton of water evaporated.
Test results from two solar sludge drying trials conducted at an 8,500 ft2, full-scale, solar dryer installation in California during the months of April – June 2009 proved that the technology is capable of producing a very dry, safe and quality end product like that of a gas-fired thermal dryers. In Trial 1, 210 yd3 of sludge were loaded in to the dryer at 17.8% dry solids, reached 75% dry solids in 18 days and a maximum dry solids concentration of approximately 90% in 20 days. In Trial 2, 210 yd3 of sludge were loaded in to the dryer at 14.7% dry solids, reached 75% dry solids in 14 days and a maximum dry solids concentration of approximately 90% in 23 days. In both trials, pathogen levels were reduced to those required by the EPA for Class A biosolids classification.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 19KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Jim Pelton, Pelton Environmental Products

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ID: 62

Submitted: 2012-12-12

Last Updated: 2012-12-13

Title: "Not Just Your Father's Chlorine Safety: A Lesson in Modern Chemical Safety Techniques"

Student: No

Author 1:
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Topic(s): Safety and Security

Keywords: safety, security, gas, chlorine, chemicals, disinfection

Abstract: "Not Just Your Father's Chlorine Safety: A Lesson in Modern Chemical Safety Techniques"
Chlorine has been utilized as a primary disinfectant of wastewater effluent for many decades and when used properly has proven to be safe and effective. Originally used primarily in the gas form, chlorine is currently available as a disinfectant for final wastewater effluent in liquid form as sodium hypochlorite, in solid form as calcium hypochlorite and is also generated on-site from a salt solution. Additionally, the use of chlorine can sometimes require the addition of related chemicals to the effluent prior to discharge such as sulfur di-oxide for de-chlorination.
The use of gaseous chlorine requires specific safety procedures regarding the transportation, storage and handling of the bulk chemical as well as connecting and

disconnecting of cylinders and checking of equipment integrity. Although many of the safety related procedures for gaseous chlorine have remained largely unchanged in recent years; the use of alternate forms of chlorine, changing regulations, homeland security concerns and the improvement of various types of instrumentation have recently dictated the need for site specific chlorine safety plans. Although gas chlorine is generally considered the most dangerous form of chlorine, sodium hypochlorite is responsible for a large share of chlorine disinfection accidents and presents unique safety issues not necessarily applicable to gas.

This paper will review key safety concerns and techniques typically implemented with a gas chlorine disinfection system including working with 150 pound cylinders and ton containers, basic first aid for inhalation and contact, and basic do's and don'ts of chlorine safety. However, this paper will also address safety issues associated with sodium hypochlorite, calcium hypochlorite, sulfur di-oxide and on-site generation of chlorine. The paper will investigate CL 2 room design considerations including containment and sprinkler system design. It will discuss the use of various types of monitoring, detection and alarm equipment including chlorine, sulfur dioxide and ammonia detectors as well as analog, amperometric residual analyzers. It will also address the use of equipment to remove released chlorine including wet packed, wet packless and dry emergency scrubber systems and vent exhaust gas arresters to treat vacuum regulator vent releases. Also addressed will be the need for the development of an emergency action checklist for the protection of both the employees and nearby residents.

The goal of the paper is to empower the attendee with significant information to develop a chlorine safety plan including identification of equipment which cost effectively increases the safety of the employees and nearby residents. The plan could be implemented immediately or in phases over a period of years as budget allows.

Comments: Although I believe this abstract fits well in the Safety and Security session, I will be willing to present in any session requested.

Files: Presentation (1): *not uploaded*
Bio (2): 54KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Preston Pendley, Hardin County Water District No. 1
- Brent Tippey, HDR

2013 KY-TN WATER PROFESSIONALS CONFERENCE
July 14 to 17, 2013
Louisville, KY

SPEAKER BIOGRAPHICAL DATA

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TITLE F PRESENTATION: "Not Just Your Father's Chlorine Safety: A Lesson in Modern Chemical Safety Techniques"

EDUCATION: M.S. Civil Engineering, Arizona State University, Tempe, AZ
B.S. Environmental Engineering, Pennsylvania State University, State College, PA

PROFESSIONAL EXPERIENCE:

Severn Trent Services, Inc **2012 - Present**
Regional Sales Manager
Regional sales Manager for large water and wastewater corporation specializing in water filtration systems, wastewater de-nitrification systems and disinfection systems. Complete sales and marketing responsibility for revenus and earnings for one third of the United States and on-half of Canada. Area Manager for one of the largest water and wastewater operations corporations in the world specializing in contract operations of municipal water and wastewater treatment systems.

City of Wilmington **2012 - 2012**
Assistant Water Director
Assistant Water Director for City of Wilmington, Delaware Public Works Department.

- Responsible for operation, maintenance and capital improvement of all wastewater facilities including collection system, pump stations and 135 MGD wastewater treatment plant.
- Responsibilities included hiring and managing consulting Engineers, Project Management of major capital projects, managing operation budgets, presentations for City Council, DNREC permitting, etc.

Veolia Water North America **2010 - 2012**
Area Manager
Area Manager for one of the largest water and wastewater operations corporations in the world specializing in contract operations of municipal water and wastewater treatment systems.

- Complete responsibility for operation of ten municipal water and wastewater treatment facilities including Poughkeepsie WWTP, Picatinny WTP, Washington WWTP, City of Wilmington WWTP, Baltimore City Compost Facility.
- Complete profit and loss responsibility for ten facilities totaling $26,400,000 in annual revenue and $2,400,000 in margin. Responsible for developing budgets, maintain forecasts and meeting financials goals, approving purchase orders, negotiating client contracts and change orders, etc..
- Managed 55 employees at various facilities including ten project managers. Negotiated contracts with three unions at facilities. Responsible for hiring, firing, raise and bonus distribution.
- Responsible for sales and marketing within project area including prospecting, initial client contact, developing scope of work, assembling proposal or response to bid, ongoing prospective client contact, and negotiations of final scope and pricing, developing brochures, etc.
- Maintained one of the best safety records within the company at facilities within the area
- Responsible for permit compliance of all WWTP's and WTP's
- Wilmington Water Pollution Control Facility won the National Association of Clean Water Agencies (NACWA) Peak Performance Gold Award in 2011 for exceptional treatment performance as well as the Wilmington Award for impact within the community.

Applied Water Management / American Water **2005 - 2010**

Senior Managing Engineer / Business Development Manager

Senior Managing Engineer / Business Development Manager for largest investor owned water and wastewater utility in the United States with 7,000 employees in 32 states including both regulated and non-regulated utility projects.

- Responsible for developing and implementing US Marketing Plan advocating the use of design build own operate public private partnerships focusing on water and wastewater infrastructure improvements for smaller to medium sized municipalities.
- Managed wastewater department with ten (10) direct report Engineers involved in various water and wastewater design and planning projects including MBR, SBR and CAS facilities. Projects included design and construction management of 250,000 gpd wastewater treatment facility in Andover, NJ, design and construction management of MBR wastewater treatment facility for Trump National Golf Course, and design of 125,000 gpd MBR wastewater treatment facility in Suffolk County, NY
- Championed efforts to construct and operate a 20 MGD regional Marcellus Shale Frac Advanced Vapor Compression wastewater treatment plant in western Pennsylvania which involved partnership with major equipment supplier and several large gas companies to treat flowback water for reuse as frac water. Project was temporarily suspended.
- Responsible for securing required local and NJDEP permits for onsite water supply and wastewater treatment including WAP, BSDW, WMP Amendments, NJPDES, TWA, land use permits, etc.
- Signed largest engineering contract ever sold at Applied Water Management involving engineering design and operation for five wastewater treatment plant retrofits including construction of two new wastewater treatment plants.
- Significantly grew AWM utility consulting business by performing engineering services for California American Water including development of Comprehensive Planning Studies, Condition Based Assessments, Asset Management, Rate Case Assistance and development of a GIS system

Alfa Laval Inc, Warminster, PA **1997-2005**

Regional Manager

Regional Manager for billion dollar international manufacturer of sludge dewatering centrifuges and heat exchangers.

- Managed 18 sales reps in 13 states across the Northeastern United States maintaining full responsibility for profit, loss and sales of $4.5M Environmental/Industrial Waste Business Unit
- Responsible for sales and marketing for one-third of county including developing marketing plan, interfacing with global marketing team, presenting plan to corporate, coordinating conferences and shows, market research, etc
- Increased overall sales proposal volume by 6% in six months by reorganizing the territory of existing sales reps, releasing some and adding others, and developing method to accurately measure rep effectiveness.
- Developed Strategic Marketing Plan for centrifuges including increasing overall market share by advocating the use of "swing" machines, and focusing on standard, prepackaged systems for smaller plants.
- Developed company technique for project risk assessment during the proposal phase, resulting in improved risk mitigation and reduced margin erosion. Served on Alfa Laval Management Committee to implement an International Centralized Project Management Group. Process included pre-contract to post acceptance phases of contract.

Senior Project Manager

Project Manager for over 40 international municipal/industrial projects from contract initiation to contract close out totaling over $75M. Complete contract responsibility including engineering, CPM scheduling, cost tracking, contract negotiations, agency approvals, risk analysis, and final commissioning.

- Managed team of five (5) engineers from bid phase through installation phase of projects including multi-million dollar projects for Charlotte, Toronto, Denver, IBM, Anheuser Busch, and Caterpillar
- Project Manager for installation of 12 dewatering centrifuges for Metropolitan Water Reclamation District of Greater Chicago totaling over $15 Million
- Project Manager for installation of 6 dewatering Centrifuges for City of Los Angeles totaling over $9 Million
- Received maximum incentive bonus four years in a row by maintaining exceptional on time/under budget project record and negotiating $10M in early deliveries, $4.5M in payment terms, and $350,000 in change orders.
- Avoided $1.8M by successfully negotiating the largest process performance penalty in Alfa Laval history. Successfully managed $750,000 order from Chicago MWRD resulting in six repeat orders totaling over $8M.
- Served on Alfa Laval Management Committee to develop plans and procedures for implementation of International Centralized Project Management Group responsible for handling all large projects.
- Managed team to develop new castings for Cummins K58 engines to adapt plate and frame heat exchangers. Brought OEM ALICS product line to market resulting in millions of dollars per year repeat business.

Carroll Engineering, Inc. Warrington, PA **1997 - 1997**

Project Manager/Wastewater Marketing Leader

Responsibilities included marketing new customers, negotiating scope, managing subcontractors, CPM scheduling, tracking costs, and facilitating on-site meetings, contract negotiations for regional Civil Engineering Consulting Firm.

- Successfully pursued the Upper Dublin WWTP design project that resulted in the largest WWTP design and construction administration contract in the Company's history.

- Project Manager/Design Team Leader for Upper Dublin WWTP project including development of plans/specifications for design and permit negotiations with PDEP

O'Brien and Gere Engineers, Inc., Bluebell, PA **1995-1997**
Wastewater Section Leader/Project Manager
Project Manager and Wastewater Section Leader for Municipal/Industrial markets, monitored section budgets, supervised employees, and acted as Project Manager on several large projects for national Civil Engineering Consulting firm.

- Project Manager for 20-year Capital Improvement Plan, WWTP capacity assessment, Chapter 94 Report, Biosolids Management Plan, Act 537 Plan Update and NPDES permit negotiations for Upper Dublin 1.35 MGD WWTP
- Project Manager for 0.15 MGD zero discharge industrial wastewater study for Dohlar Jarvis aluminum die casting
- Successfully led marketing effort resulting in company being selected for the North Penn Water Authority (NPWA) Master Plan project, the first major computer-modeling project completed by this office.
- Subsequent Project Manager/Modeling Team leader of NPWA project involved evaluation of four software systems, computer modeling of entire water distribution system, and development of Twenty Year Capital Improvement Plan for NPWA which resulted in significant reduction in operation budget for the North Penn Water Authority and provided plans for the future expansion of the NPWA Distribution System.
- Water Distribution System Model Evaluation for Washington DC, evaluating KYPIPE, EPANET, CYBERNET and WATERCADD resulting in the most cost effective modeling software for the District of Columbia.

HDR Engineering, Inc. Phoenix, AZ **1990-1995**
Project Manager
Project Manager for nationally recognized Civil Engineering Consulting Firm, specializing in the design and construction administration of large municipal water and wastewater treatment plants.
- Received National Pacesetter Award for Excellence in PM by managing the South Mountain Sewer Route Study and completing the $250,000 study with a construction cost of $40M ahead of schedule and under budget. Project involved life cycle analysis of nine major alternatives and Preliminary Design of 5 miles of large diameter tunnel and two 40 MGD pumping stations, City of Phoenix
- Suggested use of "Swing Centrifuge" as backup for thickening/dewatering centrifuges for 150 MGD WWTP final design for processing 110 dry tons solids per day resulting in savings of $1M to City of Phoenix.
- Solved capacity issues/eliminated permit violations for Phoenix through 50 MGD Verde WTP Expansion Design/Construction Administration project and the Solids Handling Facilities Design/Construction project.
- Project Manager for 1 MGD nitrification/denitrification WWTP design for Saddle Brooke, AZ
- Project Manager for 50 MG concrete reservoir rehabilitation design for City of Flagstaff, AZ
- Implemented innovative solution to SCUBA dive and dye test 20 MG City of Phoenix potable water reservoir prior to design, significantly decreasing overall cost of project and reducing overall schedule by 6 months. Dive team leader of underwater investigation and Project Manager of construction administration project.
- Reduced engineering, operation and maintenance costs by developing standard drawings and specifications to be used for 25 different 200 cfs diesel engine driven mixed flow storm water pumping stations for Arizona Department of Transportation depressed highway system.
- Project Manager for Water Master Plan and system modeling using CYBERNET, and Wastewater Master Plan and system modeling using HYDRA for Lake Havasu, AZ addressing both needs for twenty years into the future. Both projects were delivered on time and under budget to a happy customer.
- Project Manager for 15 MG Deem Hills Reservoir and Pump Station design and modeling, City of Phoenix
- Solved capacity issues and eliminated discharge permit violations for City of Phoenix through the 50 MGD Verde WTP Expansion Design/Construction Administration project and the Solids Handling Facilities Design/Construction Administration project. Project involved using innovative plate settlers and centrifuge dewatering and produced significant cost savings through the creative conversion of sand filters into mixed media filters.
- Eliminated bacterial problems in potable drinking water with low cost solution by constructing Chlorination Facilities and Recirculation Design for 21 water reservoirs for the City of Phoenix
- Saved client almost $1.3 M in construction costs by performing Value Engineering on wastewater facilities plan recommending STEP system, San Diego County, CA

A-N West Inc., Phoenix, AZ **1987-1990**
Environmental Engineer
Environmental Engineer for Civil Engineering Consulting Firm, specializing in the design and construction administration of municipal water and wastewater treatment plants.

- Reduced construction costs by over 20% by constructing 0.04 MGD aerated lagoon design, which could later be operated as a 2.4 mgd extended aeration WWTP for Estrella, AZ.
- Design of 10 MGD Electro Dialysis Reversal WTP for TDS removal, City of Estrella, AZ
- Design of 2.5 MGD extended aeration WWTP Improvements including expansion, City of Winslow, AZ
- 0.3 MGD extended aeration wastewater treatment plant design with nitrogen removal, Bullhead City, AZ
- Design and Construction Management of 0.04 MGD aerated lagoon design
- Design of 2.4 mgd extended aeration WWTP including sludge dewatering facilities, Estrella, AZ
- Avoided significant pumping costs for City of Estrella by Design of 10 MGD Electro dialysis Reversal membrane water purification plant to treat ground water with high TDS to drinking water standards.
- Project Manager for design of wastewater treatment expansion to 2.5 MGD WWTP, City of Winslow, AZ
- Storm Water Master Plan and modeling using HEC1, Cathedral City, AZ

Sherwood Capital Inc., Phoenix, AZ **1981-1987**
Account Executive:
Licensed Stock Broker Insurance Salesman operating on straight commission for national brokerage house. Managed client investment portfolios and marketed new accounts.

McFarland - Johnson Engineers Inc., Binghamton, NY **1979-1981**
Environmental Engineer
Project Engineer for consulting engineering firm specializing in Water and Wastewater Treatment on various projects including STEP System design for Oquaga Lake, NY and 25 MGD WWTP expansion for Gloucester County, NJ

ADDITIONAL QUALIFICATIONS:

Pennsylvania State University, University Park, PA
1978-1979 Pilot Plant Operator

- Operator of pilot scale activated sludge WWTP researching the patented "Phostrip" phosphorus removal process

Upper Gwynedd Towamencin Municipal Authority, Lansdale, PA
1978-1979 Assistant WWTP Operator

- Assistant Operator of 3.0 MGD attached growth WWTP undergoing expansion to 9.0 MGD

PRESENTATIONS AND PUBLICATIONS:

- Masters Thesis entitled, *Chemical Composition of Urban Runoff, Phoenix, AZ*
- *Urban Storm Water Runoff Quality in an Arid Environment,* EPA Wastewater Treatment Technology Transfer Workshop
- *City of Flagstaff 50 MG Reservoir Rehabilitation/Plant Additions* presented at the AWPCA Annual Conference.
- *Chemical Composition of Urban Runoff, Phoenix, AZ,* alternate presentation at WEFTEC
- *Storm Water Pollution in the Phoenix Metropolitan Area: Real or Imagined Threat?* Seventh Annual Symposium of the Arizona Hydrological Society
- *Measuring the Success of Asset Planning from An Investor Owned Regulated Utility Viewpoint,* alternate presentation at joint AWWA/E/WEF Utility Management Conference

REGISTRATION AND AFFILIATIONS:

- Professional Engineer (PA, AZ, NJ)
- Previous Project Manager Professional (PMP)
- Water Treatment Plant Operator License (AZ) / Water Distribution System Operator License (AZ)
- Wastewater Treatment Plant Operator License (AZ) / Wastewater Collection System Operator License (AZ)
- Phi Kappa Phi Honor Society / Who's Who in International Management
- AWWA Desalting Committee / AWWA Re-use Committee
- NJWEA Program Committee
- New Jersey American Water Works Association Conference Committee Chair
- Previous PWEA Biosolids Committee and Program Committee
- Water Environment Federation Member / PWEA / NJWEA Member
- Private Pilot License (VFR) / Open Water SCUBA Diving License

Eating the Elephant of I/I – The Beginnings of an I/I Program *Bio*

Travis E. Wilson, PE

Company – Littlejohn Engineering Associates

Education – BS, Civil Engineering, Tennessee Tech University

Background – Over 16 years experience in the engineering & management of collection system projects

Greg Clark, PE

Company – Cleveland Utilities

Job Title – Rehabilitation Manager

Education – BS, Civil Engineering, Tennessee Tech University

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Submission

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ID: 152

Submitted: 2012-12-15

Last Updated: 2012-12-15

Title: Eating the Elephant of I/I - The Beginnings of an I/I Program

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Topic(s): Collection Systems

Keywords: I/I removal, trenchless rehabilitation, lessons learned

Abstract: Eating the Elephant of I/I – The Beginnings of an I/I Program

Background
This paper illustrates the steps taken and early results achieved by a Tennessee utility district in the beginning steps of an I/I reduction program. The elements of the comprehensive program include temporary flow monitoring, permanent flow monitoring, manhole inspections, smoke testing, CCTV inspection, flow isolations, dyed-water testing, the collection of GPS information, the standardization of field procedures, and an extensive public outreach.

In order for a utility to be successful in the reduction of SSOs and the mitigation of I/I, a methodical, comprehensive approach should be taken. The methodology utilized in the formation of Cleveland's I/I reduction program consists of formalizing an overall plan, the prioritization of key areas utilizing criticality factors, the use of properly scheduled inspection techniques to identify specific sources of I/I, the collection of detailed information to document a snapshot of the system during pre and post rehabilitation conditions, the integration of all information into a GIS system, and measures taken to maximize budget dollars while achieving the desired results.

In 2010, Cleveland Utilities (Tennessee) embarked on a long-term I/I reduction program which began with a snapshot of the entire collection system utilizing a unique, but comprehensive flow monitoring approach. The results of the study were used to prioritize portions of the system. In order to maximize budget dollars, flow monitors were installed in stages for shorter periods to focus on high priority areas instead incorporating a large, complex system of meters installed simultaneously at a greater expense. The sacrifice of this approach was limited to a slight delay of the next phase of work; however, the savings resulted in approximately $130,000. Once priority areas were established, a number of flow monitors were installed in key locations to establish a permanent flow monitoring network. The data collected from this network is critical in obtaining information throughout the remainder of the program. The results of the flow monitoring study indicate that approximately 53% of the I/I exists in 27% of the monitored area.

Initial SSES activities included manhole inspections and smoke testing inspections. Due to lessons learned on previous projects, these tasks were completed prior to CCTV inspections to verify connectivity which proved to be more cost-efficient and provide a more accurate data product. Another cost savings measure implemented was to incorporate flow isolation readings during "low flow" periods. The readings were taken subsequent to qualifying rain events as observed from the permanent network of meters accessible via internet. With these results, a priority CCTV inspection listing is formulated. The expected savings recognized by implementing these procedures are approximately $265,000.

Upon completion of the all field activities, all data collected is integrated into the GIS system. This integration is a key factor in formulating a cost-effective rehabilitation plan that includes both manhole and mainline repair. As a part of the project, GPS points were gathered during the manhole inspection phase to verify and document the exact location of each manhole within the study area. With a complete and accurate GIS map, the utility can quickly access all information gathered to make day-to-day assessments and formulate decisions regarding long-term planning.

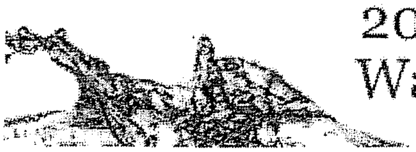
Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 12KB
© Release (3): *not uploaded*

Reviewer(s):
- Charles Poskas, ARCADIS
- Preston Pendley, Hardin County Water District No. 1
- Katie Nolan, Gresham, Smith and Partners

George Kurz, P.E., DEE

George has focused on the development of I/I reduction strategies for municipalities for the past 25 years. He documented the elimination of 4.3 billion gallons of I/I in Brentwood and Nashville using flow monitoring and regression analysis techniques.



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ID: 166

Submitted: 2012-12-16

Last Updated: 2012-12-16

Title: Accuracy and Precision for Predicting Design Storm I/I

Student: No

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Topic(s): Collection Systems

Keywords: I/I, inflow & infiltration, design storm, sewer capacity, flow prediction

Abstract: Predicting the volume and flow rate of I/I (inflow & infiltration) is important for answering

several questions related to sewer capacity management, SSO (sanitary sewer overflow) reduction, and determining the effectiveness of sewer rehabilitation conducted for I/I reduction. Typical concerns are:

- How much sewer rehabilitation is enough - to accomplish program goals?
- What magnitude peak I/I and flow rate should be used for design of a parallel or replacement sewer?
- What magnitude volume and peak I/I flow rate should be used for designing detention or equalization basins?

This paper will explain the difference between accuracy and precision for evaluating the results from linear regression techniques used to predict the 24-hour I/I volume and peak-hour I/I flow rate for design rainfall events. Selection of the size and return interval for the design rainfall event will not be discussed. Instead, these techniques and principles for considering accuracy and precision are applicable to any event selected for design by an engineer or municipal agency. Previous work evaluated 69 monitoring locations in sanitary and combined sewers. Using regression techniques, an average regression coefficient of 87% was achieved (a perfect correlation would be 100%) for the design volume and 81% for the peak rate. For the same locations, the average 95% confidence interval for the predicted design storm (expressed as a percent of the predicted value) was 34% for the volume and 45% for the peak flow. (The best confidence interval would be zero.)These represent good methods to measure precision. However, the difficult question remains, "What is the accuracy of the predicted value?" The best way to answer that question would be to compare the predicted value with the volume and peak rate actually measured during a valid design storm. Twenty-six monitoring locations were included in this study (and 50 more will be added for the paper in July). In all cases, data from a design storm was not available. Therefore, each site was analyzed without using the largest valid storm that occurred during each respective monitoring study. The regression equations were used to predict the 24-hour I/I volume and peak-hour rate for the largest observed storm. The predicted volume was an average of 9% low, and the predicted peak was an average of 8% low. However, these percentages may be misleading since they obscure any concept of dispersion of the individual values. Therefore, the differences were recalculated using the standard statistic of RMS (root mean square). The RMS of the predicted volume difference was 32% and the RMS of the peak-hour difference was 25%. The author considers these differences to be significant. However, lacking results from similar analyses using other flow prediction methods (e.g. RTK - in the US EPA Toolbox), then it is difficult to make comparisons. One goal of this paper is to provoke further investigation into this topic, and to provide baseline information for engineers and planners for considering the level of confidence for predicted design flow conditions.

Comments: All field work is completed. The 50 additional monitors mentioned in the abstract have been full analyzed. The work to evasaluate the predicted values can be accomplished in a day. There will be no hinderances for having a complete paper by July 2013.

Files: Presentation (1): *not uploaded*
Bio (2): 10KB
© Release (3): *not uploaded*

Reviewer(s):
- Charles Poskas, ARCADIS
- John Ricketts, URS Corporation
- Brad Derrick, DLZ

John Loechle is a Sr. Tech Engineer at Louisville MSD working in the Project WIN Department, Regulatory Division. This group is in charge of implementing MSD's IOAP Consent Decree program. John coordinates all assessment and rehabilitation of MSD's sanitary infrastructure (sewers, force mains, pump stations and treatment plants). John also coordinates the districts CMOM program and project manages Real Time Control (RTC) implementation and construction projects. John enjoys spending his free time with his family and all the kids activities (coaching, scouts, etc...).

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ID: 229

Submitted: 2013-01-16

Last Updated: 2013-04-17

Title: Real Time Control - Taking it to the Next Level

Student: No

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Topic(s): Collection Systems

Keywords: overflow abatement, real time control

Abstract: Louisville and Jefferson County Metropolitan Sewer District (MSD) is responsible for stormwater and sanitary sewer service in the Louisville, Kentucky Metropolitan area. In response to a Federal Consent Decree, MSD developed an Integrated Overflow Abatement Plan (IOAP) to control sanitary sewer overflows (SSOs) and combined sewer overflows (CSOs). The IOAP approach builds on MSD's existing Real Time Control (RTC) system which currently controls in-line and off-line storage at six locations throughout MSD's combined sewer area. In FY 2012 the RTC system reduced CSO volume by over 1 billion gallons, mainly by storing combined sewage in existing large interceptors, then routing the flow to the Morris Forman Water Quality Treatment Center following the rain event. Given the success of the existing RTC system, MSD plans to add 16 additional control

points during implementation of the IOAP, expanding the use of the RTC system into the separate sanitary sewers tributary to the Morris Forman plant. The new control points will include additional in-line storage, off-line storage, flow diversions, and a remote high-rate treatment system. In addition to controlling the filling of storage basins, the RTC system will be expected to route flow through several potential flow paths, determine loadings on two separate treatment facilities, prioritize the emptying of in-line and off-line storage, and control the rate of emptying to match the treatment capacity available at the Morris Forman plant or at the new high-rate treatment system.

This paper will review the status of the existing RTC system and track its effectiveness at reducing CSOs since initial implementation in 2005 and first expansion in 2009. In addition to performance statistics, a summary of "lessons learned" for further development of the system will be presented.

Expanding the RTC system to the furthest reaches of the Morris Forman WQTC service area and adding new functions to the system required MSD to carefully consider a number of implementation issues. Key decisions included:

• Re-evaluation of the RTC software platform and control optimization approach, given the availability of competing approaches to the existing RTC software that were not available during the original implementation in 2005.
• Selection of the hydraulic model used to drive the RTC optimization system, given that MSD changed its planning model platform as part of the IOAP development, and the current planning model is not the same as the hydraulic model currently driving the RTC system.
• Integration of additional flow monitoring locations to improve the short-term prediction capability of the model, reducing the reliance on calculated travel times to determine control actions.
• Integration of additional rain gage stations to improved the longer term prediction capability of the model, considering actual rainfall measurements to supplement a radar rainfall prediction module in the system.
• Determination of basic control rules for each site, and the prioritization of interactions between sites as the basis for the optimization routines run within the RTC program itself.

As an example of control approaches, a case history will be presented on the overall strategy for splitting wet weather flow between the Morris Forman WQTC and the newly expanded Derek R. Guthrie WQTC. This seemingly simple control task actually includes interaction between three flow diversion structures, two major pump stations, two off-line storage basins and in-line storage when necessary. Further complicating the control logic is the need to consider travel times of up to two hours between the upper-most and the lower-most control points in the system.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 18KB
© Release (3): *not uploaded*

Reviewer(s):
• Paul Maron, Strand Associates
• Brent Tippey, HDR

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ID: 101

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Triple Bottom Line Solution for a Decentralized Wastewater System: 2 Years Later

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Topic(s): Small Systems

Keywords:

Abstract: TRIPLE BOTTOM LINE SOLUTION FOR A DECENTRALIZED WASTEWATER SYSTEM: 2 YEARS LATER

Joseph V. Pavoni, P.E., LEED AP and Jason G. Hindenach, E.I.T.
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In general, the typical engineering/construction project looks primarily at economics when evaluating alternatives to meet its goals. However, a truly sustainable solution also

considers the Triple Bottom Line: environmental, social, and economic impacts. For the residential community at Lake Carnico in Nicholas County, KY, the Triple Bottom Line was integral in devising a long-term solution to the area's sewage collection, treatment, and disposal issues.
The Nicholas County Sanitation District #2 (NCSD2) was formed in 1978 to serve the wastewater needs for the surrounding lake development. A Wastewater Facilities Plan Update was completed in 1998 to evaluate options for wastewater collection, treatment, and disposal within the planning area. At that time, the selected alternative was to construct low pressure sewers that would transport wastewater to a neighboring municipal system for treatment.
Over the next decade politics would come into play, and the receiving municipality later determined that they were no longer interested in accepting and treating NCSD2's wastewater. Up to that point, it had been the Kentucky Division of Water's (KDOW's) position that regionalization was preferred over having several different municipalities or sewer districts in a small geographic area. Recent developments had relaxed this stance, and KDOW suggested that NCSD2 go with a "lower-tech" decentralized style solution that they could construct and maintain on their own.
Only a little more than a year ago there were still no sanitary sewage collection, treatment, or disposal facilities within the NCSD2 Lake Carnico area. Instead, the residents provided their own holding tanks, septic tank systems, aerated tanks, outhouses, etc., which were pumped and hauled away on a monthly basis to a state-approved disposal site at the residents' expense.
The resulting decentralized design consisted of wastewater collection through a new filtered low pressure Septic Tank Effluent Pumping (STEP) system for approximately 100 homes, recirculating gravel media filter and ultraviolet disinfection for treatment, and final disposal via subsurface drip irrigation. This solution would eliminate over 100 failing septic and holding tanks, and help clean up a recreational lake area. The resolution – which came about as the result of a "social impact" – offered a more economic and simpler method of collecting, treating, and disposing of NCSD2's wastewater.
Construction, which began in late 2011, will be substantially complete by summer 2013.
This presentation will review the Triple Bottom Line Solution, include issues that surfaced during the construction process, and important lessons learned that can be applied to future projects of all types.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 76KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Matthew Williamson, Littlejohn Engineering Associates, Inc.

Mr. Abraham is an Associate and Senior Environmental Engineer with Gresham, Smith and Partners. He has more than 26 years of experience with project management and design engineering, including process selection, planning, design, value engineering and construction phase services for water, wastewater, industrial treatment and biosolids facilities throughout the United States and Internationally. Ron is a registered professional engineer in four states including Tennessee, California, Iowa and South Dakota. He is also certified in Value Engineering and holds a Grade 4 Water Treatment Plant Operator license in California.

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Presenter Information / Bios

Jason Hindenach, EIT -- GRW

Jason Hindenach is a sanitary engineer with GRW's Louisville office. Since earning his bachelor's degree in civil engineering at Michigan Technological University in 2003, Mr. Hindenach has experience in the fields of water and wastewater system engineering, as well as the geotechnical/geohydraulic industry.

He has worked on projects for clients such as the Louisville Water Company, the Northern Kentucky Water District, Kentucky American Water and the Louisville-Jefferson Metropolitan Sewer District, as well as numerous municipalities throughout Kentucky and Indiana. Currently an engineer in training, Mr. Hindenach is a member of the American Water Works Association and the Geo-Institute of American Society of Civil Engineers.

Joseph V. Pavoni, PE, LEED AP -- GRW

Joe Pavoni is a sanitary engineer with GRW's Louisville office. Mr. Pavoni earned both his bachelor's and master's degrees in civil engineering at the University of Kentucky. A LEED Accredited Professional for new construction, he also is a registered professional engineer in Kentucky and Indiana.

Mr. Pavoni's experience spans a broad spectrum of civil/public works activities. He has more than a dozen years of experience with project management/coordination and the planning, design, and construction administration of various wastewater collection and treatment facilities, water supply systems, and drainage systems for clients such as the Louisville-Jefferson County Metropolitan Sewer District, the Metropolitan Sewer District of Greater Cincinnati, Indiana American Water Company, Louisville Water Company, the City of Murray, and various other municipalities throughout Kentucky, Indiana and Ohio

Mr. Pavoni is a member of a several professional organizations, and serves as co-chair for both the KY/TN WEA/AWWA Management Committee and the KSPE Louisville Chapter Partners Program. Joe is also a co-coordinator for this year's Water Professionals Conference.

Douglas L. Ralston, PE, RIWP- Biography

Mr. Ralston is a 1969 graduate of Hanover College (Chemistry Major) and has been involved in the water/wastewater industry since 1972. He began his career with SIECO in Columbus, Indiana, as an environmental technician/chemist conducting concrete and soil tests and setting up the first environmental lab for the firm. In 1974 he was hired by the City of Columbus as their Chief Chemist and Pretreatment Coordinator. In that role he was able to obtain both a Class D and IV Operators Certification. Subsequent to that position, Doug worked with AEP at their Tanners Creek Power Plant, GRW Engineers (Lexington, KY), PDR Engineers/Tetra Tech (Lexington, KY) and owned his own company, DLR Consultants, in Lexington thru 2007. Doug is now employed by American Structurepoint of Indianapolis, Indiana, serving the role as Technical Director.

Doug is a registered professional engineer in four states (IN, KY, OH, AK) and has been a member of AWWA and WEF for most of his professional career. He was a principal author of two WEF Publications, i.e. FD-3 "Pretreatment of Industrial Wastes"; and "Technical Submission to EPA: Removal of Nutrients with Currently Available Secondary Treatment Technologies", a Special Publication in 2010. He resides in Fishers, Indiana with his wife Lisa and man's best friends Jack and Jill.

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Submission

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ID: 172

Submitted: 2012-12-16

Last Updated: 2013-03-12

Title: COMPARING DESIGN AND OPERATIONS OF AN SBR

Student: No

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Topic(s): Wastewater Plant Operations

Keywords: SBR, operation, wastewater treatment

Abstract: Bowling Green, Kentucky, home of the Chevrolet Corvette and Western Kentucky University, is the third largest city in the Commonwealth of Kentucky supporting a population approaching 60,000. Bowling Green is located a couple hours south of Louisville and about an hour north of Nashville, Tennessee. Water and wastewater services in Bowling Green are provided by Bowling Green Municipal Utilities (BGMU) which owns and operates a 12 MGD Sequencing Batch Reactor (SBR) wastewater treatment plant (WWTP). Residential, commercial, and industrially pretreated wastewater is collected and conveyed to the treatment plant from the City of Bowling Green and outlying areas of Warren County. Treated effluent is subsequently discharged to the Barren River.

The SBR facility began operation in June 2012, replacing an antiquated 10.6 MGD aerated biofilter plant. Growth and more stringent effluent requirements were the primary drivers for the WWTP upgrade. The SBR process was selected to address site constraints and provide the ability to achieve biological nutrient removal (BNR) to reduce nitrogen and phosphorus concentrations in the effluent. The waste activated sludge (WAS) generated by the new SBR process required the addition of a long-term and sustainable biosolids management practice. For this project, mechanical dewatering and indirect thermal drying producing a Class A product was selected.

This presentation will focus on the differences between the basis of design and the actual treatment plant performance. Operational data will be used to compare actual plant performance to the facility's design parameters for major treatment process components.

Comments:

Files: Presentation (1): 15KB
Bio (2): 13KB
© Release (3): *not uploaded*

Reviewer(s):
- Mark Sneve, Strand Associates
- Brad Derrick, DLZ
- Michelle Hatcher, CDM Smith

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Submission

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ID: 21

Submitted: 2012-11-12

Last Updated: 2013-03-26

Title: Municipalities Facing Mandated Limits on Phosphorus"

Student: No

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Topic(s): Wastewater Plant Operations

Keywords: Phosphorus; limits; removal; chemical; biological

Abstract: The forthcoming limits on phosphorus and the methods for removal at existing wastewater treatmentn plants will be discussed from an enginering viewpoint. Design factors will be explored for the two main options (chemical and biological) will be discussed in detail. Numerous factors that impact the selection of an approproate system for a particular facility will be presented to include short and long term impacts/benefits. Operation and maintenance factors and client preference are also discussed.

Comments: I was a principal author of "Technical Submission to EPA: Removal of Nutrients with Currently Available Secondary Treatment Technologies", 2010 WEF Special Publication having been the primary author of the phosphorus removal chapter.

Files: Presentation (1): 1.8MB
Bio (2): 21KB
© Release (3): *not uploaded*

Reviewer(s):
- Mark Sneve, Strand Associates
- Brad Derrick, DLZ
- Michelle Hatcher, CDM Smith

Scott Alpert is an associate at Hazen and Sawyer. With over 17 years of experience, Scott has worked on a variety of water and wastewater projects. He currently serves on the board of the International Ultraviolet Association (IUVA) and co-chairs its Technical Committee.

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ID: 90
Submitted: 2012-12-13
Last Updated: 2012-12-13
Title: What's New in UV Disinfection of Drinking Water?
Student: No

Author 1: First Name: Scott
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Topic(s): Drinking Water Quality
Keywords: UV, Ultraviolet, Disinfection

Abstract: As compliance deadlines for the EPA's Long Term 2 Enhanced Surface Water Treatment Rule are being reached, more and more utilities are considering ultraviolet (UV) disinfection for additional Cryptosporidium inactivation credits, as well as credit for the inactivation of Giardia and viruses. The year 2012 was very active in terms of new developments in UV disinfection technology, including new standards and guidelines to better help utilities and regulators apply the technology. The purpose of this presentation is to review with the conference attendees this new information related to UV disinfection. Included will be a summary of the following:

- ANSI/AWWA F110-12 – Ultraviolet Disinfection Systems for Drinking Water (Released August 2012)
- UV Disinfection Knowledge Base, WaterRF 3117 (2012)
- Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse, Third Edition, NWRI (August 2012)
- Medium-Pressure Low Wavelength Impacts Working Group (Ongoing)

The objectives of the new AWWA F110-12 standard are to establish minimum requirements for UV disinfection system equipment and to help utilities, regulators, and consultants with all stages of system design from procurement through startup. WaterRF 3117 describes the results of a 2008 survey of 65 utilities with UV systems and presents

lessons learned and best management practices for design, regulation, maintenance, and troubleshooting. It also presents a comprehensive report on the impacts of lamp breakage and mercury release. The 3rd edition of the NWRI guidelines proposes minimum acceptable design requirements and a common basis for evaluating and implementing UV disinfection technologies. The medium-pressure low wavelength working group continues to better understand the correlation between validation with MS2 and inactivation of Cryptosporidium by wavelengths below 240 nm.

Combined with a brief summary of new equipment introductions by UV disinfection system manufacturers, this presentation will be helpful to utilities, state regulators, and consultants who have installed, or are considering the installation of, UV disinfection systems at drinking water treatment facilities. The author will convey the latest developments and provide recommendations for incorporation of this new information into the design and operation of UV disinfection systems.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 11KB
© Release (3): *not uploaded*

Reviewer(s):
- Jim Pelton, Pelton Environmental Products
- RENGAO SONG, LOUISVILLE WATER
- Josh Cravins, WASCON, Incorporated

Yong Kim

Yong Kim is Product Manager at ProMinent Fluid Controls, Pittsburgh, PA. His research/technical interest includes fluid mixing, solid-liquid separation, oxidation and reduction, and water disinfection. After earning a PhD in chemical engineering from Kansas State University, he authored a book and over 25 technical papers. During his 25 years' professional career in the water industry, he has been issued five US patents.

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ID: 59

Submitted: 2012-12-11

Last Updated: 2013-03-13

Title: Fluid Mechanics and Polymer Chemistry in Advanced Polymer Mixing for Improved Clarification Process

Student: No

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Topic(s): Water Plant Operations

Keywords: clarifier, polymer mixing/activation, fluid mechanics, polymer chemistry

Abstract: Polymeric flocculants have been of growing importance in water and wastewater treatment processes since their introduction several decades ago. Considering the wide-spread use of polymeric flocculants in the field, however, there are still limited technical resources on the role of mixing energy for better polymer mixing. Unlike other chemicals used in water and wastewater industry, polymer has a unique long-chain molecular structure which requires a very different approach in mixing equipment design.

This paper includes a hydrodynamic study on how a good understanding of fluid dynamics and polymer chemistry helps in designing better mixing equipment to maximize the effectiveness of polymeric flocculants. Extensive laboratory testing and field evaluation at a water treatment plant (Mankato, MN) confirmed that the utilization of well-designed polymer mixing could enhance the performance of polymer by as much as 40% and significantly increase the efficiency of clarification process.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 17KB
© Release (3): 405KB

Reviewer(s): • Keith Coombs, Louisville Water Company

- RENGAO SONG, LOUISVILLE WATER
- Josh Cravins, WASCON, Incorporated

Name: Brent Fulghum, P.E.
Abstract: Siting a New Water Treatment Plant for Nashville

Brent joined the Nashville office of Hazen and Sawyer in 2010. He is a licensed P.E. with 8 years of experience in water and wastewater process design. Mr. Fulghum has a B.S. in Biology from The University of Tennessee at Chattanooga and a B.S. in Civil and Environmental Engineering from Georgia Tech. He has recently completed the design of a $70 million WWTP Improvements Project for the City of Clarksville, TN.

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ID: 145

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Siting a New Water Treatment Plant for Nashville

Student: No

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Topic(s): Water Plant Operations

Keywords: Nashville Water Treatment Plant Siting

Abstract: For many utilities, a recent increase in the frequency of extreme weather events has exposed vulnerabilities in capacity and treatment capabilities at their facilities. As public awareness and expectations for a reliable drinking water source increase in the face of an ever-changing regulatory climate and economic recession, the significance of careful planning in large capital projects has never been greater. For these reasons, Metro Water Services (MWS) conducted a comprehensive study to identify and evaluate alternatives for increasing capacity and improving reliability for the treatment of its drinking water. Alternatives which were evaluated included combinations of improvements to existing facilities and construction of various-sized new treatment plants at multiple sites. Cost and non-cost evaluation criteria were weighted and assembled into a decision matrix that was used as an analysis tool to select the most advantageous capacity alternative. The study resulted in the decision to construct a new 25-mgd (expandable to 100 mgd) advanced treatment facility which would increase capacity, improve reliability, and ultimately replace aging infrastructure at one of the existing facilities.

Comments:

Files: Presentation (1): 28KB
Bio (2): 26KB
© Release (3): *not uploaded*

Reviewer(s):
- Keith Coombs, Louisville Water Company

- Josh Cravins, WASCON, Incorporated

SPEAKER DATA FORM

NAME: Neal D. Stubblefield, P.E.

TITLE: PRACTICE LEADER – COLLECTION & DISTRIBUTION

COMPANY: JACOBS ENGINEERING GROUP

SHORT PERSONAL RESUME SUITABLE FOR INTRODUCTION: **Mr. Stubblefield is national practice leader for collection & distribution for Jacobs' North American Water Infrastructure Group. He's responsible for technical guidance, quality, services roll-out and overall business development for a group comprised of over 100 professionals located in the U.S. and Canada focused on "pipelines" related work. In addition he's a senior project manager on buried infrastructure, pump station and tank projects with a specialty in condition assessment of pressure mains. He's a mechanical engineering graduate of the Georgia Institute of Technology, a long distance runner and avid cyclist.**

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Submission

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ID: 97

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Transient Analysis of a Major Water Transmission Main: How Making Fine Adjustments Extends Asset Life

Student: No

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Topic(s): Distribution

Keywords: cathodic protection, pump trips, rehabilitation, surge, transient

Abstract: When a surge tank system in operation since 1990 on the 48-inch ductile iron finished water transmission main coming from the Atlanta-Fulton County Water Treatment Plant (AFCWTP) began to fail in 2010, the City of Atlanta's Department of Watershed Management (DWM) initially looked at a steep repair bill to restore the system. The surge system consisted of two 20,000 gallon underground tanks located in a physically restricted commercial parcel in the town of Johns Creek, both connected via a 36-inch steel surge line to the City's transmission main. The surge tanks were taken off line in 2010 due to apparent leaks and subsequent repairs needed at the tanks and pipe connecting the tanks to the main. The cause of these leaks spurred an investigation by

the DWM and Jacobs staff in January 2011 that concluded in May 2012 and included these major activities:

- Physical inspection of the two surge tanks and the connecting surge line with the assistance of a pipeline contractor who had excavated down adjacent to one of the tanks as well as a portion of the steel line.
- Recommendations on rehabilitating the tanks to put them back into service as well as further investigation and possible rehab options on the surge line which included short-term additional cathodic protection measures to arrest deterioration of the steel pipe.
- Repair of the connection from the surge line to the surge tank via an internal joint seal, addition of a tapping saddle and manhole on the surge line for access, and addition of sacrificial anodes.
- Discussion with operations personnel at the AFCWTP on how the high service pumps were operated to feed both transmission mains into Fulton County and Atlanta.
- A transient analysis of the Atlanta main from the AFCWTP through to the connection to the City's distribution system south of the suburban city of Sandy Springs near the low point at the Chattahoochee River.

The final activity, the transient analysis of the main, was done to determine under what operating scenarios the surge tanks at the Johns Creek location were needed and should therefore be rehabilitated along with the surge line based on how the system was configured and being operated. Approximately $500,000 went into excavating the facilities there, doing the investigation, cathodic protection, and restoration of the site and the City wanted to ascertain the need to make further investment in those facilities. The transient analysis was revealing in that other operational and maintenance items, like sizes, locations and operability of air release valves (ARVs) as well as interconnects with adjoining systems could have as much impact on protecting the transmission assets as the operation of the surge tanks.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 23KB
© Release (3): *not uploaded*

Reviewer(s):
- Keith Coombs, Louisville Water Company
- Amy Kramer, Northern Kentucky Water District

AULICK
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The Chemistry of Corrosion Control and Cleaning in Water Distribution Lines

Abstract

Water treatment plants make excellent water; however, the distribution system is often full of scaling, tuberculation, biofilm, and oxidized metals. The state of water distribution systems, more often than not, is the cause of water quality complaints. Black (MnO_2) and red ($Fe(OH)_3$) water can be the result of an ineffective corrosion control program, changes in the water treatment process, or an overly aggressive cleaning program. Additionally, taste and odor complaints are more likely to occur in the presence of significant scaling because the scaling provides binding and growth sites for biofilm and other organics. Therefore, to make great water and preserve the existing infrastructure, you must understand the chemistry that happens in the water distribution system among the various types of pipes, oxidants, inorganic and organic materials, and phosphates.

This presentation will cover the chemistry behind formation and removal/inhibition of scaling, tuberculation and biofilms. A best practices program for corrosion control and cleaning in the water distribution system will also be presented.

Don Adams

Mr. Adams has more than 50 years of chemistry experience, with nearly 25 years spent in the water treatment industry. He has worked for the United States Atomic Energy Commission, Monsanto, Union Carbide, Occidental Petroleum, and other notable firms. Mr. Adams holds a bachelor's degree in chemistry and mathematics from Morehead State University, with additional graduate coursework in chemistry.

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ID: 98

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: The Chemistry of Corrosion Control and Cleaning in Water Distribution Lines

Student: No

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Topic(s): Distribution

Keywords: Tuberculation, Biofilm, Scaling, Black and Red Water, Cleaning, Oxidants

Abstract: Water treatment plants make excellent water; however, the distribution system is often full of scaling, tuberculation, biofilm, and oxidized metals. The state of water distribution systems, more often than not, is the cause of water quality complaints. Black (MnO_2) and red ($Fe(OH)_3$) water can be the result of an ineffective corrosion control program, changes in the water treatment process, or an overly aggressive cleaning program. Additionally, taste and odor complaints are more likely to occur in the presence of significant scaling because the scaling provides binding and growth sites for biofilm and other organics. Therefore, to make great water and preserve the existing infrastructure, you must understand the chemistry that happens in the water distribution system among the various types of pipes, oxidants, inorganic and organic materials, and phosphates. This presentation will cover the chemistry behind formation and removal/inhibition of scaling, tuberculation and biofilms. A best practices program for corrosion control and cleaning in the water distribution system will also be presented.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 63KB
© Release (3): *not uploaded*

Reviewer(s):
- Keith Coombs, Louisville Water Company
- Amy Kramer, Northern Kentucky Water District

Dr. Sudhir Kshirsagar, founded Global Quality Corp. in 1993 after a successful career at Procter & Gamble, and the firm has excelled in environmental modeling and software development under his guidance. Dr. Kshirsagar has his BS in Electronics from IIT, Kharagpur, an MS in Computer Science from IISc, Bangalore, and a Ph.D. in Environmental Engineering from University of Illinois, Urbana-Champaign. He has known his team members since 1983. Dr. Kshirsagar has led and successfully completed several private and public projects in a variety of areas. He has completed projects for key federal agencies including the US Army, the US Air Force and the US EPA. He has been awarded Silver Drop (25
years of Association Membership) by the American Water Work Association.

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ID: 178

Submitted: 2012-12-16

Last Updated: 2012-12-17

Title: Real-time Modeling of Water Distribution Systems: Costs and Benefits

Student: No

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Topic(s): Distribution

Keywords: Real-time Modeling, Distribution Systems, Water Quality, Energy, Leak Detection

Abstract: Real-time modeling of water distribution systems is a developing area and although the theoretical benefits of the proposed approach are many, the practical issues surrounding an actual implementation can reduce the overall return on investment. This paper presents findings based on the field experience in developing two real-time models of different levels of complexity. The two utilties, one from Kentucky and one from New York, were considerably different in their daily water production, customer mix and infrastructure. The treatment practices were different and very specific water quality models were developed for each utility. New tools were developed for integrating SCADA data to drive the real-time model refinement (RMR) process, and a uniform approach for integrating SCADA was developed. The resulting toolset was used to address each of the

objectives of the water utility personnel. The overall costs and benefits from both the field studies will be summarized in this paper.

Comments: We had set up a booth last time and will be looking at the same option this year.

Files: Presentation (1): *not uploaded*
Bio (2): 14KB
© Release (3): *not uploaded*

Reviewer(s):
- Keith Coombs, Louisville Water Company
- Amy Kramer, Northern Kentucky Water District

Kay D. Ball
Louisville Water Company

Kay Ball is the Program Manager of Advanced Treatment Technologies for the Louisville Water Company. She has over 27 years of experience at Louisville Water in various positions in engineering and construction, leading the ATT/ Riverbank Filtration program for the last 15 years. She is married to Tim Ball and considers her greatest accomplishments are her five Children and three grandsons.

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ID: 108

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: What do you do with a Pump Station when it's no longer a Pump Station: The restoration of Louisville Water's 150 year old Zorn Pump Station #1

Student: No

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Topic(s): Other

Keywords:

Abstract: Before Abraham Lincoln was elected president of the United States, Louisville Water put into service their first pumping station along the banks of the Ohio River. 150 years later, this building is no longer pumping water but remains the icon of Louisville Water, a Louisville Landmark and a gathering place for the community. After many years of being used as the office for the Louisville Visual Art Association, Louisville Water is regaining control of the building and plans a complete restoration of the interior and create an educational facility to communicate our rich history of water treatment, pumping and innovation.

We will walk through the history of the building, including archives of the original pumping facility that in conjunction with the historic water tower provided water to residents of Louisville.

This 1860 building is on the Historic Registry and will require restoration according to the Kentucky State Historic Preservation Office (SHPO) and the Department of Interior Standards for Historic Preservation. This presentation will explain how being on the historic registry can be utilized to offset restoration costs. It will also look at difficulties when you are dealing with a property that is located in the flood plain (where else would a surface water pump station be located?) and when changing the intended use of the property. We will also discuss construction and structural issues found dealing with a solid brick building built in 1860.

In conclusion, the presentation will discuss the educational component, a museum that will be constructed in the west wing of the building.

Comments: Will include construction, issues when dealing with historic registry and how it will be used for public information

Files: Presentation (1): *not uploaded*
Bio (2): 22KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Charles Poskas, ARCADIS

David Haas has over 27 years of experience in process engineering and project management with emphasis on water treatment. His experience in water treatment projects includes advanced technologies such as riverbank filtration (RBF), membrane filtration, ultraviolet (UV) light disinfection, and on-site generation of sodium hypochlorite. His experience includes more than a dozen projects involving the evaluation, selection, procurement, design, and construction of alternatives to chlorine gas, including low- and high-strength on-site sodium hypochlorite generation systems and bulk hypochlorite systems. These projects ranged from 100 pounds per day (lbs/day) to 9,000 lbs/day as chlorine equivalent. David was a co-principal investigator for Water Research Foundation Project 4410, Evaluating On-Site Generation of Hypochlorite Solutions, a facilitated research project funded by Dallas and Arlington, TX. He also is a chapter co-author on AWWA's new manual of practice for on-site sodium hypochlorite systems (M65).

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ID: 96

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Thinking of Converting to On-Site Generated Hypochlorite? Learn from Experiences from Other Utiliites - Water Research Foundation Project 4410

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Topic(s): Engineering and Construction

Keywords: Sodium Hypochlorite

Abstract: Since 9/11, security measures have been enhanced at all water facilities across the country. Water facilities are currently exempt from the CFATS law, but there is a possibility that the exemption may end in the future. If water facilities were subject to the CFATS program, then use of chlorine gas may be severely restricted, and "inherently safer technologies (IST)" such as bulk or on-site generated (OSG) hypochlorite would need to be evaluated. In response to the ongoing regulatory discussions and from a philosophy of desiring to improve safety and mitigate security related concerns even without a regulatory mandate, many utilities have been converting from gaseous chlorine to bulk or OSG hypochlorite.

While conversion from gaseous chlorine to bulk or OSG hypochlorite lowers the security risks at a facility, there are implementation, operational, water quality, and economic factors associated with hypochlorite that need to be addressed prior to decision-making, as highlighted through the AWWA WITAF Report "Selecting Disinfectants in a Security Conscious Environment: Six Utility Case Studies".

This paper will present findings from Water Research Foundation Project #4410, which performed case studies on ten water utilities that have implemented OSG hypochlorite, including Louisville Water Company. The specific objectives of this project were to: 1) Conduct case studies on water utilities with OSG hypochlorite systems and summarize implementation, operational, and economic information, and 2) Collect water quality data on emerging contaminants that may be formed from hypochlorite.

Case study utilities included both large and small water systems that use surface water, groundwater or both. Equipment from all major OSG hypochlorite manufacturers hypochlorite, were represented. The collected information included water system background, disinfection methods summary, implementation and operational issues, and most importantly decision drivers including economic and non-economic factors that led to hypochlorite selection. "Lessons learned" and "best practices of operation and maintenance" were summarized so they are helpful for utilities that may consider OSG hypochlorite implementation in future. There are concerns related to formation of perchlorate, chlorate, and bromate, from the decomposition of hypochlorite. As such, this project investigated water quality changes and contaminant occurrence resulting from hypochlorite implementation.

This project was funded by Dallas and Arlington, TX water utilities, both of whom are currently evaluating disinfection alternatives. This presentation will be specifically tailored to address the considerations and issues being faced by utilities that are performing similar evaluations.

In addition to presenting information from the WRF Project #4410, the presentation will include a summary of lessons learned after 2 plus years of operation from the Frankfort, Kentucky and Louisville, Kentucky OSG projects. Louisville is currently designing an OSG system for their B.E. Payne WTP and incorporating lessons learned from their first OSG project at the Crescent Hill WTP.

Given the ongoing regulatory discussions related to chlorine gas use, and the need for a comprehensive analysis of the benefits and challenges associated with alternative disinfection methods, this presentation will be particularly timely and instructive to water utilities across the United States.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 14KB
© Release (3): *not uploaded*

Reviewer(s):
- Amy Kramer, Northern Kentucky Water District
- Matthew Williamson, Littlejohn Engineering Associates, Inc.

Ben Simerl is a Senior Project Manager for McGill Associates in Knoxville, TN. Ben has over 15 years of experience in the design of municipal water and sewer treatment plants. When not working, Ben enjoys playing soccer, hiking and homebrewing.

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ID: 94

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Jefferson City TN WTP - Upgrade and Expansion Project - The Design and Installation of Membrane Filters in Existing Filter Boxes

Student: No

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Topic(s): Engineering and Construction

Keywords: Submerged Membrane Filters, Existing Filter Boxes, Retrofit

Abstract: This paper details the upgrade and expansion of the Jefferson City Water Treatment Plant from a 5.0 MGD conventional gravity filtration plant to a 7.5 MGD submerged membrane filtration plant, including a discussion of the challenges encountered during design and construction. The new submerged membrane filtration system was installed in the existing gravity filter boxes, one of the few projects of this type in the country.

The Jefferson City Water Treatment Plant was originally constructed in the early 1940's. TVA's construction of the Cherokee Dam/Reservoir flooded the City's water supply on the Holston River, forcing the construction of a new water treatment plant using the Mossy Spring as its raw water source. The water treatment plant was expanded through the addition of more filters, and a second raw water source, the Jarnigan Well, in subsequent projects in the 1950's, 1960's, and 1970's to a capacity of 5 MGD. The Jarnigan Well draws water from an abandoned zinc mine about a half mile from the water treatment plant site.

The upgrade and expansion of the Jefferson City Water Treatment Plant to 7.5 MDG included a new submerged membrane filtration system installed in the existing conventional filter basins, new chemical storage and feed systems, disinfection using sodium hypochlorite, a treated water storage reservoir, and an instrumentation and control system. The project also included new pumps in existing raw and finished water pumping stations, improvements to existing buildings and electrical systems for code

compliance. The $9.0M project was financed by a combination of funding from USDA – RUS, TDEC – State Revolving Loan, EPA – STAG, and local funds.
age, condition of electrical, building, inefficient spaces due to several plant expansions....
The design to incorporate the submerged membrane filtration system into the existing water treatment plant included several unique design challenges including:
• The existing plant site had limited area available for expansion. It is bounded by a 4-lane U.S. Highway and the Mossy Spring/Creek wetland and floodplain.
• The existing treatment plant building had limited HVAC, an old electrical service, a leaky roof and most of the major pumping equipment was in service beyond its useful life and need of replacement.
• The existing treatment plant building had limited space available for needed upgrades. The series of expansions since the initial construction had resulted in some spaces being utilized for multiple purposes, such as the Lab/Control Room/Operator Office.
• The design of the submerged membrane filtration system to be installed in the existing 70-year old conventional filtration plant filter boxes.
• The design of the permeate pumps, backpulse pumps, and associated piping and instrumentation in the limited space existing filter pipe gallery, while maintaining the existing high service and backwash pumps and electrical service.
• The design of a new 5-ton traveling bridge crane with limited headroom over the existing filter tanks.
• Establishing a plan for phasing construction of the membrane filters, while maintaining conventional filtration in the plant's other four filters. This process included the use of temporary backwash piping and a temporary electrical service to keep the existing conventional filters in service while construction and start-up of the membrane filtration system was completed.
In addition to the design challenges on the project there were several significant challenges encountered during construction:
• The need to maintain the existing plant in service while constructing and starting-up the membrane filtration system was a significant challenge requiring regular construction progress meetings of the project team including the City of Jefferson City water treatment plant operators and supervisors, the General Contractor, 3D Enterprises Contracting Corporation, and McGill Associates construction administrator and field representative.
• During excavation for the new plant drain pumping station, the Contractor discovered a subterranean void on the plant site. This void was subsequently mapped by the project's geotechnical engineer, who determined that the void was over 30 feet deep in places and extended under several existing structures, including a 500,000 clearwell and the Mossy Spring raw water pumping station. This discovery required the relocation of the plant drain pumping station and modifications to a large portion of the plant site piping and underground electrical duct banks to avoid conflicts with the plant drain piping.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 13KB
© Release (3): *not uploaded*

Reviewer(s):
- Keith Coombs, Louisville Water Company
- Bart Potts, Louisville Water Company
- Daniel tegene, Louisville Water Company

SPEAKER DATA FORM

NAME: Rosemary Harman, GISP

TITLE: OPERATIONS MANAGER, MANAGEMENT CONSULTING

COMPANY: JACOBS

Rosemary Harman oversees Jacobs' Management Consulting Practice which includes service offerings in Information Management, Asset Management, and Communications and Public Education. She has been involved in the development of project management systems for the past 8 years. In her off time she enjoys competing at horse shows with her 7 year old Quarter Horse named "Myles".

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Submission

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ID: 61

Submitted: 2012-12-12

Last Updated: 2013-03-18

Title: Integrated Capital Planning, New Tools to Integrate Project Delivery, Finance and Communications Systems

Student: No

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Topic(s): Management

Keywords: information, management, web, portal, report, system, planning

Abstract: Integrated Capital Planning

New Tools to Integrate Project Delivery, Finance and Communications Systems

Christina Gnadinger, Louisville Water Company
Rosemary Harman / Mark Vosburg, Jacobs Engineering Group

When information is managed so that it becomes a reliable decision support tool,

benefits, efficiencies and savings are realized across the organization and in ways not initially imagined. This paper will show how Louisville Water Company (LWC) has implemented and continues to refine their own version of an enterprise wide information management system used in daily operations and long term planning. The system, named "Project Tracker", has served to aggregate what had been separately maintained departmental databases and spreadsheets. The application is integrated (or linked) with other LWC information systems, delivering critical, timely information on budgets and project details to managers through web portals and reporting tools.

Project Tracker was initially designed to manage project-specific information including budgets, milestones, acquisitions and easements, surveying, and business contacts. LWC has progressively added customized functions such as a contractor evaluation page and fleet management services. The system contains a link to the company's GIS and also allows remote data entry from the field which pipeline inspectors use to record their daily activities for each project.

LWC has continued to improve their system over the last 5 years and as it continues to mature, it provides return-on-investment through improved efficiency and more effective project management. Enhancements planned for 2013 include developing applications to track permitting, planning services, project proposals and change actions using electronic approvals. Project Tracker continues to be under development and will keep evolving to meet the changing needs of LWC as a growing and forward thinking utility.

By showing a high level overview of how LWC initially defined their information management priorities and how their system continues to develop over time the audience may gain a new perspective on how to get greater benefits from their current information management practices.

Comments: This paper will be presented jointly by Louisville Water Company and Jacobs

Files: Presentation (1): 25KB
Bio (2): 13KB
© Release (3): 379KB

Reviewer(s):
- Martha Segal, Metro Water Services
- Katie Nolan, Gresham, Smith and Partners

Matthew Yonkin is a Licensed Professional Engineer, a Board Certified Environmental Engineer in the specialty of Water Supply and Wastewater and a Certified Energy Manager. He has a BS in Civil Engineering from Union College and an MS in Management from the Lally School of Management at Rensselaer Polytechnic Institute. In addition to over 16 years of experience with Malcolm Pirnie/ARCADIS focusing on energy efficiency, process optimization and water resources solutions for municipal clients, Matt was a Senior Manager at Siemens where he served as a National internal subject matter expert responsible for providing technical assistance during project development and implementation for Energy Performance Contracts completed by Siemens within the municipal water and wastewater sectors. During his career he has presented and published a number of articles on the topics of energy efficiency, industrial pretreatment, ultraviolet disinfection and stormwater compliance at the local, State and National level.

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ID: 150

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Alternative Project Delivery for Self-funding Projects

Student: No

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Topic(s): Sustainability

Keywords: energy efficiency, renewable generation, heat recovery, self-funding, alternative project delivery, alternative financing

Abstract: Alternative Project Delivery for Self-Funding Projects

Presentation Summary:
Municipal budgets continue to be stretched thinner and thinner. At the same time, energy costs continue to rise, placing even greater constraint on already tight operating budgets. Wastewater and drinking water systems are typically two of the largest consumers of electricity within a community. It is generally understood that energy efficiency projects that can provide savings of 10 to 20% and often significantly more are readily available at these facilities, particularly when renewable generation and waste heat recovery are considered. Yet, these projects are not being implemented and communities continue to waste money operating inefficiently or relying upon inefficient technology to meet their wastewater needs. Why? The most common reason is a lack of available funding.

With energy efficiency and process optimization projects, flexible, rapid deployment of "best-in-class" technologies is the goal. Rather than being perceived as unavoidable costs of doing business, self-funding projects need to be seen as what they are: facility investments that yield a positive return on investment (ROI) and reduce the life-cycle costs of meeting communities' critical wastewater and drinking water needs.

Self-funding energy efficiency and process optimization projects can be delivered using the traditional design-bid-build model relied upon so heavily by the sector. But because flexible, rapid deployment of "best-in-class" technologies is the overarching goal for these projects, alternative project delivery using any variation of design-build may offer a more effective solution. Energy Performance Contracting has made significant gains over the past decade and is now viewed as a legitimate delivery model for municipal energy efficiency projects, including those at water and wastewater facilities. Turnkey solutions that rely upon a design-build-finance delivery model using tax exempt municipal lease purchase agreements may also offer these communities a way to implement these projects with no upfront costs and with annual payments coming from the energy savings that are realized as a result of project implementation.

This presentation will:

- Provide an overview of energy usage in the water and wastewater sector.
- Provide an overview and comparison of Energy Performance Contracting and design-build-finance arrangements for the delivery of self-funding energy efficiency and process optimization projects.
- Discuss the concept of owner's risk tolerance; describe the role that Measurement and Verification can play in self-funding projects; introduce the International Performance Measurement and Verification Protocol (IPMVP); and outline the various levels of guarantee that can be provided.

Comments: The abstract is fairly broad. However, if any specific aspect of the abstract is of interest, I can narrow the focus and go into greater detail (e.g., energy auditing, self-funding measures, guarantees, alternative delivery).

Files: Presentation (1): *not uploaded*
Bio (2): 23KB
© Release (3): *not uploaded*

Reviewer(s):
- Martha Segal, Metro Water Services
- Amy Kramer, Northern Kentucky Water District

Gregory C. Heitzman
President/CEO
Louisville Water Company

Greg Heitzman has served as President of Louisville Water Company since 2007. He has been with Louisville Water Company for 30 years, working in areas of engineering, operations and customer service. In December 2011, Mayor Greg Fischer appointed Mr. Heitzman to serve as Interim Executive Director of Louisville Metropolitan Sewer District and on May 1, 2013 he assumed these duties full time.

He has an MBA from the University of Louisville, and earned bachelor and masters degrees from the University of Kentucky in Civil Engineering. He serves on a umber of community and industry Boards and currently serves as the 2013 Campaign Chair for the Fund for the Arts.

December, 2012

June 2012

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ID: 156

Submitted: 2012-12-15

Last Updated: 2012-12-15

Title: One Water - The Future of Louisville Water and MSD

Student: No

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Topic(s): Management

Keywords: Water, Sewer

Abstract: Presentation on the proposed consolidation of water and sewer service for Louisville Kentucky. Consolidation will provide operating benefits of up to $25 million per year, benefiting ratepayers through a reduction in future rate increases. Quality and customer service levels will increase, and regulatory compliance can be improved. The presentation will provide a summary of the analysis by Black and Veatch, the recommendations by the Mayor's Task Force on Water and Sewer Merger, and the next steps necessary to achieve One Water for Louisville Kentucky.

Comments: Place presentation in a Management Session.

Files: Presentation (1): *not uploaded*
Bio (2): 22KB
© Release (3): *not uploaded*

Reviewer(s):
- Martha Segal, Metro Water Services
- Katie Nolan, Gresham, Smith and Partners

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ID: 23
Submitted: 2012-11-15
Last Updated: 2012-11-15
Title: UK/Nicholasville Road Flood Mitigation Project
Student: No

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Contact Author: Author 1
Alternate Contact: Josh Karrick
Topic(s): Stormwater Management
Keywords: stormwater, mitigation, water quantity, water quality, detention

Abstract: Stormwater runoff from a 225-acre watershed flows via an open channel to a concrete

box culvert under Nicholasville Road. (U.S. 27). This watershed consists of poorly drained soils and a large impermeable component associated with open parking areas surrounding UK's Commonwealth Stadium. The box culvert has flooded several times over topping Nicholasville Road.
The UK/Nicholasville Road Flood Mitigation Project includes a number of water quantity and quality control measures to be implemented to mitigate the problem. A combination of pervious pavement, underground detention, and detention ponds are proposed. The site requires that a variety of utility relocations along Shawneetown Drive and Alumni Drive be made. Shawneetown Drive will be permanently removed and upgrades will be made at the upstream side of the culvert on Nicholasville Road. There is also a vision for this project to create a "floodable" green space in the 3.6 acres of land located between Shawneetown Drive and Alumni Drive which will incorporate both stormwater quantity control, when needed, and stormwater quality control at all other times. When the project is completed, the project area is expected to serve a dual purpose as a passive park and its stormwater management attributes to be concealed and not easily discernible.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): *not uploaded*
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

Biographical Sketch

Jim Buckles, P.E., BCEE is a Senior Environmental Engineer employed by Bell Engineering. He has over 37 years of civil and environmental engineering experience. Mr. Buckles obtained a B.S. in biology from Kentucky Wesleyan College and a M.S. in microbiology and a B.S. in Civil Engineering from the University of Kentucky. He is a Past President of the Kentucky-Tennessee Water Environment Association, a Diplomate of the American Academy of Environmental Engineers,an d a recipient of the Water Environment Federation's Arthur Sidney Bedell Award.

Bill Scalf is Director of the City of Frankfort Sewer Department. He has over 35 years of experience in design and management of a variety of projects ranging from small commercial developments to multimillion dollar environmental remediation projects. He currently is overseeing a $75 million capital improvement program associated with a recently negotiated Consent Judgment with the State of Kentucky. In his spare time he enjoys camping and hiking and spending time with his 8 grandchildren.

Author 1: Hazem Gheith

Dr. Hazem Gheith is a principal engineer with ARCADIS. He has 25 years of engineering experience with expertise in hydrology and hydraulics modeling, collection systems evaluation and mitigation and Green Infrastructure planning. Hazem enjoys playing Bridge and volunteering in community services.

Author 2: Vincent Tremante

Mr. Vincent Tremante is a project ecologist with ARCADIS. He has 12 years of design experience with expertise in natural systems and Green Infrastructure design and implementation. Mr. Tremante enjoys gardening and plant propagation.

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ID: 212

Submitted: 2013-01-04

Last Updated: 2013-01-04

Title: Educated Site Hydrology is a Key to a Successful Green Infrastructures Planning

Student: No

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Topic(s): Stormwater Management

Keywords: Green Infrastructure Delineation Modeling Calibration Planning

Abstract: The traditional catchment per manhole delineation procedure is enhanced to increase the accuracy of the hydrologic model when applied to the scale of Green Infrastructure (GI) controls. GIS data, combined with field investigations, are used to identify and delineate surface-features of the catchment that have fixed and unique runoff characteristics. For example, roof areas as one surface features are completely impervious with constant/high slopes and negligible depression storage. Field observations are then used to split the roof surface features based on runoff discharge configuration from these roofs like routed over pervious lawns, to the impervious streets or directly connected to the sanitary sewer system. Similarly, surface features like parking lots, streets, and alleys will have their unique slope and width parameters that improve the sheet flow calculations. These

parameters can easily be identified with high accuracy from the GIS data. The additional investment effort in the catchment delineation process reduces the uncertainty in the runoff calculations, which accelerates the calibration analyses and results in a more educated understanding of the runoff configuration within the runoff catchments.

Separating the catchment into subareas of fixed hydrologic parameters not only improves the model to more closely resemble field conditions. It also simplifies and improves the accuracy of planning and evaluating GI programs because GI is so site specific. Additionally, when retrofitting GI into a built urban environment, knowing detailed drainage areas is a valuable tool that assists with screening GI options. For example, by isolating flat roofs of commercial and industrial buildings as individual subarea catchments, it allows for accurate evaluation of green or blue roofs applied to the low slope roof surfaces of these buildings. Separating alley and street areas during the delineation process will allow for more accurate evaluation of of installing permeable pavements. Site evaluations for GI may favor areas with ample space; however, if there is limited hydrology reaching these spaces, they can either be ruled out or configured differently to best utilize the space. Following the enhanced delineation approach presented here increases the understanding of the hydrological impact of the GI program on the catchment's runoff, leading to a higher level of accuracy in understanding the performance of the GI program in meeting regulatory objectives.

Comments: Full paper write-ups with graphs and results are available as needed.

Files: Presentation (1): *not uploaded*
Bio (2): 13KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

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ID: 226

Submitted: 2013-01-09

Last Updated: 2013-04-23

Title: Frankfort / Franklin County Green Block Demonstration Project

Student: No

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Author 3: First Name: Robert
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Contact Author: Author 1

Alternate Contact: Scott Southall

Topic(s): Sustainability

Keywords: Green Infrastructure, Sustainability, Stormwater Management

Abstract: Frankfort / Franklin County Green Block Demonstration Project

This project is designed to demonstrate a variety green infrastructure options communities may incorporate into their Best Management Practices (BMPs) to address the environmental, economic, social impacts related to stormwater runoff within a city's urban core.

This session will discuss the particular issues associated with urban stormwater runoff in Frankfort, KY and green infrastructure solutions employed to mitigate the impact of runoff and address water quality improvements. Attendees will develop an understanding of the challenges faced with the design of this project, benefits developed and its metrics for success. The session will also expose attendees to green infrastructure design practices and the appropriate applications.
The Problem: Urban stormwater runoff represents a threat to our local, regional and national waterways due to increased flow rates, runoff volumes and associated pollutants stormwater carries with it. Conventional storm sewer systems typically serve only to convey runoff and the suspended pollutant loads to the nearest waterway. The City of Frankfort's storm water system is typical for a well established community. In addition to the inherent water quality and quantity issues, there is a general lack of understanding of environmentally friendly, green best management practices (BMPs) that can address peak flow, increased volume, and pollutant loading in a cost-effective and aesthetically pleasing manner. This project proposes two major goals to address the problems associated with impacts of and an understanding of stormwater runoff:

Goal 1: Reduce runoff volume and discharge of pollutants through on-site green BMPs: The objectives associated with this goal are to implement green BMPs (Low Impact Development, Green Infrastructure and Phytoremediation) in the context of a new Franklin County Judicial Center by incorporating the design concepts often utilized in green streets. To accomplish the objectives; a series of activities have been established that will identify the pollutants of concern, the BMPs most effective at removing the pollutants, and the locations most appropriate within the site.

The City of Frankfort faces additional challenges due to existing combined sewer systems that are undersized or in dire need of rehabilitation and/or separation. While not funded by the demonstration project, opportunity existed to separate a significant portion of the project's stormwater watershed from the existing Combined Sewer System (CSS) during the Franklin County Judicial Center project. Thus, offering additional water quality benefit to the Frankfort community.

Goal 2: Educate a broad spectrum of target audiences, including government entities (both local and state), educational institutions, private sector organizations and citizen groups, on green infrastructure and NPS pollution control: The objectives that will satisfy this goal are targeted toward a diverse group of stakeholders and audiences. To address the technical community; (the developers, engineers, planners, landscape architects, architects, and maintenance operators), a series of field days will be held to demonstrate the form, function, and installation/construction of green BMPs and demonstrate the performance post construction. To educate the non-technical community such as elected officials, educators, private entities and civic organizations, and outreach programs featuring the many project partners and stakeholders will be developed and launched after construction is completed. This program will provide both passive and active elements to educate and will draw upon many sects of the community to identify the synergetic benefits of green infrastructure.

This project is funded in part by a grant from the U.S. Environmental Protection Agency under 319(h) of the Clean Water Act and administered by the Kentucky Division of Water to the Franklin County Fiscal Court.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 18KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

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ID: 153

Submitted: 2012-12-15

Last Updated: 2012-12-15

Title: TECHNICAL, ENVIRONMENTAL AND ECONOMIC ASSESSMENT OF SLUDGE THICKENING PROCESSES: A COMPARISON OF CONVENTIONAL AND NOVEL TECHNOLOGIES

Student: Yes

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Alternate Contact: Michele Whitfield, mwhitfield@centrisys.us, 262.654.6006

Topic(s): Other

Keywords: Thickening Technology; Centrifuge; Waste activated sludge

Abstract: Introduction
Waste activated sludge (WAS) is characterized by low solid content, ranging between 0.25 to 2% depending on the operational condition. Prior to further stabilization processes, WAS is often thickened to increase total solids (TS) content. Several technologies are available for thickening. Presently gravity belt thickeners (GBTs) tend to be the most commonly installed for new applications. However, new advancements in thickening centrifuges give reason to believe that the centrifuge may be economically competitive with GBTs and other thickening technologies moving forward, creating a need to compare the economic favorability of each process. In addition, little research has presently been completed in assessing the environmental impact of thickening technologies.
Objective
The objective of this study was to compare conventional and novel thickening technologies in the economic and environmental terms. Economic performance was to be evaluated based on the following: energy consumption, efficiency, capital cost, staffing costs, and required auxiliary equipment (wash systems, air handling equipment, etc.). Global warming potential in kg CO2-eq and primary energy demand in MJ were used as the indicators for environmental performance. This is an attempt to illustrate the importance of unit process selection on overall plant performance.
Approach
This study was carried out in four steps. First, operational data for GBT installations was collected from several wastewater treatment plants in the upper Midwest. The process mass balances were assessed by taking the measurements of input WAS, thickened sludge, and reject water. Data for energy consumption of the process and an inventory of the auxiliary process equipment was also collected.
Secondly, the same operational parameters were measured for the novel centrifugal thickening processes at four pilot test sites (as of Nov 27, 2012) by Centrisys Corporation of Kenosha, WI.
Thirdly, the economic and environmental assessment of thickening technologies was conducted based on data obtained from field measurement. A Life Cycle Assessment (LCA) framework was applied to assess the environmental performance of thickening technology alternatives using the EASETECH model. The system boundary includes the provisioning of electricity, flocculent polymers, and downstream treatment processes. In this study, it was assumed that all the thickened sludge was sent to anaerobic digestion, followed by dewatering and landfilling. Primary energy consumption rate and global warming potential were used as indicators for environmental performance of thickening technology alternatives.
Finally, the collected performance data were used in completing a cost analysis comparing the two technologies, which considered both capital and operational & maintenance costs.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 13KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

Josh Gable, 26, has been employed at Centrisys Corporation for nearly two years as a Process Engineer. Josh received his bachelor's degree in Biological Systems Engineering from the University of Wisconsin focusing in Environmental Engineering. Josh is currently a Master's candidate in Environmental Engineering in the Civil and Environment Engineering program at the University of Wisconsin as well. Josh also currently serves as the Treasurer and Secretary for the WI Section of the Central State Water Environment Association.

Pat Herrick is Sales Manager for Hydro International – Wastewater Division which specializes in the development, design and fabrication of unique, high performance equipment and systems for removal of grit, sugar sand, abrasives and fixed solids. Mr. Herrick has worked with market leaders in liquid/solid separation for over 20 years. He has experience in both the municipal and industrial markets providing equipment solutions. Mr. Herrick has a Bachelor of Science degree in Industrial Technology from Illinois State University in Normal, IL. He enjoys hunting, fishing and camping with his family.

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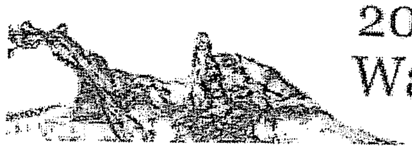

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ID: 26

Submitted: 2012-11-19

Last Updated: 2013-04-17

Title: GRIT HAPPENS – YOU DON'T KNOW WHAT YOU ARE MISSING

Student: No

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Topic(s): Wastewater Plant Operations

Keywords: Wastewater, Headworks, Grit Removal, Grit Classification, Sludge Degritting

Abstract: Operator dissatisfaction with grit removal systems is all too common. Design of grit removal processes has been labeled as inadequate and misunderstood. Conventional guidelines target removal of grit larger than 210 micron while minimizing organic content. In fact, many wastewater treatment plants across the country find over 50% of their influent grit is smaller than 210 micron. In addition to designing for inadequate removal based on size alone other factors contribute to grit system failure. Conventional design assumes that municipal grit behaves like clean sand particles in clean water. Grit removal systems are traditionally based on settling velocities of perfect spheres of silica sand particles with a 2.65 specific gravity in clean water. In reality, wastewater grit is comprised of silica sand as well as asphalt, concrete and various other materials that do not have a specific gravity of 2.65. Further, grit particles are not all perfect spheres and finally, grit is exposed to fats, oils, greases, and soaps in the collection system which coats the grit and changes its settling velocity. Grit systems can work as intended when designed with an accurate understanding of the nature and characteristics of the grit arriving at the treatment plant and how this grit actually behaves in wastewater. Advancements in grit management technology now allow 95% capture of grit as fine as 75 m while producing a clean, dry product.

Comments:

Files: Presentation (1): *not uploaded*

Bio (2): 18KB
© Release (3): 565KB

Reviewer(s):
- Mark Sneve, Strand Associates
- Brad Derrick, DLZ
- Michelle Hatcher, CDM Smith

Brad Hice is the Eastern Territory Manager for Environmental Operating Solutions and has more than 6 years of experience in the design and operation of biological nutrient removal facilities. Brad has a bachelor's degree in Civil Engineering from the University of Michigan and a master's degree in Environmental Engineering from Johns Hopkins University. He is a licensed professional engineer in the state of Maryland and Minnesota. When he is not working, Brad is busy trying to corral his two toddlers.

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ID: 43

Submitted: 2012-12-07

Last Updated: 2012-12-18

Title: Successful Pilot of MicroC 2000TM as substrate for Enhanced Biological Phosphorus Removal at ENR WWTP

Student: No

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Topic(s): Young Professionals

Keywords: phosphorus, biological phosphorus removal, micro C, VFA

Abstract: To determine whether glycerol based products could be used as a carbon source to facilitate Enhanced Biological Phosphorus Removal (EPBR), MicroC 2000TM¬ was trialed over 30 days at a WWTP in Fredrick County, Virginia. The facility is a 5MGD municipal plant operating a 5 Stage Bardenpho process with tertiary filters for polishing to meet a Total Phosphorus(TP) discharge requirement of 0.3 mg/L. A significant industrial discharger is a local dairy that on average comprises 20% of the influent flow but up to 45% of the TP load. EPBR using 20% acetic acid and chemical precipitation using aluminum sulfate are utilized for phosphorus removal. In an attempt to reduce chemical usage and cost, a side by side trial using MicroC 2000TM, a glycerol based carbon source,

and 20% acetic acid were fed to the anaerobic zones on separate biological reactor trains. Orthophosphate concentrations were recorded by a Chemscan unit which sampled the influent and effluent of the tertiary filters every 20 minutes. Over 150 grab samples from within all zones of 5 Stage Bardenpho, secondary clarifier effluent, and the influent and effluent of the tertiary filters were also analyzed for orthophosphate using a HACH DR850 colorimeter. The data showed no quantifiable difference in performance between MicroC 2000TM and 20% acetic acid. As a result of the successful trial, the facility transitioned the remaining trains to MicroC 2000TM as the sole carbon source for EPBR and has reduced its carbon feed by over 70%.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 13KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Matthew Williamson, Littlejohn Engineering Associates, Inc.

Tim Kraus is a professional engineer with 27 years of experience. His specialization is in wet weather and collections system planning. Tim is employed by O'Brien & Gere, having worked for them for the past 15 years. Along with his municipal project work, his duties at O'Brien & Gere include managing the Midwest municipal business. Prior to working for O'Brien & Gere Tim spent 6 years at Louisville MSD and 6 years at Ogden Environmental.

Tim is an active member of KY TN WEA serving as Chair on the Government Affairs committee. He is active member of WEF serving as Chair on two Collection System Committees. Tim has served as Mayor of the City of Norbourne Estates, was appointed by the governor of Kentucky to serve on the State Plumbing Code Committee. He has received the President's award from KSPE, the Young Engineer of the Year award from the Louisville Chapter of KSPE.

Tim is married and has three children ages 12, 12 and 16.

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ID: 57

Submitted: 2012-12-11

Last Updated: 2012-12-12

Title: Rain Barrel Installations Reduce Combined Sewage Overflow in Louisville's CSO140 Area

Student: No

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Topic(s): Collection Systems

Keywords: Rain Barrels; Consent Decree; sewer seperation;

Abstract: This paper will present the documented benefits in overflow volume reduction derived

from the installation of rain barrels on residential properties in the Combined Sewer Overflow (CSO) 140 drainage area. A brief summary of Louisville and Jefferson County Metropolitan Sewer District (MSDs) wet weather planning process will also be presented along with CSO140 project information and many details of the rain barrel installation process.

MSD is responsible for stormwater, flood protection, and sanitary sewer service in the Metropolitan Louisville, Kentucky area. In response to a Federal Consent Decree, MSD developed a comprehensive Overflow Abatement Plan to control sanitary sewer overflows (SSOs) and combined sewer overflows (CSOs). MSDs Overflow Abatement Program utilizes a unique approach, allowing for adaptive management to incorporate green infrastructure into its CSO abatement plans. A key component of MSDs Green Infrastructure program will be the application of various green infrastructure technologies along with removal and re-direction of downspouts directly connected to the combined sewer system.

The combined sewage overflow from CSO140 was originally planned to be eliminated by building a new storm sewer system (separating the sewers) as outlined in MSDs CSO Long Term Control Plan in 2009. The project cost estimate for this separation as noted in the CSO LTCP is $3,150,000. In 2012, MSD completed a model calibration and submitted a revised IOAP. Within the LTCP, MSD provided a revised project for abatement of CSO 140 – reconstruction of the diversion, in line storage, and green infrastructure in the contributing area. MSD also made a decision to implement a rain barrel program in CSO140 prior to beginning design on the IOAP project to determine how much CSO could be reduced or eliminated through rain barrel installation.

CSO140 discharges into the Middle Fork of Beargrass Creek very near downtown Louisville. The CSO140 drainage area is 75.5 acres of which 68% are residential and 26% are commercial/industrial and 6% parks/open space. It contains approximately 550 properties. The CSO140 area is in an environmentally progressive part of the Louisville, KY where various community groups are actively addressing ecological issues. A partial listing of these groups include: Louisville's Green Triangle; Sustainable Clifton and 15Thousand Farmers. Each of these groups was engaged as a stakeholder to the installation of rain barrels.

In January of 2012, MSD began exploring the viability of implementing a rain barrel program in the CSO140 drainage area. Prior to this project, MSD had been advocating rain barrels installation throughout the combined sewer area. Advocacy was accomplished by subsidizing the purchase and with educational material (on-line advertisement, brochures etc.). CSO140 was selected as a candidate for project specific application of rain barrel installation for the three key reasons. These reasons are: desire to understand the value of rain barrels on the reduction of CSOs; desire to reduce the cost of the CSO140 sewer separation project; and belief that customers would embrace installing rain barrels as many residents in this area were actively engaged in environmental initiatives.

The CSO140 Rain Barrel project kick off meeting was held in February 2012. At this meeting and at follow-up meetings, key project decisions were made. Significant decisions that were made included:

- Which streets in the CSO 140 area should be targeted for rain barrels
- Location of the flow meter to be installed in order to monitor pre and post sewer flows
- Which stakeholders to engage in the project along with their role in the project
- What community outreach efforts to engage: meetings to attend, Fairs to attend, etc.
- Type of rain barrel to install
- Percentage of financial assistance to provide to customer for the barrel
- The wording for the customer release, allowing installation on private property
- Who installs rain barrel
- How to track use of the barrel (emptying after rain event)
- Advertisement for project-yard signs

Results for some of the key decisions outlined above included:

1. It was decided to target only a portion of the CSO140 drainage area for rain barrel installation. The Payne Street area which consisted of 100 homes was selected as a

manageable area but also because it was a distinct area that could be monitored with one flow monitor.
2. The initial brand of rain barrel installed was the Earthminded 65 gallon rain barrel but customers could also choose a retrofitted 55 gallon barrel formerly used to transport flavorings. As the project progressed, more retrofitted barrels were installed to allow for "chaining" multiple barrels together
3. MSD elected to pay for 100 percent of the rain barrel to encourage participation. To obtain valuable flow data, effort was made to install as many barrels as possible.
4. Installation of the barrels was completed through a volunteer effort supported by the University Of Louisville Chapter Of Engineers without Borders, and Sustainable Clifton. Multiple training sessions were held to assure volunteers performed work in a safe and consistent manner.
5. A form was developed and distributed to those that had rain barrels installed to document use and maintenance of the barrel. Follow-up phone calls were also made throughout the project to remind customers to use the water stored in the rain barrel.
6. In order to maintain momentum for this project, a yard sign was developed. A theme, "I'm Disconnected" was adopted and placed on yard signed given to each participating customer.
As of October 2012, 80 rain barrels have been installed in the project area. Throughout the summer, fall and early winter of 2012, flow data has been collected and analyzed. Flow data will continue to be collected until spring 2013. A summary of the data is available and will be presented. The x-axis of the graph to be presented is total rainfall and the y-axis of the graph is MG/inch of rainfall which is a normalized wet weather volume. As shown in the graph that will be presented, as the rainfall increases the volume of overflow is reduced. Results obtained to date document an overflow reduction upwards of ten percent.

MSD anticipates continuing with this project through 2013, ramping up the public outreach again the spring of 2013.

Comments: Graph referenced in abstract is available and can be sent to the reviewer upon request.

Files: Presentation (1): 109KB
Bio (2): 13KB
© Release (3): *not uploaded*

Reviewer(s):
- Charles Poskas, ARCADIS
- Preston Pendley, Hardin County Water District No. 1
- Katie Nolan, Gresham, Smith and Partners

Anthony D. Young, PE

Mr. Young has more than 21 years of professional experience. As a Project Manager with O'Brien & Gere, he is currently responsible for performing and delegating technical and administrative responsibilities to engineers, designers, and drafters on major complex and diverse water and wastewater treatment projects. He assumes an active role in the selection of the project team, prepares and administers project budgets and schedules for projects under his supervision, and may also assist in the evaluation and selection of project contractors. He works with the client and the team to develop economical and forward-thinking solutions to technical problems. Mr. Young is also an Adjunct Hydraulics Instructor for the MCE program at Norwich University.

PROFESSIONAL REGISTRATIONS

- Professional Engineer: OH, KY, TN

EDUCATION

- Masters of Civil Engineering /2008/ Norwich University
- BS Civil Engineering Technology/1991/ Western Kentucky University

TECHNICAL EXPERTISE:

- CSO Storage and Conveyance
- Potable water treatment and distribution
- Wastewater collection and treatment
- Combined sewer overflow (CSO) basin design
- Stormwater management

SOFTWARE

- AutoCAD
- Excel
- Primavera Project Planner
- ArcGIS

SPECIAL TRAINING

- O'Brien & Gere's Project Manager's Boot Camp, 2007
- EPSC Designer Training and Certification, 2004,2003, 2001
- KYTC Bridge Inspection School, 1993
- FHWA Concrete Corrosion Detection Training, 1992

PUBLICATIONS AND PRESENTATIONS

- Young, T.D. 2004. **Technical Presentation of the use of Constructed Wetlands for the Treatment of Sanitary Sewage**, Indiana Water Environment Association, Indianapolis, IN.
- Young, T.D. 2000. **Developed a unique use of GIS as an analysis tool for development of watershed management plans**. National WEF Conference technical presentation, Rochester, NY.

AWARDS AND HONORS

- O'Brien & Gere Cornelius B. Murphy, Jr. Award, 2011
- Roy F. Kenzie Award, Florida Redevelopment Association for Creative Partnerships, in recognition of a custom GIS application used in growth management, 2004

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ID: 142

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: CSO Storage and Conveyance Design Decisions that Save Louisville MSD over $10,000,000

Student: No

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Topic(s): Stormwater Management

Keywords: Consent decree, overflows, storage basin

Abstract: This paper will present cost-saving features implemented during the design of the Logan Street CSO Storage Basin and Conveyance Project. The project will begin construction in 2014

Louisville and Jefferson County Metropolitan Sewer District (MSD) is responsible for stormwater and sanitary sewer service in the Metropolitan Louisville, Kentucky area. In response to a Federal Consent Decree, MSD developed a comprehensive Integrated Overflow Abatement Plan (IOAP) to control sanitary sewer overflows (SSOs) and combined sewer overflows (CSOs). A key component of MSD's CSO IOAP will be to reduce the number of overflows at CSOs 091, 097, 106, 110, 111, 113, 117, 137, 146, 148, 149, 151, and 152 to eight overflows per year.

In order to meet this requirement, the IOAP included two offline storage basins with a total storage volume of 17 MG and a conveyance system with pipe diameters ranging from 24 inches to 84 inches. The total distance of the original conveyance system is approximately 10,000 LF. Overflows are diverted to these off line storage basins and held until such time as there is sufficient room in the discharge interceptor to accept additional effluent. These diversion and storage projects require a diversion mechanism, a control mechanism, a conveyance mechanism, and a storage mechanism. The costs associated with these improvements can escalate rapidly. During the design of the subject project, many design decisions were analyzed with the goal of reducing capital costs and

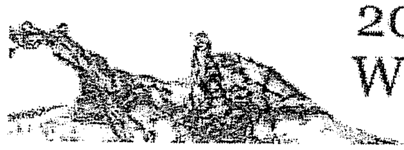
minimizing projected maintenance expenses. These decision points often include a trade-off between operational ease, public pressure, and capital costs. The following cost savings decisions will be discussed:
1. Above Grade vs. Below Grade roof.
• Preliminary design for this project was to have the storage basin below grade with a load bearing roof. Analysis was performed and determined that raising the roof above grade would avoid the possible loads from saturated soil and vehicles that accompany subterranean ceilings. Estimated savings from this decision is approximately $5 million.
2. Confined Space Requirements during cleaning and maintenance.
• Install gates at the CSOs and at the Basin to potentially reduce the confined space entry protocol
3. Accessibility
• Preliminary design for this project was to access the storage basin from the roof. Analysis was performed and it was decided to add a ramp to simplify basin access and maintenance. The ramp allows quicker access to the basin and will allow up to one-ton trucks access to enter the basin.
4. Solids and floatables management
• Choose to NOT install mechanical screens at the individual CSOs.
• Install static screen instead of rotating screen because the static screen is less expensive to install and maintain, especially with the improved access provided by the basin ramp.
5. Basin Cleaning
• Add wall washing system. This system includes over 300 spray nozzles mounted on stainless steel spray headers. The spray nozzles apply 10gpm @ 30psi to the wall at the high water level to rinse debris from the walls.
• Add floor flushing System. This system includes nearly a dozen 2 ft. by 13 ft. stainless steel flush gates. These hydraulically actuated flush gates was debris down the basin floor to a collection trough and ultimately to the static screen
6. Conveyance Location
• At the conceptual stage, the conveyance system followed Beargrass Creek. As reviews of the excavation costs and construction limitations were made, it became clear that the conveyance would have to be deeper than the channel. Given the highly-developed nature of the urban area, it was determined that the best location might be UNDER the existing stream channel. This solution allowed for reduced excavation (3 feet instead of 30 feet).
• The channel excavation does present issues with stream flow management, side-slope slides and groundwater infiltration. Diaphragm walls and slurry walls have been used in Europe extensively to retain the earth in narrow, subterranean work areas. We are applying that technology to this project.
7. Combine Basins
• During early design, it was determined that the upstream basin could be eliminated by upsizing the mainline conveyance diameter and adding an additional 2,000 L.F. of additional pipe at the upstream end of the project. While this was expensive, it did save an estimated $7 million in capital expenditures.
8. Basin and Conveyance Depth
• The basin can be designed such that it surcharges the influent pipe during the design event or not. In this project the volume of the conveyance pipe was not included in the System Design Volume calculations but it does surcharge and is defined as a factor of safety.
9. Roof
• The primary purpose of a roof on a basin is to reduce odors and reduce the rainwater entering the system. A roof is expensive and this decision must be approached from more than an economic point of view. The impact on adjacent property users must be addressed.
The analysis of the design decisions will be presented to allow others the opportunity to consider the situations and apply a similar decision methodology.

Comments:

Files: Presentation (1): 17KB
Bio (2): 43KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Josh Cravins, WASCON, Incorporated

Mr. Poskas is a Senior Project Engineer with ARCADIS, has over 16 years experience and is registered in four states. He has a well-balanced background in the study, design, and construction of wastewater collection and treatment systems with a focus on the impact of stormwater on these systems. His experience includes master planning and CIP development, detail design, SSO and CSO elimination studies, RDI/I reduction studies, hydrologic and hydraulic modeling, and construction supervision.



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Submission

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ID: 181

Submitted: 2012-12-17

Last Updated: 2013-04-17

Title: Buffalo Sewer Authority Pilot Rain Barrel Program The good, the bad, and the Indifferent

Student: No

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Topic(s): Collection Systems

Keywords: CSO mitigation, rain barrels, customer outreach

Abstract: Green infrastructure (GI), sustainable management, low impact development (LID): Cities

and utilities across the country are becoming more and more familiar with these. The US EPA and other agencies have actively promoted the benefits of these tools for storm water management; while communities, to varying degrees, have included it in their programs to address combined sewer overflows (CSOs). Non-Government Organizations (NGOs) have spearheaded grass-roots efforts to educate the general population and promote volunteer installation of GI and LID technologies at private residences and business developments.
This paper documents the results of a pilot implementation of rain barrels on private property by a utility. It answers the following questions: If rain barrels are the tool of choice, how many homes will be willing to participate? Will they manage the rain barrels to benefit the combined sewer collection system and help mitigate CSOs? Once the rain barrels are installed, how will the benefits to the collection system be documented and reported to the regulatory community if the utility is under a consent decree? In addition, this paper summarizes lessons learned that other utilities can apply, the observed impact on the collection system (in terms of wet weather flow reduction), and offer advice to any utility thinking about a green infrastructure pilot program that involves private land owners, volunteer efforts, and grass-root support from NGOs.
In 2010, the Buffalo Sewer Authority (BSA) began a pilot study by providing rain barrels, free-of-charge, to residential owners if they would participate in the program. Not only would the rain barrels be provided by BSA for free, but they would be installed by the Buffalo-Niagara River Keepers (BNRK) as part of a partnership agreement between BSA and the BNRK. In return for this service, the home owner was requested to complete a rain barrel management log documenting dates and times that the rain barrels were dewatered.
In addition to the rain barrel management logs, BSA installed flow monitoring equipment both within the study area, to collect pre- and post-installation data, as well as in a similarly sized control area. By collecting pre- and post-installation data, the collection system's response to rain events can be plotted and any reduction in wet weather flows can be quantified. Using a control area in conjunction with the study area allows BSA to account for any seasonal differences in weather patterns or antecedent conditions that often hamper traditional pre-/post-construction monitoring efforts.
At the end of 2012, the flow monitoring equipment has been removed and the data analyzed. Public participation numbers have been reviewed and evaluated. If selected, BSA will present their lessons learned, the observed impact on the collection system, and offer advice to any utility thinking about a green infrastructure pilot program that involves private land owners, volunteer efforts, and grass-root support from NGOs.

Comments: Additional contact information will be provided if selected.

Files: Presentation (1): *not uploaded*
Bio (2): 21KB
© Release (3): *not uploaded*

Reviewer(s):
- Kimberly Martin, CDM Smith
- Preston Pendley, Hardin County Water District No. 1
- Katie Nolan, Gresham, Smith and Partners

WPC Bios

Gary Boblitt is a Senior Project Manager for HDR Engineering, Inc. He has over 40 years of experience in the planning, design and construction of wastewater collection and treatment facilities. Mr. Boblitt served as HDR's project manager for both the design and construction of the DRG WQTC Wet Weather Treatment Facilities.

Steve Keiber is a Senior Project Manager/Professional Associate with HDR Engineering, Inc. He has 40 years of experience in the planning, design, and construction phases of numerous civil and environmental projects. Steve was also the Design Manager and Engineer-of-Record for the Judy/Quest design/build team on the Floyds Fork, Cedar Creek, and Hite Creek Water Quality Treatment Center projects for the Louisville and Jefferson County Metropolitan Sewer District. He has been married to his wife Vicki for 41 years, has two grown daughters in the teaching profession, and enjoys pestering his two grandkids.

Derek is currently employed by HDR Engineering where he specializes in wet weather programs for storwater and wastewater utility. He has over 34 years of experience in the field, including over 20 years at the Louisville Metropolitan Sewer District where he was Chief Engineer.

Vicki Coombs, an Area Team Leader at the Louisville Jefferson County Metropolitan Sewer District, was involved with both the design and construction phase of the DRGWQTC Wet Weather Treatment Facility Project. She has worked in the water and wastewater treatment field, both public and private sector for over 30 years.

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ID: 206

Submitted: 2013-01-04

Last Updated: 2013-01-04

Title: Post Construction Compliance Monitoring Plan Development for the DRGWQTC Wet Weather Treatment Facility

Student: No

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Topic(s): Wastewater Plant Operations

Keywords: PCCM, Wet Weather Treatment, Consent Decree

Abstract: The Louisville Metropolitan Sewer District has increased its conveyance capacity and wet weather storage in targeted areas to eliminate SSOs. A large percentage of the additional wet weather flow captured will be conveyed to the Derek R. Guthrie WQTC. The DRG WQTC is a contact stabilization secondary treatment facility with a design average daily flow capacity of 30 MGD, and a peak hydraulic design capacity of 96 mgd. In order for the Derek R. Guthrie WQTC to handle the additional wet weather flow, it was necessary to expand the wet weather treatment capacity of the plant by an additional 100 mgd. Process changes have increased the capacity of the existing facilities to provide a peak wet weather treatment capacity of 200 mgd with all units in service. Additionally, the facility can handle up to 300 MGD for a short term peak with the use of a short term detention basin and an equalization basin. A Post Construction Compliance Monitoring (PCCM) Plan, as required by the Consent Decree, is being developed to evaluate the ability of the expanded facilities to handle the peak wet weather flows and to meet NPDES permit requirements. The PCCM will incorporate the following four elements: equipment testing, field verification of the hydraulic model, field verification of the process model, and a report on one-year operations including a certification of expansion.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 11KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

Sam Harrison, P.E., LEED®GA, ENV SP is a Senior Engineer with Smith Seckman Reid, Inc. from their Knoxville office. Sam has his undergradute degree in Civil Enginnering and his Masters in Environmental Engineering from the University of Tennessee. He has been on the design team for the Alcoa Water Treatment Plant, Stones River Water Treatmnet Plant, Pigeon Forge Wastewater Treatment Plant, and Sinking Creek Wastewater Treatment Plant.

Sam servies as chair of the KY/TN AWWA Training Committee and chair of the MLK Magnet High School Engineering Advisory Board. Sam is happily married to his wife Katherine with their 2 year old son James.

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ID: 109

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Erwin Wastewater Treatment Plant: Novel Solutions to Treatment Challenges

Student: No

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Topic(s): Wastewater Plant Operations

Keywords: WWTP, Filters, I/I, Novel

Abstract: The WWTP serving Erwin, Tennessee is a 1.9 MGD facility with screening, grit removal, primary clarification, rotating biological contactors (RBCs), final clarification, and chorine disinfection. The plant has 30/30 permit limits with a minimum 85% removal efficiency. The plant consistently meets the 30/30 limits, however struggles to meet the 85% removal requirement due to a low influent waste strength that averages only 102 mg/l BOD. Through testing it was determined the RBCs are removing the dissolved BOD, but the fraction of particulate BOD remaining is enough to put the plant on the edge of compliance.

A study was performed to determine the most beneficial way to achieve consistent and reliable permit compliance. The recommendation was to remove the final clarifier from service and replace it with compressible media filtration. The filter will capture the insoluble portion of BOD to ensure compliance with the 85% removal requirement of the permit. This was the simplest and least expensive option to achieve the desired goals.

Comments: This s a unique proposal. We are recommending design of a treatment plant without a final clarifier. We propose using a Schreiber Fuzzy Filter or WWetco filter as the solids separation process. This is feasible on an RBC plant because there is no sludge recycle like an activated sludge plant.

Files: Presentation (1): *not uploaded*
Bio (2): 11KB

© Release (3): *not uploaded*

Reviewer(s):
- Mark Sneve, Strand Associates
- Brad Derrick, DLZ
- Michelle Hatcher, CDM Smith

DAN MIKLOS BIOGRAPHY

Dan Miklos is a Senior Associate with Hazen and Sawyer, PC and is the Operations Practice Leader for the firm. He has over 30 years experience in wastewater process design and optimization, utility management, biological nutrient removal, process automation, operator training, and biosolids. He is a Class IV Registered operator in several states.

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Submission

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ID: 168

Submitted: 2012-12-16

Last Updated: 2012-12-16

Title: Low Cost Strategies for Wet Weather Treatment

Student: No

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Topic(s): Wastewater Plant Operations

Keywords: wet weather, optimization

Abstract: Introduction
Many utilities are faced with the challenge of providing additional peak wet weather treatment capacity at with limited budgets. This is being driven by a host of factors, the most significant of which is the focus by regulators on overflows and "bypasses" and while eliminating "blending" options. If improvements are not required by a consent decree or other regulatory order, they are increasingly being mandated during permit renewals. While regulatory priority had been placed on larger utilities, small to mid-sized utilities are being scrutinized for wet weather flow compliance.
There are a number of challenges associated with accommodating significant flows beyond average capacities:

- Capture of first flush – The initial time period of a storm event is often accompanied by an initial period of very high influent loading. A plant or facility must be designed to accommodate this loading, but usually requires bringing on additional treatment units or operating existing equipment at much higher rates. First flush loading and removal is often focused on screening and grit removal facilities.
- Hydraulic capacity – Often, when plant upgrades are considered, the hydraulic capacity of interprocess piping and flow management structures is simply inadequate. Therefore, utilities must consider either upgrades to this conveyance infrastructure or other options for treatment.
- Maintenance of biomass and protection of sensitive biology - The active biomass of the treatment system must be maintained throughout and normal conditions must be returned as soon as possible after storm events so that consistent permit compliance can be achieved. If biomass is lost from the secondary system during a storm event, permit compliance will be a significant challenge as the biomass population is "restored" within the system. In many facilities with nutrient removal limits, this challenge has become even greater as specialized biological communities must continue to be protected.
- Operational transition between dry and wet weather operations – Operation for wet weather typically requires that the plant develop a transitional strategy for bringing process units on line, for changing the flow paths in the secondary system, and for potentially storing part of the incoming flow. This transitional strategy must accomplish two objectives. First, the transition must maintain consistent treatment throughout. Second, the transition must return the plant to normal operations and regular permit compliance as soon as possible.

There is much that can be learned from the experiences of existing utilities in the overall process of planning, implementing, and then operating wet weather treatment systems. This paper will focus on several utilities where varying strategies and systems have been used to accommodate wet weather. The utilities and examples were chosen to cover a broad range of capacities, treatment technologies, and overall strategies.

The paper and presentation will present information on the following:

- Description of wet weather strategy and why it was selected
- Lessons learned from operations staff on the use of the strategy, including how plant operations have been modified since the system was put on line.
- Operational strategy used for initiation of wet weather treatment, operation during high flow events, and the return to normal flows.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 10KB
© Release (3): *not uploaded*

Reviewer(s):
- Mark Sneve, Strand Associates
- Brad Derrick, DLZ
- Michelle Hatcher, CDM Smith

Richard E. Gell, P.E.

Mr. Gell is located in Syracuse, NY and has over 30 years of experience at O'Brien & Gere. Mr. Gell manages a wide range of potable water service projects for both large and small municipal and industrial clients.

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ID: 158

Submitted: 2012-12-15

Last Updated: 2013-03-19

Title: Achieving Reliability While Rebuilding and Maintaining Operation of a Water Treatment Plant

Student: No

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Topic(s): Water Plant Operations

Keywords: construction sequencing, reliability, water treatment plant

Abstract: When the City of Ithaca decided to maintain its upland water source, Six-Mile Creek, and replace its 100 plus year old water treatment plant, it also decided that the new plant would essentially be constructed in the same location as the existing plant. Evaluations of alternative sites concluded that the land use between the raw water reservoir source and the water treatment plant had changed so dramatically since the original construction of the water treatment plant that it was not feasible to relocate the plant. Consequently the City elected to move forward with the construction of a new plant on the existing site. The only existing facilities that are being salvaged are the finished water clearwells and the finished water pumping station.

This decision introduced a large number of challenges regarding how to sequence the work and the need for temporary facilities to allow the plant to remain in operation throughout construction and meet the water demands of the City. The work is being phased into four distinct areas. The first includes implementation of distribution system storage and reliability improvements to minimize the reliance on the water treatment plant production capacity during construction. The second included improving the reliability and operability of the interconnections with adjoining public water systems. These interconnections will not only help during construction but will provide long-term value in the event of a future emergency. Third, based on a detailed review of the

construction sequencing it was concluded that a fabric structure would be constructed over the existing clearwell to house the membrane filter units until the permanent structure and piping system can be completed. In addition mobile trailers will be used for a temporary control room, offices, laboratory and bathrooms. Each of these preparatory steps is needed to facilitate construction of the permanent structure. Once the permanent structure is complete the membrane filtration units will be relocated into the new structure and the temporary facilities relocated to another site for use by the Public Works Department.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 27KB
© Release (3): 107KB

Reviewer(s):
- Keith Coombs, Louisville Water Company
- RENGAO SONG, LOUISVILLE WATER
- Josh Cravins, WASCON, Incorporated

On-Site Hypochlorite Generation
Your Clean, Green, Safe and Sound Disinfection Option

On-Site Hypochlorite Generation (OSHG) or electro-chlorination is the process that converts common salt to sodium hypochlorite. OSHG is gaining popularity as a disinfection option for water and wastewater.

This presentation will discuss OSHG technology and its application in water and wastewater disinfection. Specific areas of discussion will include:

- The electro-chlorination process
- Regulations challenging traditional disinfection options
- System configuration and components
- Improvements in equipment over the last twenty years
- Process selection & equipment evaluation criteria
- Review of significant OSHG projects:
    - Albuquerque Bernillio County Water Utility Authority
    - Rancho California Water District
    - Missouri American Water - South & Meramec WTPs
    - Lawrenceburg, KY WTP
    - Portland, TN WTP

Attendees will gain a basic understanding of OSHG technology, it's acceptance & evolution in the industry and how it can meet their disinfection requirements. They will also benefit from a review of current regulations impacting disinfection options.

Speaker Bio

Brian W. Branch
Process Solutions, Inc. - Regional Manager

He has been continuously involved with the development and commercialization of electro-chlorination technology since 1983. First in swimming pool applications, then with Chemical Services Company which first introduced electro-chlorination for water and wastewater treatment applications in 1988.

Mr. Branch was personally involved with the first OSHG installations in FL, GA, NC, SC, TN, PA and NJ. He has been successful in upgrading many of those original installations to the latest third generation technology.

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ID: 188

Submitted: 2012-12-21

Last Updated: 2012-12-21

Title: On-Site Hypochlorite Generation - Your Clean, Green Safe & Sound Disinfection Option

Student: No

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Topic(s): Water Plant Operations

Keywords: On Site Hypochlorite Generation, Sodium Hypochlorite, Disinfection

Abstract: On-Site Hypochlorite Generation (OSHG) or electro-chlorination is the process that converts common salt to sodium hypochlorite. OSHG is gaining popularity as a disinfection option for water and wastewater treatment.

This presentation will discuss OSHG technology and its application in water and wastewater disinfection. Specific areas of discussion will include:
• The electro-chlorination process
• Regulations challenging traditional disinfection options
• System configuration and components
• Improvements in equipment over the last twenty years
• Process selection & equipment evaluation criteria
• Review of significant OSHG projects:
Albuquerque Bernillio County Water Utility Authority
Rancho California Water District
Missouri American Water - South & Meramec WTPs
Lawrenceburg, KY WTP
Portland, TN WTP

Attendees will gain a basic understanding of OSHG technology, it's acceptance & evolution in the industry and how it can meet their disinfection requirements. They will also benefit

from a review of current regulations impacting disinfection options.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 19KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Amy Kramer, Northern Kentucky Water District

Dorothy J. Johnson
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CRENDENTIALS

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EXPERIENCE

12/02 – Present	Water Quality Specialist Kentucky American Water
4/96 – 12/02	Lab Analyst Kentucky American Water
2/94 – 4/96	Principal Lab Technician University of Kentucky Livestock Disease Diagnostic Center
1/93 – 2/94	Project Leader PTRL East, Inc
2/91 –1/93	Staff Scientist PTRL East, Inc

COMMITTEES

KY/TN AWWA Operations & Water Quality

EDUCATION

B.A. Biology
Berea College

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Submission

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ID: 125

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Stage 2 DBP-Operational Evaluation Level Study-Meeting Requirements

Student: No

Author 1:
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Topic(s): Drinking Water Quality

Keywords: Stage 2 DBP-Operational Evaluation Level Study

Abstract: Kentucky American Water (KAW) began stage 2 DBP sampling in April of 2012. After completion of the first three quarters of sampling, KAW began to compile data to determine if our system would meet the operational evaluation requirements. On review of the data KAW determined that six of the 12 sites were in exceedance of the HAA MCL. KAW Water Quality staff began an evaluation of all three water treatment plants to determine what would be the cause of the elevated HAA results. The evaluation included evaluating plant data along with distribution data to determine if the results were being seen were coming from one plant in particular. Data that was reviewed included total organic carbon, pH, chlorine (pre-chlorine and post chlorine), raw water turbidity and UV-254. As part of the evaluation KAW looked at THM-HAA data for the previous two years that had been done on all of the stage 2 sites. The review of data showed that the results were being influenced by the Kentucky River Station 1 (KRS 1) plant. The presentation will discuss what was determined in the evaluation for the cause of exceedance and what actions will be taken going forward to eliminate the higher levels.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 28KB
© Release (3): *not uploaded*

Reviewer(s):
- Jim Pelton, Pelton Environmental Products

- RENGAO SONG, LOUISVILLE WATER
- Preston Pendley, Hardin County Water District No. 1
- Brent Tippey, HDR

Joe Goodin is a PhD student at the University of Kentucky studying under Dr. Lindell Ormsbee. His areas of study include hydraulic/water quality calibration, asset management and resilience of water distribution systems. He is also an avid UK basketball and football fan.

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ID: 19

Submitted: 2012-11-12

Last Updated: 2012-11-12

Title: Organizing/Planning/Executing a Grab Sampling Tracer Study for a Small to Medium Sized Water Utility: Lessons Learned

Student: Yes

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Topic(s): Distribution

Keywords: Fluoride Tracer Study Water Quality Calibration Lessons Learned Small/ Medium Utility

Abstract: Tracer studies have been used throughout the years for a variety of different purposes. These types of studies can provide data that can be used to calculate travel time, residence time or age of water in a distribution network. Tracer studies can also be used to help verify and further calibrate existing hydraulic models. When conducting a tracer study, there are several different components that need to be addressed to ensure the results of the study are acceptable and useful. This paper discusses issues and provide guidance for future fluoride tracer studies, conducted using a grab sampling approach, for a small to medium sized utility. Topics addressed are: 1) Potential cost components of the study 2) How to properly select ideal sampling sites using a hydraulic model and issues that arise from potential flow reversals in the distribution system 3) Importance of tank sampling to help accurately reflect tank mixing 4) How to utilizing sampling when fluoride is turned down to predict/verify sampling locations when fluoride is turned back up. 5) Issues pertaining to reliability of field fluoride colorimeters 6) Organization and scheduling concerns 7) Overall lessons learned from a fluoride tracer study conducted for a medium sized utility.

Comments: I am a PhD student here at the University of Kentucky. Through a research grant provided by NIHS, we were able to conduct a hydraulic and water quality calibration of a medium sized water utility system. This presentation will hopefully serve as a case study to help inform other utilities about some of the obstacles that they will face when performing a Tracer Study and offer practical solutions for future studies.

Files: Presentation (1): *not uploaded*
Bio (2): 13KB
© Release (3): *not uploaded*

Reviewer(s):
- Bart Potts, Louisville Water Company
- Amy Kramer, Northern Kentucky Water District
- Daniel tegene, Louisville Water Company

Title: *"Operation Leap Frog: Minor Hill's Emergency Water Supply Initiative"*

Jason Griffin, P.E.
Jacobs Engineering Group
615-254-6002
jason.griffin@jacobs.com

Credentials

Registered Professional Engineer: TN, KY, AL, GA

Experience

June 1991 - July 1996	Cooperative Education Program (3 terms) Metro Nashville Overflow Abatement Program *Consoer Townsend & Associates*
January 1997 – August 2011	Project Engineer / Project Manager / Principal in Charge / Department Manager *Gresham, Smith and Partners*
September 2011 - Current	Nashville Office Manager / Project Manager *Jacobs Engineering Group*

Education

Bachelor of Science in Civil Engineering
Tennessee Technological University / December 1996

Summary

Mr. Griffin has spent the majority of his 17 year career working with water and wastewater utilities on solving growth and aging infrastructure issues. Using hydraulic modeling & GIS, practical design considerations, feasible construction practices, and an understanding of funding and finance principals, Jason and his team provides clients with a broad visualization of master planning and capital improvement project concepts. Jason began managing the Nashville branch office of Jacobs Engineering Group in late 2011; since then his technical and professional staff has doubled in size by building on the foundation of principals described.

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Submission

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ID: 179

Submitted: 2012-12-17

Last Updated: 2012-12-17

Title: Operation Leap Frog: Minor Hill's Emergency Water Supply Initiative

Student: No

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Alternate Contact: Author 2

Topic(s): Distribution

Keywords: hydraulic model, NPSH, over-pressurization, rental pumps, water outage, water supply

Abstract: Prior to the July 4, 2012 holiday weekend, Jacobs' Nashville office was called upon by the Minor Hill Water Utility District to assist the District with a water outage that began on June 25 affecting the southern portion of their system. Staff from that office oversaw the collaboration of personnel from adjacent utilities as well as pump rental suppliers to work with the District as it installed two temporary pumps to pump additional water into the area suffering the shortage. The maximum pumping capacity of the Highway 11 Booster Pump Station (BPS) serving the southern part of the system before the work was completed was 200 gpm; the final output was increased to over 400 gpm without over-pressurizing the system.

The BPS has two existing 200 gpm pumps that are fed by a six-inch suction main and then discharge through a six-inch main to the Anthony Hill Tank. Hydraulic capacity of the BPS is restricted by both six-inch water mains. The two existing pumps can be operated in parallel; however, low suction pressure causes the pumps to shut down. Thus the proposed solution had to boost the pressure on both "sides" of the BPS in a balanced method to limit over-pressurizing the existing six-inch water mains. Using the District's current hydraulic model, a temporary pumping arrangement was devised that was comprised of two 200 HP diesel powered skid units: one skid was installed upstream of the BPS and one was placed downstream to boost the capacity of the pump station by providing both additional suction and discharge head.

The upstream temporary pump boosted suction head entering the BPS, thus preventing a shut down due to lack of net positive suction head (NPSH). The downstream temporary pump overcame pressure losses through the six-inch water main within the station so the maximum pump rate of the BPS could be achieved.

Demonstrating great teamwork from adjoining utilities, the mobilization, selection of pumps, their installation, and commissioning was accomplished by the early morning hours on June 27, just under two days from the time the shortage began bringing highly acclaimed relief to the water customers and staff of Minor Hill.

The task quickly was dubbed 'Operation Leap Frog' seeing as we were passing water through 3 series booster pump stations much like kids would play leap frog. The greatest challenges were field coordination, proper excavation equipment, required piping materials, and start-up coordination. The temporary pumps have since been removed but the connections are still in place should the pumps be needed again before a more permanent solution to redundant water supply can be constructed.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 27KB
© Release (3): *not uploaded*

Reviewer(s):
- Bart Potts, Louisville Water Company
- Amy Kramer, Northern Kentucky Water District
- Daniel tegene, Louisville Water Company

WPC Bios

Kevin Brian is a Project Manager for HDR Engineering, Inc. He has over 25 years of experience in the planning, design and construction of wastewater collection and water distribution systems. Mr. Brian has served as technical and project manager in various water, sewer and drainage replacement and rehabilitation projects. In his free time, Kevin enjoys coaching his kids' grade school football, basketball and baseball teams.

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Submission

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ID: 213

Submitted: 2013-01-04

Last Updated: 2013-01-04

Title: Aging Transmission Water Infrastructure in Urban Areas - Rehabilitation or Replacement?

Student: No

Author 1:

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Topic(s): Distribution

Keywords: Rehabilitation, Replacement, Water Transmission Infrastructure

Abstract: Aging Transmission Water Infrastructure in Urban Areas - Rehabilitation or Replacement?

As our cities and urban areas continue to age so does the water infrastructure that serves these areas. As water infrastructure reaches the end of its useful life and transmission systems begin to experience higher frequency of leaks, breaks, and other failures, utility owners and operators are faced with the decision to either rehabilitate or replace. This study will evaluate elements to include when considering either replacement or rehabilitation and identify rehabilation options for transmission mains in high density and fully developed urban areas. Alternatives for pipe and joint rehabilitation for steel, concrete and cast iron pipe will be evaluated. These alternatives along with other project factors will be summarized in a decision matrix. This decision matrix will provide water utilities with a general guideline and approach to rehabilitating aging transmission main facilities.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 11KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Keith Coombs, Louisville Water Company

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Submission

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ID: 180

Submitted: 2012-12-17

Last Updated: 2012-12-17

Title: Technology and Training That Empowers Ordinary People to Save Lives With Water

Student: No

Author 1: First Name: Mark
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Topic(s): Water Service Projects

Keywords: Developing Countries, Humanitarian Work, Chlorine Generator, Service Projects, International Aid, Disaster Relief, Sustainability

Abstract: After years of working with water in the developing world, WaterStep felt the need to provide a means to sanitize water with chlorine gas, by electrolysis of brine for virtually anyone to operate, deliver and implement worldwide through WaterStep's training program. Though the technology over 100 years old, this would be a new design influenced by WaterStep's water relief experience since 2001.

WaterStep, General Electric and The Louisville Water Company worked in collaboration to build a chlorination device that is compact, easily manufactured from available materials, low cost, mobile, robust, with no intellectual property encumbrance's.

WaterStep would like to present the process of our work and research and the success of the unit in distressed areas around the world for the purpose of sanitizing thousands of gallons of water per day. In addition to its use in developing countries, the unit has been utilized in Eastern KY. Further in 2013 the chlorine generator will be implemented by WaterStep trained, volunteers in 10 ports of call throughout Central and South America and the Caribbean onboard the USNS Comfort hospital ship in the annual US Military's Humanitarian event, Continuing Promise.

In addition to sanitizing water the unit can produce large amounts of chlorine and sodium

hydroxide as bi-products that are also effective and helpful in the developing world.

We look forward to the possibility of being a part of the presenters at the conference.

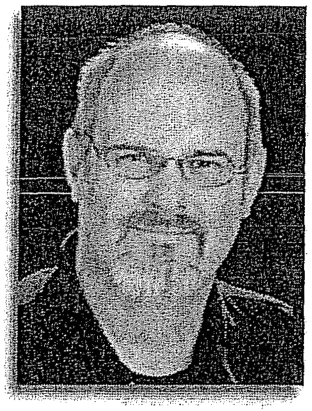
Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 194KB
© Release (3): *not uploaded*

Reviewer(s):
- Amy Kramer, Northern Kentucky Water District
- Kimberly Martin, CDM Smith

Tim Tucker is the Utilities Group Director at Cannon & Cannon, Inc. Tim has over 17 years of experience in the water / wastewater industry. Tim has been heavily involved in master planning, CMOM program development, and sewer and water rehabilitation projects throughout his career and has split his time working for a utility and a consultant. Tim is part of the Leadership Team of Knox ProCorps and has recently traveled to Guatemala to install a water system for the Town of Sequixpur in the Ulpan Valley.

Mark McKinney is a Project Engineer for First Utility District in Knoxville Tennessee. Mark has over 10 years of experience working in the water/wastewater industry. Mark has worked on projects ranging from water distribution modeling, water and wastewater treatment plant design, sanitary sewer collection rehabilitation, as well as planning studies for utility expansion and reconfiguration. Mark and his family have recently moved back to Tennessee from Guatemala where Mark spent the last year working as a water engineer planning, designing, and installing water systems for the Mayan people living in the Ulpan Valley. Mark is also on the leadership team for Knox ProCorps.



Mark Hogg
Founder and CEO
WaterStep,
Louisville, KY USA
WaterStep.org

O: 502.568.6342
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A child dies every 15 seconds from water borne disease.

WaterStep success...
Projects implemented by WaterStep staff and trainees have an 85% success rate, compared to the 50% success rate of water projects overall (cited by Rajesh Shah of Blue Planet Run Foundation).

WaterStep's is a partner with US Southern Command and pure water projects and health and hygiene initiatives are implemented by WaterStep trained, volunteers in 10 ports of call throughout Central and South America and the Caribbean onboard the USNS Comfort hospital ship in the annual US Military's Humanitarian event, Continuing Promise.

PROFILE

Seasoned non-profit executive director capable of casting a broad vision, then designing and implementing specific programs to achieve that vision. Talented at recruiting, training, and motivating staff and volunteers from many cultures to accomplish the specific primary goal – to improve access to safe drinking water in developing countries.
The result? Ordinary people trained to extraordinary things.

EXPERIENCE

Founder and CEO of WaterStep
Louisville, Kentucky, 1995 to present

Nurtured this Kentucky non-profit organization since its inception in 1995, refocusing its mission through phases that have included:

- sending scores of students and adults on **short-term missions** to various countries
- integrating efficient and **sustainable technologies** for water, sanitation and health and hygiene
- building profitable shoe **export business** to assist funding non-profit organization
- working with engineers and business men and women in **technology and social entrepreneur initiatives**

WaterStep has spent much effort developing various technologies and replicable training modules that work hand in hand for the ordinary person. In 2012, WaterStep began manufacturing its own chlorine generator. These uncomplicated, **water purification systems** are capable of being installed and run by local users in under-served communities outside the US. The chlorinator, when coupled with multiple tanks and a PVC manifold, acts as a mini-water treatment plant providing up to 55 gallons of purified water per minute - a life-saving impact on community health. Pure water and the system's byproducts, chlorine and sodium hydroxide, can also be used to build local micro-businesses.

In connection with purification units, WaterStep developed an **international water training program.** To be available through distance learning in 2013, hundreds each year from all over the world are taught WaterStep courses on purification, filtration, health and hygiene, and sanitation.

WaterStep has the only indoor **hand pump repair school** in this hemisphere to address the millions of broken hand pumps in the world. Manufacturing a unique set of light weight hand pump repair tools provides self sustainability and another micro-businesses opportunity for people in developing countries.

Awards and Honors

Coordinated **water disaster relief response for earthquake and flood disasters** in Costa Rica, Haiti and Pakistan. WaterStep relief work includes a developmental plan for sustainable, community-based water solutions effective after the disaster has passed.

Connected on Facebook, Twitter, and blog. Traveled internationally for over 25 years. Among 128 people chosen from over 5,500 nominees for Leadership Louisville's Connector Project. Ernst and Young 2012 Social Entrepreneur of the Year Winner. Experienced speaker. WaterStep was a "Faith in Action" recipient by the Center for Interfaith Relations in Louisville, KY.

TRAINING

BBA in business management, Belmont University, Nashville, Tennessee, 1985; MDiv., Southern Seminary, Louisville, Kentucky, 1990; ordained minister since 1985; owned Hogg Contracting remodeling company; first international humanitarian experience with water was a construction project to extend a dam in Burkina Faso in 1983.

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Submission

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ID: 231
Submitted: 2013-03-06
Last Updated: 2013-04-19
Title: KnoxProCorps
Student:

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Topic(s):
Keywords:
Abstract:
Comments:
Files: Presentation (1): *not uploaded*
Bio (2): 18KB
© Release (3): *not uploaded*

Water For People Showcases Sustainability and Transparency in Guatemala

Authors' bios follow.

JJ Van Dyke is an Assistant Engineer at Hazen and Sawyer, P.C. He has three years of experience in nutrient removal, collection systems, and water/wastewater treatment facilities. JJ is currently Vice Chair for the KY/TN Water For People committee. In his spare time, he enjoys building block towers with his two year old son.

John McMaine is an engineering graduate research assistant at the University of Kentucky, focusing on stormwater management He has been involved with water/wastewater systems all of his life, and has seen systems in several states, Mexico, Ecuador, Argentina and Australia. Understanding that safe water is an unattained luxury in much of the world, he has been an active member of the Water For People committee since 2010. John enjoys travelling, connecting with new people, and experiencing different cultures.

Ron McMaine, PE, is a senior vice president at Bell Engineering. He has worked with more than fifty water systems over the past forty years. He is a former chair of the KY/TN Water For People committee and a recipient of the Kenneth J. Miller Water For People Founders' Award. In his spare time he enjoys working with his wife on the family farm and selling at farmers' markets in the area.

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Submission

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ID: 204

Submitted: 2013-01-03

Last Updated: 2013-01-04

Title: Water For People Showcases Sustainability and Transparency in Guatemala

Student: No

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Topic(s): Water Service Projects

Keywords: sustainability, transparency, Guatemala,

Abstract: Many water/wastewater systems have a history of completing projects without a

commitment to maintenance. They have also failed to inform and involve their customers. Nevertheless, sustainability and transparency have become more than slogans for the water/wastewater industry. Water For People (WFP) seeks to emphasize sustainability and transparency realizing that no one benefits if these problems remain unaddressed and hidden. WFP has developed approaches for both issues that are successful. This presentation describes those approaches, both in general and in particular, with a case study from an eye witness report by a KY/TN WFP committee member who recently visited Guatemala.

Comments:

Files: Presentation (1): 17KB
Bio (2): 14KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

The KY/TN WEA/AWWA Management Committee will be hosting a panel discussion on the subject "Managing the Infrastructure Funding Gap". Members of the panel will include representatives from the investment banking and bond industry, state revolving loan fund, and financial officers for utilities.

Tamika Parker, P.E. graduated from Drexel University in 1998 with a Bachelors of Science Degree in Chemical Engineering. She received her masters of science degree in Organizational Dynamics from the University of Pennsylvania in 2006. She has done process design, equipment and plant design, field service, regional management, and project engineering. Ms. Parker has worked for Rohm & Haas, Roberts Filter Group, Inc., Metcalf & Eddy| AECOM, and MWH New Zealand Ltd. Ms. Parker is currently pursuing a Jurist Doctorate at the Nashville School of Law. Governor Bill Haslam of Tennessee recently appointed Ms. Parker to the Tennessee Water and Wastewater Financing Board.

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Submission

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ID: 112

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: The University of Diversity

Student: Yes

Author 1:
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Topic(s): Diversity

Keywords: diversity, women, ethnic, culture, gender,

Abstract: The University of Diversity
In this talk, the author will ask and answer the following queries:
1. What is Diversity?
Types of diversity: cultural, ethnic, gender, age
2. How diverse is the water industry?
Overview of diversity and employment statistics for the water industry
3. What are the ramifications of implementing diversity action plans?
Affirmative action v. diversity
Job satisfaction and diversity
Diversity and profitability
4. Making strides toward a diverse Water Professionals Corps: suggestions for moving forward.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): *not uploaded*
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Keith Coombs, Louisville Water Company

Priya Dhingra Klocek is a business consultant, executive coach, mentor, and facilitator. Her mission is to help organizations manage and develop their most important assets: People. Her consulting practice focuses diagnosing and improving the fundamental human interactions upon which all successful businesses are built.

Priya has more than 15 years of experience in the corporate sector. Her employers included Ashland Inc, Convergys, Great American Insurance, and Fifth Third Bank. More recently, she served as director of client services for Global Lead Management Consulting, which had clients in the entertainment, utility, healthcare, legal, and financial sectors.

Priya served in various roles and led several global projects during her corporate tenure. She conducted focus groups and 360° feedback sessions, and created and carried out a variety of leadership, cultural, and HR assessments. She was instrumental in the launch of Convergys in India. She was placed in charge of the language and cross-cultural training of employees in both India and the U.S.; the pattern she developed became the company's standard for all new employees worldwide. She also was instrumental in the launching of Convergys in Europe and the Philippines. Priya expanded her role at Convergys into that of a coach and mentor who helped to bridge the communication and cultural gaps all across the organization.

Priya specializes in leadership development, change management, human resources, and diversity & inclusion. She leverages her diverse background and work experiences to help her clients navigate and manage complex business issues at home and abroad. She designs solutions that are strategic and forward thinking, yet practical. Besides consulting, Priya teaches a graduate course on managing diversity at Northern Kentucky University.

Priya is qualified and uses various tools including the Myers-Briggs Type Indicator® (MBTI®), the Intercultural Development Inventory (IDI) and EIDI (Emotional Intelligence and Diversity) in her consulting practice.

She holds a bachelors degree in business from the College of Mount St. Joseph and a master's degree in human resource development from Xavier University. She is a certified coach practitioner and in the Prosci Change Management methodology.

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Submission

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ID:	230
Submitted:	2013-03-05
Last Updated:	2013-04-17
Title:	The Years Between Us - Working Across Generations?
Student:	
Author 1:	First Name: Priya Dhingra Last Name: Klocek Organization: Consultant On The Go LLC Country: United States Email: pklocek@consultantonthegollc.com Telephone: 513-295-5251
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Alternate Contact:	
Topic(s):	
Keywords:	
Abstract:	
Comments:	
Files:	Presentation (1): *not uploaded* Bio (2): 66KB © Release (3): 68KB

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Submission

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ID: 72

Submitted: 2012-12-12

Last Updated: 2012-12-12

Title: Updated Design Criteria and Guidance for Tennessee Collection Systems

Student: No

Author 1:
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Topic(s): Management
Keywords: Collection System, rehabilitation, sustainability, design

Abstract: This project involves review and revision of Tennessee's design criteria for sewers and sewer rehabilitation. Additionally, this project will produce guidance documents specific to Tennessee for operation, maintenance, management and funding of sewer systems. This criteria and guidance would incorporate sustainable and energy efficient practices that significantly reduce I/I and the effect of sewer construction on adjacent streams and ground water. Finally, this project would develop educational opportunities for engineers, operators and utility managers that are based on the criteria and guidance. This project would be managed out of DWR's engineering section with DWR upper management oversight.

To accomplish this, DWR would assemble multiple workgroups (5 - 7 members) that would include representatives from the design community, utilities (large, medium and small) and operators along with representatives of MTAS and TAUD and, of course, Water Resources staff (engineering, EFOs, SRF and FTC). We can work with ACEC, Ky-Tn WEA, TAUD and TML to select workgroup participants. Separate workgroups would be given responsibility for production of elements outlined below:

Phase I - Revise Design Criteria and Develop Guidance Documents
1. Revise Design Criteria - Chapters 2 and 18 (engineering staff, consultants, utility engineers)
a. Compare Chapters 2 and 18 to other criteria and best practices1.
b. Identify gaps, needed improvements
c. Draft revisions to Chapters 2 & 18
d. Workgroup review of draft revisions
e. Proposed revisions to DWR management for review
f. External peer review of draft revisions
g. Finalize revisions and publish on web page

2. Develop a "Best Practices" document for operation and maintenance of collection systems (engineering staff, EFO staff, operators, consultants)
a. Review available literature
b. Identify/survey well-operated systems of various sizes for operation and maintenance practices and procedures
c. Review selected CMOM programs
d. Identify, organize and prioritize best practices for Tennessee utilities
e. Draft a concise and clear document that outlines best practices for Tennessee
f. Workgroup review of document
g. Proposed document to DWR management for review
h. External peer review of document
i. Finalize document and publish on webpage
3. Develop funding policies/strategies (engineering staff, SRF staff, consultants, utility managers)
a. Review existing funding mechanisms
b. Identify best practices for asset management
c. Identify best practices for energy management

d. Identify best practices for public outreach and buy-in for infrastructure investment
e. Incorporate these items into a document that provides information on funding policies/strategies for utility managers and funding priorities for agencies
f. Proposed document to DWR management for review
g. External peer review of document
h. Finalize document and publish on webpage

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 28KB
© Release (3): *not uploaded*

Reviewer(s):
- Martha Segal, Metro Water Services
- Katie Nolan, Gresham, Smith and Partners

Saya Ann Qualls

Ms. Qualls is an associate with Hazen and Sawyer where she provides regulatory, wastewater and stormwater consulting services for various clients throughout Tennessee. Previously she served asthe Chief Engineer for Tennessee's Water Division of Water Resources where she was responsible for coordinating the functions of the permitting, enforcement and municipal facilties sections and served as a senior water policy manager within the Department of Environment and Conservation.

Ms. Qualls worked as the division's the lead municipal permit writer. During this time, she led the development of Tennessee's Watershed Approach to permitting, monitoring and assessment.

Prior to joining state government, she worked for Martin Marietta Energy Systems in Paducah, Kentucky and for GSEE Environmental Consultants in LaVergne, Tennessee. She received a Bachelor of Science degree in chemical engineering from the University of Kentucky and is a registered professional engineer in the State of Tennessee.

Ms. Qualls has been a member of the Water EnvironmentFederation for over 20 years and served as the Kentucky-Tennessee Water Environment Association president in 2007-2008 . She currently serves as the Tennessee delegate to the Water Environment Federation House of Delegates.

Richard Smith, P.E. is a Project Manager with HDR Engineering, Inc. in Lexington, KY. Rich has 25 years of experience in the water/wastewater industry and has managed numerous projects involving wastewater collection, conveyance and treatment. Rich enjoys travel, spectator sports, hiking and jogging in his spare time

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Submission

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ID: 149

Submitted: 2012-12-14

Last Updated: 2012-12-14

Title: Unbridled Spirits - Providing Service to Jim Beam Bottling Plant

Student: No

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Topic(s): Engineering and Construction

Keywords:

Abstract: Unbridled Spirits – Providing Service to Jim Beam Bottling Plant

By Richard Smith, P.E.
HDR Engineering, Inc.

The City of Frankfort Sewer Department took on the challenge of providing sewer service to a landmark facility in Franklin County--the Jim Beam Old Grand Dad bottling facility on Georgetown Road.

As part of a facility expansion, Jim Beam was interested in eliminating their wastewater treatment plant and pumping their wastewater to the City of Frankfort. The project provided an opportunity to add a significant customer to the City's wastewater customer base, and eliminate three existing pumping stations in the process.

Some challenges associated with the project included the following:

• Gravity sewer and force main crossings of Elkhorn Creek, a scenic rock-bottom stream popular for canoeing. For the gravity portion, an inverted siphon was required.
• Installing a new pumping station at the Jim Beam plant site that could be easily

expanded in the future for additional flow.
• Installing approximately 6,400 linear feet (LF) of 8-inch, 10-inch, 12-inch, and 15-inch gravity sewer and approx. 6,800 LF of 12-inch force main.
• Replacing an additional 1,000 LF of 15-inch gravity sewer at the receiving end of the force main that was in poor condition.
• Collecting and pumping high strength wastewater, while providing accurate flow measurement and sampling facilities.
• Meeting a hard deadline by Jim Beam to have the facilities operational.

Horizontal directional drilling (HDD) was used to install the two pipelines (inverted siphon and force main) under Elkhorn Creek through solid rock.

The project was constructed successfully and on schedule. This presentation will review the design considerations, construction and operation of this project.

Comments: Speaker Bio:

Richard Smith, P.E. is a Project Manager with HDR Engineering in Lexington, KY. Rich has 24 years of experience in the design, construction and operation of water and wastewater systems. Rich is a licensed P.E. in Kentucky, Tennessee and Ohio.

Files: Presentation (1): *not uploaded*
Bio (2): *not uploaded*
© Release (3): *not uploaded*

Reviewer(s):
- Keith Coombs, Louisville Water Company
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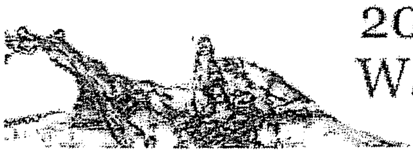
Avoiding the Rehab Rut

Author: Biographies

Robert Cook, P.E. is a Project Manager with CH2M HILL in Knoxville, TN. He has 13 years of experience in the Biosystems and Environmental Engineering field. In his free time, he enjoys playing dad with his one year old son Braxton.

Dwayne Frye, P. E. is a Senior Project Engineer with the Knoxville Utilities Board.He has over 34 years of experience in the field of Environmental Engineering. Dwayne's favorite hobby is grandparenting (and an occasional round of golf).

Sharon Deane is a project engineer at Knoxville Utilities Board. She has worked on numerous sewer replacement and rehabilitation projects in her 6 years at KUB. In her free time, she enjoys training for her first Ironman triathlon and backpacking with her husband.



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Submission

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ID: 151

Submitted: 2012-12-15

Last Updated: 2012-12-15

Title: Avoiding the Rehab Rut

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Topic(s): Collection Systems

Keywords: Sanitary Sewer Overflow, Sewer Rehabilitation, SSO Mitigation,

Abstract: As part of the PACE 10 Program, the Knoxville Utilities Board (KUB) continues to

diligently mitigate sanitary sewer overflows (SSOs) within its sewer collection system. KUB Mini-basins 08B3 and 24B1 were been identified as having multiple reoccurring SSOs along their mainline collector pipe. The basins have a total of 65,000 linear feet of collector pipe and elevated R values of 9.1 and 13.9 percent, respectively.

In the current era of sewer consent decrees and annual rehabilitation programs, it is easy to fall into the "rehab rut" by defaulting to trenchless rehabilitation technologies to mitigate known SSOs. It is true that many times SSOs can be mitigated by reducing the amount of rain inflow and ground water infiltration (I&I) into the sewer system through aggressive trenchless rehabilitation technologies.

All too often, however, rehabilitation efforts alone will not mitigate the SSOs because of underlying system characteristics. Such was the case with Mini-basins 08B3 and 24B1. In evaluating the basin and reviewing the maintenance history, several "red flags" directed the team to conduct a more detailed analysis of each basin. The detailed analysis revealed multiple SSO factors that would not have been addressed with trenchless rehabilitation technologies.

The in-depth analysis included a review of existing sanitary sewer evaluation survey (SSES) data including flow monitoring, maintenance histories, previous rehab efforts, and the results of a hydraulic analysis of the basins' mainline collector pipe. In both mini-basins 08B3 & 24B1, the existing 8-inch mainline sewer proved to be undersized; therefore, requiring the mainline to be upsized to an appropriate diameter slope. Severe sags were identified downstream of the SSOs and determined to also be contributing to the SSOs.

In conclusion, the initial red flags and subsequent detailed analyses helped the project team avoid the "rehab rut" and provided the basis for an engineered solution rather than solely relying on rehabilitation technologies. The engineered solution involved aggressive rehabilitation efforts upstream of the SSOs in conjunction with downstream capacity improvements. The downstream capacity improvements included upsizing the mainline sewer in each basin and selective sewer replacement to correct insufficient slopes and severe sags. The conference presentation will further detail the "red flags" that guided the project team to performing a more detailed analysis and the underlying basin characteristics which required downstream capacity improvements.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 17KB
© Release (3): *not uploaded*

Reviewer(s):
- Charles Poskas, ARCADIS
- John Ricketts, URS Corporation
- Brad Derrick, DLZ

Bo Copeland is a professional engineer in Ohio and holds a B.S. degree in Chemical Engineering from the University of Illinois at Urbana-Champaign. He has over 19 years of water/wastewater experience, including 12 years at a medium-size utility in southwest Ohio and 7 years in consulting. Bo has extensive pump station and force main experience, including planning, hydraulic and surge modeling, design, construction administration, operational support, and condition assessment. He is currently a Senior Principal Engineer with Hazen and Sawyer in the Cincinnati office.

Sean O'Rourke is a professional engineer in Ohio and holds a B.S. degree in Civil Engineering from the University of Cincinnati. He has over 5 years experience in the field of water and wastewater conveyance and treatment. Past projects have included design and rehabilitation of pump stations, force mains, and sewers. His total experience in the field of engineering and construction is over 12 years. He is currently a Principal Engineer with Hazen and Sawyer in the Cincinnati office.

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Submission

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ID: 73
Submitted: 2012-12-12
Last Updated: 2012-12-16
Title: Low Velocities in Force Mains: Impacts and Solutions
Student: No

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Topic(s): Collection Systems
Keywords: low velocity, force main, solids deposition, pumping

Abstract: Introduction:
Low velocity is a common problem experienced in many wastewater force mains (FMs). The primary concerns with operating FMs at low velocities relate to solids deposition and accumulation of gas pockets, both of which can lead to pipe deterioration and increased life cycle costs. As utilities work to better understand their assets, extend asset life, replace aging infrastructure, and reduce costs, they are often encountering the impacts of low FM velocities—whether or not they recognize it. This presentation will explain the issues associated with low FM velocities, including flow behaviors of solids-liquid flow, relevant standards, consequences, contributing factors, and potential solutions. Case studies will be presented to demonstrate some of these considerations.

The goal for FMs is to operate at adequate velocity to achieve a somewhat-turbulent, heterogeneous suspension without solids deposition and to periodically achieve flushing velocity, while balancing low-velocity concerns with the consequences of high-velocity—e.g. excessive headloss, increased operating pressure, exacerbated surge conditions, and higher pumping costs.

Two well-known references, "Ten States Standards"1 and Pumping Station Design2, as well as numerous other standards and publications, recommend that wastewater pumping facilities be designed to maintain a minimum velocity of at least two feet per second (2 fps) to avoid solids deposition in the FM. Many of these sources further recommend that systems periodically achieve flushing velocities of at least 3.5 fps. However, there is some inconsistency between engineers and from project to project in how these guidelines are applied. For example, adjustable-speed pump systems may be designed to achieve 2 fps at minimum pump speed, at average pumping rate, or only at full pump speed; and multi-pump systems may be designed to achieve 3.5 fps at firm capacity or only with all pumps operating.

Low-velocity Complications and Contributing Factors:
As indicated above, if operating velocity is not maintained above the deposition velocity, solids will begin to settle in the FM—potentially resulting in reduced hydraulic capacity and odor concerns. This is the primary concern with low velocities and is often the only reason cited for maintaining adequate velocities. However, another important reason to maintain adequate velocity in FMs is to avoid the accumulation of gas pockets in the FM while minimizing the need for air valves. At low velocities, air and sewer gases can get trapped in high points along the FM or even in long level sections without adequate air valves. This can reduce the pipe's hydraulic capacity, and it often results in accelerated internal corrosion of unlined concrete and metallic piping. By maintaining adequate fluid velocity (dependent upon pipe diameter and slope), air and sewer gases can be scoured from the pipeline. Another complication is that low velocities provide more opportunity for grease and biological slime to build up on the pipe wall. This can reduce the hydraulic capacity of the pipe and can sometimes accelerate internal corrosion of the pipe.

All these issues share some common concerns and manifest themselves in similar and interrelated ways—often compounding each other. Most notably, the following consequences can result from low velocity in a FM:
• Increased friction losses, resulting in increased operating pressure and reduced pumping capacity,
• Increased odor and corrosion within the FM and downstream sewers and MHs,
• Increased O&M costs (e.g. increased electrical use, chemical use, cleaning costs, etc.), and
• Reduced asset life (e.g. due to internal corrosion).

Another consideration when designing or evaluating a FM with low velocity is that some commonly-used headloss equations (esp. Hazen-William's formula and Manning's equation) assume conventional velocities within the "transition zone" on the Moody chart. At low velocities, these equations can be misapplied; thereby leading to design errors or wrong conclusions. Thus, it's important for engineers to understand the impact of velocity on headloss equations and to apply them appropriately.

Unfortunately, it's not always feasible to achieve adequate velocities on a routine basis. Even facilities that are properly designed to regularly achieve 3.5 fps or higher in the FM may actually operate at lower velocities for a number of reasons. Some of the contributors to low FM velocities include:
• Small pump stations with minimum-size (4") FMs,
• Systems with no/low initial contributing flow,
• Excessive wet weather peaking factors,
• Very long FMs—esp. when combined with high static head,
• Manifolded FMs serving multiple pump stations,
• Pump station down-sizing or elimination, and
• Wear of pump components.

Solutions:
When designing new pumping systems, proper hydraulic evaluation is essential to ensure adequate minimum and flushing velocities are achieved. Design considerations may include:
- Alternative alignments and profiles,
- Pipe material, diameter, and wall thickness,
- Pump and impeller selection (including number of duty pumps),
- Constant- vs. adjustable-speed pump operation, and
- Flushing or pig-launching connections.

Pump controls should be designed with FM velocity in mind, and options such as a built-in flushing sequence can be incorporated. In situations with a wide flow range (e.g. initial vs. build-out conditions), parallel FMs should be considered. In some cases (e.g. large pump stations with multiple adjustable-speed pumps), it's appropriate to incorporate screening and grit removal ahead of the pumps to reduce the solids content and lower the deposition velocity.

Each pumping system is unique, thus existing systems found to be experiencing symptoms of low-velocity operation must be thoroughly assessed and understood in order to properly identify the contributors to low velocities, actual impacts, and appropriate solutions. Some operational and maintenance possibilities that can be explored to improve velocities in existing systems include:
- Refurbishing or replacing pumps/pump impellers,
- Changing pump controls or sequencing,
- Regular flushing (either automatic or manual) at >=3.5 fps,
- Chemical "shocking" of the FM to kill biological growth on the pipe wall,
- Changing odor control chemical, and
- Pigging (typically only as a last resort).

Case Studies:
The first case study is the manifolded Bromley and Taylorsport FMs. The velocity in the first section of the 48" Bromley FM is only about 1 fps during low flows; and velocity in this section only exceeds 2 fps during wet weather and never exceeds 4 fps. Velocities in the common portion of the FM are significantly higher. Pump testing at both stations revealed a significantly higher pipe roughness for the low-velocity portion of the FM than in the higher-velocity section (i.e. Hazen-Williams "C factor" of 90 vs. 110)—even though all the pipe is otherwise identical. The low-velocity portion of the FM runs under the Ohio River before climbing uphill to the discharge at the treatment plant. Thus, it's suspected that solids may have settled in the low section of the FM under the river.

A very similar situation was found with the manifolded Burlington and Gunpowder FMs. In that case, the low-velocity (less than 2 fps) section of FM was found to have an equivalent C factor of less than 70 vs. 100 in the common FM. Again, the pipe was all identical. Based on available information, it's suspected that the lower C-factor was due to a combination of effects, including grit deposited within the FM, grease accumulation on the pipe walls, and air-binding in part of the FM.

Another case study is the ~2.5-miles long, 12" Wilder FM, which operates at velocities of only 1.5 to 2.5 fps. Pump testing was conducted at this pump station in 2008 and again in 2012. During the intervening time, the FM roughness increased noticeably. Recent condition assessment revealed little to no deposits attached to the FM pipe wall, and all the air valves have been recently maintained and are believed to be functioning properly. Thus, it's suspected that solids may be settling out in the low portions of this FM, esp. in the section under the river crossing.

Conclusion:
During this presentation, participants will gain a better understanding of why low velocities in wastewater FMs are undesirable, the typical causes of low FM velocities, the resulting problems, and potential solutions to avoid or remedy low velocities. Proper understanding of these issues will help engineers to make better design decisions; allow utility operators to better understand issues associated with O&M of existing FMs, which will help them to make better decisions; and reduce overall life-cycle costs of wastewater

pumping facilities.

1 Recommended Standards for Wastewater Facilities, The Great Lakes—Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 2004, Health Research Inc.: Albany, New York.
2 Pumping Station Design, 3rd ed., Jones, G. M., 2004, Elsevier, Inc.: Burlington, Massachusetts.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 11KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Mark Sneve, Strand Associates
- Brent Tippey, HDR

Patrick Moore is a Senior Principal Engineer in Hazen and Sawyer's Nashville, Tennessee office. He graduated with a B.S. in Environmental Engineering from North Carolina State University. He began his career in Hazen and Sawyer's Boca Raton, Florida office in 1999. His project experience includes a variety of pump stations and transmission systems (both wastewater and reuse), process mechanical piping, site plan development, stormwater management and construction management. He participated in the design of the TP Smith WRF BNR Improvements overseeing the development of the site plan, hydraulic profile, site civil improvements and process mechanical piping. Following the design, he spent three years as a resident project representative for the construction of the TP Smith WRF Improvements.

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Submission

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ID:	148
Submitted:	2012-12-14
Last Updated:	2012-12-14
Title:	Design and Construction of BNR Upgrades at an Operating Secondary Treatment Facility
Student:	No

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Topic(s): Engineering and Construction

Keywords: AWT, BNR, Secondary Treatment Upgrade

Abstract: Introduction

The Thomas P. Smith Water Reclamation Facility (TPSWRF) is a 26.5-mgd (annual average) secondary treatment facility located in Tallahassee, Florida. Effluent from TPSWRF is disposed of by land application on crop sprayfields. The USGS identified the sprayfield as one suspected source of increased nitrogen levels in nearby Wakulla Springs, one of the largest and deepest natural springs in the world. As a result, the Florida Department of Environmental Protection (FDEP) implemented phased nutrient limits over a six year period. In January, 2014, the TPSWRF will be required to meet Advanced Water Treatment (AWT) standards with effluent limits of 3 mg/L total nitrogen (TN) and 2.5 mg/L total phosphorus (TP). Hazen and Sawyer designed upgrades and oversaw construction to meet the final limits as well as interim improvements to allow the plant to meet the phased limits while construction was underway.

Existing Treatment Facilities

The existing treatment process operates as three independent activated sludge treatment trains. Each train utilizes a different aeration method: mechanical surface aerators, jet aeration, and fine bubble aeration. There are six total secondary clarifiers (two per train) of two different sizes, depths and elevations. Disinfection of the secondary effluent takes place in two chlorine contact basins. Solids treatment facilities consist of three dissolved air floatation tanks, three anaerobic digesters (of two different sizes) and dewatering by screw presses followed by thermal drying.

Process Model Calibration

Process sampling was performed for this project to supplement the plant's existing historical data. The combined historical and sampling data were used to create and calibrate a BioWin model of the existing treatment process. Stress testing was also performed on the existing secondary clarifiers, and the results of the stress testing were used to perform CFD modeling of the clarifiers. Hazen and Sawyer then linked the Biowin and CFD models to create an integrated design for the upgrades.

Interim Nitrogen Limits

The schedule of annual average interim limits implemented by FDEP is:

- January, 2008: < 12.0 mg/L TN
- January, 2011: < 9.0 mg/L TN
- January, 2013: < 6.5 mg/L TN
- January, 2014: <3.0 mg/L, < 2.5 mg/L TP

Using the calibrated BioWin model, a number of minor operational changes were implemented that allowed the existing facilities to meet the initial limit (12.0 mg/L TN). The BioWin model also showed that the second limit (9.0 mg/L TN) could be met by converting the jet aeration train to a 2-stage MLE process. Based on this, interim improvements were designed and implemented separate from the overall plant improvements. The interim improvements were designed to be incorporated into the final design.

Proposed Facilities

To meet the final nutrient limits plant-wide improvements were needed including:

- New preliminary and primary treatment facilities including fine screening, grit removal and primary clarification;
- Conversion of all three treatment trains to matching 5-stage BNR basins;
- A common mixed liquor distribution channel to create a "single-sludge" process;
- One new secondary clarifier and rehabilitation of all six existing secondary clarifiers;
- New high level disinfection facilities including deep-bed denitrification filters;
- New solids processing facilities including primary sludge thickening, secondary sludge thickening, anaerobic digestion, centrifuge dewatering and thermal drying.

Design and Construction Challenges
Incorporating AWT upgrades into an existing treatment facility presented a number of challenges and constraints. This presentation will cover

- Site Layout and Hydraulic Profile – the space available for new facilities was limited and in some cases was not ideal. The locations available for the preliminary treatment, primary treatment and disinfection facilities had a significant impact on the hydraulic profile.
- Hydraulic Profile – due to the location of the new preliminary and primary treatment facilities, a pump station was required upstream of the BNR Basins. The new pump station eliminated additional pumping of wastewater downstream of BNR basins.
- Existing Subsurface Infrastructure – the existing facilities were constructed in at least six different phases. The quality of available As-Built drawings varied and sometimes conflicted. Subsurface utility location utilized ground penetrating radar, and over 200 "soft-dig" locates to verify pipes at key points.
- Airport Proximity – the TPSWRF is next to the Tallahassee Regional airport and lies directly in the landing path of one of its two runways. This had to be considered when locating and designing several of the tallest structures. This was also a significant challenge during construction.
- Soil Conditions – the existing subsurface conditions required three of the new proposed facilities be supported on auger-cast minipiles (over 500 total).
- Electrical Supply – the existing electrical system did not meet Class I reliability. In addition, the proposed electrical load represented a 55 percent increase over the existing.

- Maintaining Plant Operations – disruptions to the existing treatment facility were minimized by maintaining access for operations and maintenance staff, scheduling shutdowns for tie-in work for off-peak hours and providing temporary bypass piping.
- Testing and Start-up – testing of new facilities often required temporary provisions so that existing operations were not affected. When ready, new facilities had to be integrated into the existing process which sometimes required interim operation and control protocols.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 10KB
© Release (3): *not uploaded*

Reviewer(s):
- Keith Coombs, Louisville Water Company
- Bart Potts, Louisville Water Company
- Daniel tegene, Louisville Water Company

ROBERT STOLT, PE

Project Manager

Mr. Stolt is an AECOM Project Manager specializing in water and wastewater treatment and transmission systems. He serves as a senior technical advisor to many AECOM projects. Mr. Stolt is also responsible for the design of combined sewer control systems and storm water conveyance systems. He was responsible for the management of municipal wastewater and water projects from inception to construction, overseeing the planning, design and construction of projects by engineering staff. He has served as lead design engineer for several major multimillion dollar sewer improvement projects for MWS, including Washington CSO Facility and Whites Creek WWTP Disinfection Improvements.

He was a graduate of Marquette University in 1973 and has practiced wastewater treatment design nationally from his Nashville office base. An industry exception, he is a 39 year employee of the same firm, albeit corporate name changes. A licensed engineer since 1979 in Tennessee, Kentucky and Alabama. He enjoys getting out of the office to resolve construction related issues.

Scott Phipps is an Associate with Hazen and Sawyer based in the Columbus, Ohio office. He has over 12 years experience in wastewater treatment processes, specifically in advanced nutrient removal and denitrification filters. Mr. Phipps has been the lead process and design engineer for three separate denitrification filter facilities meeting total nitrogen limits of 3 mg/l. Mr. Phipps has a B.S. and M.S. in Environmental Engineering from Virginia Tech.

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Submission

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ID: 164

Submitted: 2012-12-16

Last Updated: 2012-12-16

Title: Achieve Low Total Nitrogen Limits by Implementing Deep Bed Denitrification Filters

Student: No

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Topic(s): Wastewater Plant Operations

Keywords: wastewater, nutrient removal, denitrification filters

Abstract: Historically, wastewater treatment plants have been focused on meeting NPDES effluent requirements for organic and suspended solids to protect the receiving water body. In the last 20 years, regulatory agencies have focused more intently on the impacts of nutrients on the receiving water bodies, specifically eutrophication. More recently, cyanobacteria growth in water bodies is increasing becoming more of a health concern, including in Ohio.

Total phosphorus (TP) has been the major nutrient of concern in Ohio in the past because typically phosphorus is the limiting nutrient in fresh waters (i.e. streams and lakes). Nitrogen is typically the limiting nutrient in coastal regions with total nitrogen (TN) being more stringently regulated, such as the Chesapeake Bay. Because of these concerns, the United States EPA has mandated that individual states provide a basis for establishing both TN and TP effluent requirements in NPDES permits. Currently, Ohio EPA is in the process of finalizing its methodology for evaluating surface water quality and subsequent nutrient permitting where required.

The establishment of stringent TN and TP effluent limits will dramatically increase the capital and operational costs at wastewater treatment plants. Various biological nutrient removal (BNR) activated sludge configurations have the ability to consistently achieve effluent TN concentrations between 6 – 8 mg/l without external carbon addition and effluent TP concentrations between 0.5 – 1.0 mg/l. Typically, additional advanced nutrient removal technologies are required when the NPDES effluent requirements are lower than

the BNR activated sludge TN and TP removal capacity. One advance nutrient removal technology that has been successfully implemented in the United States to meet stringent TN and TP limits is denitrification filters.
Denitrification filters are an advanced TN and TP removal technology that are typically implemented with effluent TN requirements are less than 6 mg/l. This technology is an attached growth filtration process that grows a biofilm on solid media, which is typically sand or synthetic material. The attached biofilm converts oxidized nitrogen (nitrate and nitrite) to nitrogen gas with the addition of an external carbon source. Additionally, denitrification filters remove suspended solids, which reduce particulate organic nitrogen and phosphorus, and consume soluble phosphorus to perform both TN and TP removal. This "add on" TN removal technology to an existing BNR activated sludge biological process provides "two barriers" for TN removal, which is attractive due to seasonal TN removal strategies that can be implemented.
Denitrification filters are divided into three separate categories including biological aerated filters, continuous backwashing filters, and deep bed mono-media denitrification filters. The majority of the installations in the United States are deep bed mono-media denitrification filters, which will be the focus of this presentation. The intent of this presentation is to focus on deep bed denitrification filter technology and will include the following topics of information:

- Critical design criteria for deep bed denitrification filters.
- Differences between the two major manufacturers of the technology.
- Deep bed denitrification filter process operations, including "nitrite lock" occurrence and monitoring.
- Seasonal operational strategies.
- Organic carbon dosing strategies and requirements.
- Case studies where deep bed denitrification filters have been implemented successfully.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 10KB
© Release (3): *not uploaded*

Reviewer(s):
- Mark Sneve, Strand Associates
- Brad Derrick, DLZ
- Michelle Hatcher, CDM Smith

Kay D. Ball
Louisville Water Company

Kay Ball is the Program Manager of Advanced Treatment Technologies for the Louisville Water Company. She has over 27 years of experience at Louisville Water in various positions in engineering and construction, leading the ATT/ Riverbank Filtration program for the last 15 years. She is married to Tim Ball and considers her greatest accomplishments are her five Children and three grandsons.

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Submission

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ID: 85

Submitted: 2012-12-13

Last Updated: 2012-12-13

Title: Louisville Water's Quest for Advanced Treatment Technologies: Riverbank Filtration, What we have learned and where we are headed

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Topic(s): Other

Keywords: Advanced treatment Technology: Riverbank Filtration

Abstract: The quest for an Advanced Treatment Technology (ATT) for Louisville Water began in 1997 with the design of a 15 MGD Riverbank Filtration (RBF) demonstration well at the 60 MGD B.E. Payne water treatment plant in the Prospect area of Jefferson County, Kentucky. The well, although not without public opposition, was a success meeting or exceeding all water quantity and quality expectations. With the completion of this well, LWC proceeded with the next phase of the RBF program; to build an additional 60 MGD supply of RBF water, changing the source supply from surface water to the Ohio River aquifer. The award winning Riverbank Tunnel & Pump Station project was dedicated and started pumping in December 2010.

Concurrently, LWC was evaluating ATT options for the 180 MGD Crescent Hill Water Treatment Plant (CHWTP). After nearly eight years of research and investigations, LWC made the decision to embark on yet another chapter of RBF. The first task at hand will involve determining the capacity needed, evaluating historical pumping trends and population predictions. Based on the capacity, the alignment must be established and subsurface investigations performed to determine the feasibility of tunneling, and perform pumping tests to site the well locations. The BOWW has approved preliminary engineering for 2013-2014 to build upon and validate work already performed in the aquifer that will serve CH.

The scope of this presentation will focus on the RBF Tunnel & Pump Station project two years later, the results and what we have learned. We will also discuss the decision made for RBF at Crescent Hill, the barriers to implementation and what we anticipate the $150 M + project may look like when complete.

Comments: Area of Topic includes WQ, research, program planning, design & barriers to construction

Files: Presentation (1): *not uploaded*
Bio (2): 22KB
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Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

Matt Kusnir bio:

Matt is project engineer with HDR in the area in the areas of potable water treatment, transmission system design and hydraulic modeling. Matt has worked on over 10 projects related to re-engineering of water plants or process optimization over the last 4 years with cumulative construction costs of over $30 million. Matt is a University of Kentucky graduate of civil engineering.

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Submission

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ID: 105

Submitted: 2012-12-14

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Title: Life Support System Design for a Stingray Touch Exhibit

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Topic(s): Water Reuse

Keywords: Stingray, salt water, reuse, ozone, foam fractionator, ORP, brentwood media tower

Abstract: Life Support System Design for a Stingray Touch Exhibit

Matt Kusnir, HDR
Brent Tippey, HDR

The Columbus Zoo and Aquarium (CZA) is home to over 10,000 mammals, birds, reptiles, and fish. With park attendance increasing annually, the CZA continues to be the number one attraction in Central Ohio. Among the annual visitors, over 70,000 families have purchased memberships to the zoo. These members visit the zoo multiple times annually, and in some cases, several times per week. Repeat business and loyal customers have

been earned by providing unique experiences and animals, and continually updating and creating new exhibits. Among the new exhibits in 2012, an interactive touch exhibit, allowing customers to reach into the underwater environment of the stingray.

In October 2011, HDR was retained for the design of the interactive exhibit, including the life support system for the stingrays. The 23,000 gallon saltwater pool was designed for accommodation of 43 cownose and southern stingrays. The equipment selection included:

- Dual rapid sand filters
- Brentwood media tower
- Foam fractionator with ozone feed
- Large storage reservoirs
- Heating and Cooling Elements

The life support system included a split flow process designed for flexible operations and a final degassing phase cleverly disguised as an architectural centerpiece, a large waterfall.

Of particular concern, and the driving factor behind many design decisions, was the human element introduced to the aquatic environment. In a touch exhibit, the typical biological loading rates are of as equal concern as the unpredictability of particulates introduced with visitors' hands. Another challenge was maintaining an acceptable oxidation-reduction potential (ORP) in the environment. While an ozone generator would be utilized as the primary force in maintaining an acceptable ORP, additional biological activity and proper aeration and de-gassing was critical.

This presentation will outline many of the decisions during the design process, including the equipment selection and the ultimate decision to leave out granular activated carbon as a treatment supplement. Additionally, lessons learned from the project will be highlighted, including how some of the unique challenges were ultimately overcome.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 10KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Keith Coombs, Louisville Water Company

ANTHONY W. GRUBBS, PE

SENIOR ENGINEER

Expertise

Dam Engineering – Hydrology and Hydraulics

Education

Bachelor of Science / 2003 / Agricultural and Biosystems Engineering, North Carolina Agricultural and Technical State University

Registration

Professional Engineer / North Carolina
Professional Engineer / Georgia
Professional Engineer / Kentucky
Professional Engineer / Virginia
Professional Engineer / Oklahoma

Years With Firm: 9 **Total Years Experience:** 9

Summary

Mr. Grubbs is the Hydrology and Hydraulics/GIS Team Leader for the Greensboro, NC office. He and his team are vital contributors to projects that include alternatives analyses, inundation studies, Emergency Action Plans (EAPs), and Operation and Maintenance Manuals (O&Ms). In addition, he has served as Project Manager and lead H&H engineer for numerous dam projects throughout North Carolina and the Southeast. As a Project Manager, Mr. Grubbs works closely with clients to ensure their needs and constraints are met. He has managed projects that have included the full range of services from analysis through construction administration. On projects where he serves as the H&H Lead Engineer, Mr. Grubbs' experience and expertise allows him to work closely with the project team and client to select the most appropriate components to ensure a cost effective solution is provided.

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Submission

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ID: 47

Submitted: 2012-12-10

Last Updated: 2012-12-10

Title: Is my dam failing? How to identify problems with your dam before they become emergencies...

Student: No

Author 1:
First Name: Anthony "Tony"
Last Name: Grubbs
Organization: Schnabel Engineering
Country: United States
Email: tgrubbs@schnabel-eng.com
Telephone: 336-274-9456

Contact Author: Author 1

Alternate Contact: awgrubbs@gmail.com

Topic(s): Other

Keywords: Dams, Maintenance, Inspection, Emergency

Abstract: Water authorities and municipalities may rely on a dam and reservoir as a significant portion of their water supply system, the failure of which could have significant operational, economic and safety consequences for owners and operators. This presentation provides an overview of dam failure scenarios designed to raise awareness and provide guidance for dam owners and operators. The presentation will address the early identification of potential problems, action levels, monitoring techniques, remedial alternatives, and emergency response.

The process starts with properly identifying potential problems either by observing changes in normal conditions or recognizing deficiencies. The next step is to determine the appropriate action to be completed which will depend on the magnitude, implications, and urgency of the problem. The situation may simply need to be monitored, may need remediation, or, in a worst case scenario, may require evacuation of those within the downstream inundation area. The presentation will provide a general discussion on possible failure modes, their causes and early-warning signs, with emphasis on providing dam owners and operators the base knowledge and available resources to improve or develop operation & maintenance programs, inspection procedures, and/or emergency action plans specific to their dams.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 60KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

Ken Nichter has been an Emergency Response Pretreatment Inspector with the Louisville Metropolitan Sewer District for the past three years. His background in Hazardous Materials response includes twenty years of emergency response with various agencies, and was an instructor at the University of Louisville's Hazardous Material Program for seven years. In his spare time he can be found clowning around town, literally, with the Kosair Shriners.

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Submission

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ID: 27

Submitted: 2012-11-20

Last Updated: 2012-11-20

Title: Fire Department Considerations for Response to Sewers and Treatment Facilities

Student: No

Author 1:
First Name: Ken
Last Name: Nichter
Organization: Louisville Metropolitan Sewer District
Country: United States
Email: ken.nichter@louisvillemsd.org
Telephone: 502-523-2481

Contact Author: Author 1

Alternate Contact: 502-930-2210

Topic(s): Safety and Security

Keywords: Fire, Rescue, Hazmat

Abstract: The sewer system is usually looked upon as a catch all for materials that are on the ground or in the streets. This catch all attitude has allowed for all types of materials, including hazardous materials, to adversely affect those systems. Unfortunately, when a hazardous materials incident occurs, most sewage system owners, private or municipal, and the local response agencies are not ready for this type of response. This lack of readiness can cause raw untreated sewage to enter our streams, creeks, and rivers. Worse yet, it can cause damage to the collection system.
The purpose of this course is to give responders a better understanding of how a sewage collection system and treatment facility operates, the hazards associated with each, the special rescue needs, and how hazardous materials can affect the sewer system.

Comments: This course has been presented to several departments in and around Louisville, KY. It was designed to open communication between the departments and the POTW. Each has come away with an understanding of the response needs for various incidents.

Files: Presentation (1): *not uploaded*
Bio (2): 10KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Preston Pendley, Hardin County Water District No. 1
- Brent Tippey, HDR

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Submission

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ID: 13

Submitted: 2012-10-29

Last Updated: 2012-10-29

Title: Why Utility Safety Matters

Student: No

Author 1:
First Name: Bob
Last Name: Hathcock
Organization: Alliance Water Resources
Country: United States
Email: bobh@alliancewater.com
Telephone: 636-742-5200

Contact Author: Author 1

Alternate Contact: sneal@alliancewater.com

Topic(s): Safety and Security

Keywords: safety

Abstract: Not your ordinary safety presentations. You will learn practical skills of how to keep you and your co-workers safe from an operator with over 20 years of experience of learning the hard way. The instructor will take you through the how's and why's of utility safety using his experience as a "what not to do guide". When you are finished you will possibly wonder "why is this guy still alive?" but you will also see how to make most situations you will face safer in spite of whether you have large financial backing or even very little management support and you'll laugh plenty on the way. Remember you are the only one who can truly keep you safe.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 232KB
© Release (3): *not uploaded*

Reviewer(s):
- Preston Pendley, Hardin County Water District No. 1
- Brent Tippey, HDR

Greg Welter bio information (WPC2013 Submission ID 70)

"Greg Welter is an environmental engineer with over 30 years experience with O'Brien & Gere Engineers, working out its Washington, DC, office. His presentation today is on lessons learned and reported by water and wastewater utility managers in their responses to natural disasters."

PROFESSIONAL CREDENTIALS

BOB HATHCOCK

System Manager – Public Water Supply District No. 1 & No. 3 of Franklin County, Mo.

Profile

A veteran of more than 18 years of water and wastewater operations and related public works, Mr. Hathcock has successfully operated systems in communities in both Missouri and Kansas. His experience includes operations for technical, maintenance and business systems, and he holds Class "A" certifications in both water and wastewater operations.

Current Responsibilities

As Alliance Water Resources System Manager at Public Water Supply District No. 3 of Franklin County, Mr. Hathcock is responsible for providing water and wastewater services to approximately 3,100 customers over a 200-square-mile area southwest of St. Louis, Mo. His duties include providing oversight and management of 20 package wastewater treatment plants, over 60 lift stations, approximately 26 miles of sewer main, seven deep wells, and 150 miles of distribution main. In addition, he is in charge of billing, customer service, finance and public relations. Mr. Hathcock has served in this position since 1998.

In February 2005, Mr. Hathcock also assumed System Manager responsibilities for Public Water Supply District No. 1 of Franklin County, Mo. With over 1,300 customer connections, this District has three deep wells, two elevated towers and one standpipe, 75 miles of distribution main, seven wastewater treatment facilities, 10 wastewater lift stations and 15 miles of collection lines. He oversees operations and management of this infrastructure, as well as billing, customer service, finance and public relations.

In addition to these missions, Mr. Hathcock serves as the liaison between PWSD No. 1 and No. 3 and the developers who are working to establish water and wastewater service for new communities under construction in Franklin County. His professional expertise is an asset in serving as a member of the steering committee creating Franklin County's new comprehensive plan, which will help guide the development of the county for the next 10 to 15 years.

Under Mr. Hathcock's management, employees at both Districts were recognized with Alliance's Safety Award for their commitment to sustaining zero work-related injuries in 2010 and 2011.

Prior Experience

Prior to joining Alliance, Mr. Hathcock served as the public works director for the City of DeSoto, Kan. He has operated water plants ranging from 0.3 MGD to 12.0 MGD and wastewater plants up to 4.0 MGD. While with the City of DeSoto, he was in charge of water and wastewater, as well as streets, parks and recreation. His experience also includes planning and directing programs to lay lines to already-operating water and wastewater plants.

Areas of Special Expertise

- ☐ Distribution Systems
- ☐ Wastewater Plant Operations
- ☐ Public Works

Certifications/ Registrations/ Memberships

- ☐ Class "A" Water Treatment Certification, Mo.
- ☐ Class "A" Wastewater Treatment Certification, Mo.
- ☐ Class "DS-III" Water Distribution Certification, Mo.
- ☐ Class "A" Collection Systems Operator Certification, MWEA
- ☐ Qualified Trainer
- ☐ OSHA General Industry Safety and Health – 10 hour
- ☐ OSHA Construction Safety and Health – 10 hour
- ☐ Certified Office Professional, MRWA
- ☐ Missouri Rural Water Association
- ☐ Class "IV" Water and Wastewater Operator, KS

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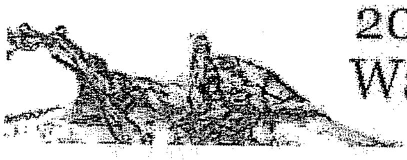

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Submission

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ID: 70

Submitted: 2012-12-12

Last Updated: 2012-12-13

Title: Natural Disaster Response: Lessons Learned for Water and Wastewater Utilities

Student: No

Author 1:
First Name: Gregory
Last Name: Welter
Organization: O'Brien & Gere Engineers
Country: United States
Email: Greg.Welter@obg.com
Telephone: 301-275-3084

Contact Author: Author 1

Alternate Contact: 301-731-1140

Topic(s): Safety and Security

Keywords: "natural disaster" emergency recovery hurricane wildfire earthquake

Abstract: The presentation will be based on a report "Recovery Primer for Natural Disasters", which was commissioned under the Water Infrastructure Security Enhancement (WISE) initiative of the American Society of Civil Engineers (ASCE), the American Water Works Association (AWWA) and the Water Environment Federation (WEF). The project was funded by the Environmental Protection Agency (EPA). It largely draws on the discussions from a workshop of water utility managers who had experienced and responded to natural disasters that had imperiled their facilities and operations. These disasters included hurricanes, river flooding, wildfires, and earthquakes, among others. The workshop discussions were also supplemented by online research and phone conversations with other utility personnel who generously shared their experiences.

The project report is downloadable from the websites of the three sponsoring organizations, including specifically AWWA's at (http://www.awwa.org/files/science/WISE/6.pdf) Included with the report are an appendix of other articles and publications of particular relevance to utilities for natural disaster response, and which are listed at the end of this article.

For purposes of this summary presentation, the case study synopses are grouped according to the following categories:

Preparation for imminent events

(Lessons learned on what was successful or "what we wished we'd done in preparation for onset.")
Disaster incident effects and expedient response
(Remarkable characteristics of some disaster types, and expedient response measures)
Suggested management considerations (Some useful planning considerations)

Comments: Bio information

"Greg Welter is an environmental engineer with over 30 years experience with O'Brien & Gere Engineers, working out its Washington, DC, office. His presentation today is on lessons learned and reported by water and wastewater utility managers in their responses to natural disasters."

Files: Presentation (1): *not uploaded*
Bio (2): 39KB
© Release (3): *not uploaded*

Reviewer(s):
- Preston Pendley, Hardin County Water District No. 1
- Brent Tippey, HDR

Members of the University of Louisville's Engineers without Borders/WEA/AWWA chapter will discuss their efforts to provide drinking water and sanitation to third world countries. The discussion will focus not only on the technical challenges and how they are overcome, but the organizational and logistic challenges as well.

Speakers will be leaders from the chapter and members actively engaged with the group.

Steve retired from LWC in 2004 and continues volunteer work with AWWA, Water for People, Engineers Without Borders, and Sister Cities International.

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Submission

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ID: 232

Submitted: 2013-03-29

Last Updated: 2013-03-29

Title: Water for People in Honduras: Working towards Sustainable P

Student: No

Author 1: First Name: Steve
Last Name: Hobbs
Organization:
Country:
Email: stevehubbs@bellsouth.net
Telephone:

Contact Author: Author 1

Alternate Contact:

Topic(s): Water Service Projects

Keywords:

Abstract: WFP has a multi-tiered approach to improve public health through water supply, sanitation, and hygiene education. This three-pronged approach was evaluated in 2006 in an inspection of 30 Honduran communities that had received assistance in public water supply. The results indicated that those projects driven by emergency were more likely to fail than those following a systematic introduction to sanitation and hygiene. In a second WFP visit to Honduras in 2010, the feasibility of regionalization was considered, along with the cultural issues of metering the public water supply. This work has led to a coordinated effort between Water for People and the U of Missouri Engineers Without Borders to demonstrate a sustainable chlorination system in the community of Santiago (planned for design in April 2013 and implementation in August 2013).

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 17KB
© Release (3): *not uploaded*

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Water Quality in Belize: Using Service Learning to Develop Sustainable Solutions

Erin Wagoner is a Senior Water Resources Engineer at URS Corporation where her areas of expertise include water quality management, stormwater permitting, and green infrastructure planning. As a student at the University of Louisville, she helped form and lead the Engineers Without Borders Chapter. Erin has since traveled to Belize multiple times and worked with the University to develop a course that was added to the curriculum. She currently serves as a practitioner advisor and professional liaison for the local Engineers Without Borders chapter.

Sanitary Sewer Lift Station Evaluation for Smaller Communities
Where is it, What is it, What condition is it in?

Steve Bostic, P.E.[1]
[1] Vice President, Lamar Dunn & Associates, Inc., Knoxville, TN

Abstract

As a part of the assessment of its wastewater collection system, the City of Oak Ridge, Tennessee authorized an assessment of the condition of its wastewater pumping stations in response to an EPA Consent Order to address sanitary sewer overflows. While this is standard operating procedure for EPA in larger municipalities, it presents different challenges for smaller communities such as Oak Ridge including collecting and managing new data, finding resources to process the data, and getting the money to fund the effort. This presentation will provide a synopsis of the assessment process, and discuss lessons learned that will be of interest to others who may be preparing for a similar effort.

The lift station assessment was subsequently used to develop a plan for upgrades and/or replacement for the lift stations that will enhance the efficiency of the pumping facilities, improve on the City's existing maintenance program and, provide a data base of the lift station components. The process of assessing the lift stations, developing a data base and, plan for upgrade or replacement of the stations included development of the data base which would be incorporated into the City's GIS system, developing a "scoring" system to rate the various components of each station and, preparing a schedule for upgrades to the stations. The assessment was performed as a team effort between LDA and City personnel. The data base and scoring system were prepared jointly to reflect the needs of the City as well as provide the needed information for the scoring system.

Assessment components

- Field inspection of each station by engineers (electrical and civil/mechanical)
- Obtaining pump information including type, manufacturer, serial numbers, condition, etc.
- Performing pump drawdown tests where no metering device was available
- Obtaining pump curves for each pump
- Obtaining electrical information for the station including controls, instrumentation, condition, etc.
- Comparison of station capacity with hydraulic model results

The results of this type of assessment can be a tremendous benefit to a small community. Some of those benefits include, but are certainly not limited to:

- Reduced risk of pump station and force main failures causing SSOs
- Reduced energy consumption by improving pump efficiency and better managing the system conditions of the force mains
- Reduced call out time to pump stations for pump and other mechanical or electrical alarms or failures

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ID: 157

Submitted: 2012-12-15

Last Updated: 2012-12-15

Title: Sanitary Sewer Lift Station Evaluation for Smaller Communities - Where is it, What is it, What condition is it in?

Student: No

Author 1:
First Name: Steve
Last Name: Bostic
Organization: LD&A
Country: United States
Email: bostic@ldassoc.com
Telephone: 8655737672

Contact Author: Author 1

Alternate Contact: 8655737672 Jason Brooks

Topic(s): Small Systems

Keywords: Pump Stations, Small Communities, Asset Management, EPA Consent Order, SSO

Abstract: As a part of the assessment of its wastewater collection system, the City of Oak Ridge, Tennessee authorized an assessment of the condition of its wastewater pumping stations in response to an EPA Consent Order to address sanitary sewer overflows. While this is standard operating procedure for EPA in larger municipalities, it presents different challenges for smaller communities such as Oak Ridge including collecting and managing new data, finding resources to process the data, and getting the money to fund the effort. This presentation will provide a synopsis of the assessment process, and discuss lessons learned that will be of interest to others who may be preparing for a similar effort.

The lift station assessment was subsequently used to develop a plan for upgrades and/or replacement for the lift stations that will enhance the efficiency of the pumping facilities, improve on the City's existing maintenance program and, provide a data base of the lift station components. The process of assessing the lift stations, developing a data base and, plan for upgrade or replacement of the stations included development of the data base which would be incorporated into the City's GIS system, developing a "scoring" system to rate the various components of each station and, preparing a schedule for upgrades to the stations. The assessment was performed as a team effort between LDA and City personnel. The data base and scoring system were prepared jointly to reflect the

needs of the City as well as provide the needed information for the scoring system.

Assessment components
• Field inspection of each station by engineers (electrical and civil/mechanical)
• Obtaining pump information including type, manufacturer, serial numbers, condition, etc.
• Performing pump drawdown tests where no metering device was available
• Obtaining pump curves for each pump
• Obtaining electrical information for the station including controls, instrumentation, condition, etc.
• Comparison of station capacity with hydraulic model results

The results of this type of assessment can be a tremendous benefit to a small community. Some of those benefits include, but are certainly not limited to:

• Reduced risk of pump station and force main failures causing SSOs
• Reduced energy consumption by improving pump efficiency and better managing the system conditions of the force mains
• Reduced call out time to pump stations for pump and other mechanical or electrical alarms or failures

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 15KB
© Release (3): *not uploaded*

Reviewer(s):
• Paul Maron, Strand Associates
• Matthew Williamson, Littlejohn Engineering Associates, Inc.

BIOGRAPHIES

Mr. Gary M. Cinder, P.E.
Director of Public Works
City of Oak Ridge, TN

Mr. Cinder is a licensed engineer in the State of Tennessee having received a degree in Civil Engineering from Michigan State University, and is a member of WEF, AWWA, APWA, NSPE, and ASCE. Gary has been in the water and wastewater field for more than 30 years. He has served 21 years as the Public Works Director for Oak Ridge, Tennessee, leading a full service department that includes water treatment and distribution, wastewater collection and treatment, street and right of way maintenance, facility maintenance, fleet maintenance and city engineering functions. In his spare time, Gary enjoys travelling with his fifth wheel RV, riding a recumbent tricycle, and working around in the yard and garden.

Mr. M. Lee Gentry, P.E.
Vice President
Lamar Dunn & Associates, Inc.
Knoxville, TN

Mr. Gentry is a Civil Engineering graduate of Auburn University with more than 40 years experience in civil and water resources engineering. He is a licensed engineer in multiple states, including Tennessee and Kentucky, and is a member of AWWA, AWRA, and ASCE. His background includes the analysis, modeling, planning, and design of a wide range of water resources facilities, including sewer and flood control systems. Lee's outside interests include music and Mustangs.

Ms. Amanda H. Purkey, E.I.
Engineer Intern
Lamar Dunn & Associates, Inc.
Knoxville, TN

Ms. Purkey is a Civil Engineering graduate of the University of Tennessee with seven years of experience in computer modeling of sewers and streams, and civil engineering design for a variety of projects. Amanda served as the hydraulic modeler for the Oak Ridge sewer system capacity assessment. She also coordinated the management of the rainfall and wastewater flow data, and collaborated with the remediation engineers in selecting the most appropriate rehabilitation measures. Outside of the office, Amanda enjoys indoor and outdoor soccer and home improvement projects.

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Submission

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ID: 65
Submitted: 2012-12-12
Last Updated: 2012-12-13
Title: EPA Orders aren't just for "Big Cities"...what to consider when your small community has to address the capacity of your Sewer System
Student: No

Author 1:
First Name: Gary
Last Name: Cinder
Organization: City of Oak Ridge, Tennessee
Country: United States
Email: gcinder@cortn.org
Telephone: (865) 425-1875

Author 2:
First Name: Lee
Last Name: Gentry
Organization: Lamar Dunn & Associates, Inc.
Country: United States
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Telephone: (865) 573-7672

Author 3:
First Name: Amanda
Last Name: Purkey
Organization: Lamar Dunn & Associates, Inc.
Country: United States
Email: apurkey@ldassoc.com
Telephone: (865) 573-7672

Contact Author: Author 2
Alternate Contact: macall52@gmail.com (Lee Gentry's personal email)

Topic(s): Small Systems
Keywords: wastewater, collection, capacity, overflows, EPA order, rehabilitation, remediation,

sanitary sewer, modeling, small communities, funding, flow data, rainfall data, wet weather, inflow and infiltration

Abstract: The City of Oak Ridge, Tennessee prepared an assessment of the hydraulic capacity of its wastewater collection system in response to an EPA Order to address sanitary sewer overflows. While this is standard operating procedure for EPA in larger municipalities, it presents different challenges for smaller communities such as Oak Ridge including collecting and managing new data, finding resources to process the data, and getting the money to fund the effort. Another unique feature in Oak Ridge is the significant presence of the Department of Energy and other federal facilities with their own collection systems discharging to the City's system. This presentation will provide a synopsis of the assessment process, and discuss lessons learned that will be of interest to others who may be preparing for a similar effort.

Oak Ridge has a population of approximately 30 thousand residents. Its sewer system consists of approximately 1.3 million feet of sewer, seven thousand manholes, 35 pump stations, and a 30 MGD wastewater treatment plant. The system assessment consisted of:

- Field surveys to define the pipe and manhole physical network
- Continuous monitoring of rainfall and wastewater flows
- Characterization of dry-weather flows and wet-weather conditions
- Developing a model to simulate the performance under observed and design conditions
- Determining the most practical and economical corrective actions

The system assessment was subsequently used to develop a remediation plan that will enhance the efficiency of the system and eliminate sewer overflows. The complex process of developing the capacity assessment was accompanied by interesting challenges. Those included: obtaining reliable flow and rainfall data under often difficult field conditions; managing large amounts of survey, flow and rainfall data; preparing a hydraulic model that accounted for dry-weather and wet-weather flows, and sewer overflows; and very importantly, the need for close coordination between all members of the assessment team.

Comments:

Files: Presentation (1): 14KB
Bio (2): 12KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Matthew Williamson, Littlejohn Engineering Associates, Inc.

Steve Cavanaugh, Jr., P.E.
President, CEO – Cavanaugh & Associates, P.A.,
A creative visionary with an unshakeable dedication to environmental stewardship and preservation, Steve Cavanaugh's vast engineering experience encompasses a wide range of both domestic and international projects. For more than two decades, Steve has worked with public and private sector clients to develop intelligent environmental solutions to some of today's most challenging issues. In addition to his agricultural expertise on waste-to-energy and biomass facilities, Steve is known among his peers as an expert in the field of Water Loss and Recovery. His dedication to improve and protect the world's water resources through urban and agricultural areas, streams, lakes and reservoirs, water distribution systems, wastewater collection systems and water/wastewater treatment plants has helped him forge lasting relationships across the board with federal, state and municipal clients to effectively solve their water problems.

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Submission

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ID: 71

Submitted: 2012-12-12

Last Updated: 2013-04-17

Title: You Can't Learn to Fly a Plane by Playing a Video Game – Reducing Non Revenue Water Takes Practice!

Student: No

Author 1: First Name: Steve

Last Name: Cavanaugh

Organization: Cavanaugh & Associates, PA

Country: United States

Email: steve.cavanaugh@cavanaughsolutions.com

Telephone: 3367599001

Contact Author: Author 1

Alternate Contact: will.jernigan@cavanaughsolutions.com

Topic(s): Small Systems

Keywords: Water Efficiency, Water Loss, Best Practices, Regulations

Abstract: All too often Utility Managers attend a workshop, gain valuable knowledge, and leave with great intentions on how they will implement practices to reduce Non Revenue Water. The real challenge comes when they return home to their full schedule, and even worse their Utility with "inherited business practices" and "ways we have always done it." The state of Georgia recently embarked upon a wildly successful training model for Small (serving between 3,300 and 10,000 customers) Water Utilities that embraces the KASH model of Knowledge, Application, Skills and Habits for meeting a new state mandate for Water System Auditing and public reporting.

This paper details the eight month training program and chronicles how over 105 systems (93% of those required to comply with the mandate) voluntarily signed up for technical assistance training, stayed active and engaged, and became huge proponents of changing their view of Non Revenue Water and the mandate as "something we should have been doing all along." The reader will understand the program set-up, elements of the training with its purposeful starts and stops, homework, trying and improving, periods of accountability, methods of providing group and individual assistance, and overall effectiveness. The reader will also see the way in which the Georgia Environmental Finance Authority (GEFA) was creative in its utilization of the 2% State revolving Fund (SRF) set aside for training. Many other states are looking at this training as a model for the future.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 73KB
© Release (3): 95KB

Reviewer(s):
- Paul Maron, Strand Associates
- Matthew Williamson, Littlejohn Engineering Associates, Inc.

The KY/TN AWWA Diversity Committee will lead a panel discussion on the topic "How to Pick the Best and the Brightest from a Diverse Pool of Talent". The discussion will focus on how to recruit and evaluate potential employees from a diverse workforce. Panelists will include human resources executives, business leaders, and others from some of the largest employers in the area.

Will Jernigan, P.E.
Director of Water Efficiency – Cavanaugh & Associates, P.A.

Will has been with Cavanaugh for 11 years and is an industry expert in Water Efficiency with a focus on Revenue Recovery. He is active on the national AWWA Water Loss Control Committee in developing tools and standards for the water industry, including the M36 Water Loss Control Manual and the Free Water Audit Software. He has authored several technical papers and articles on the topic and presented at both regional and national conferences. Will has worked with hundreds of water utilities in the Southeast in water auditing and efficiency programming, and is presently managing a statewide water audit training project in Georgia. Will lives in Asheville, North Carolina.

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Submission

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ID: 66

Submitted: 2012-12-12

Last Updated: 2013-04-17

Title: State of the States: Emerging Water Loss Regulations in the U.S.

Student: No

Author 1: First Name: Will
Last Name: Jernigan
Organization: Cavanaugh & Associates, PA
Country: United States
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Telephone: 8282557596

Contact Author: Author 1

Alternate Contact: willjjernigan@gmail.com

Topic(s): Water Resources and Conservation

Keywords: water loss, efficiency, conservation, regulation

Abstract: Water quality has been rigorously regulated in the U.S. for decades. Water quantity, however, has gone largely unregulated in many parts of the U.S. This has historically been perpetuated by the notion that water is plentiful and cheap. But water sources are becoming more difficult and costly to develop. Drought frequency is on the rise. Water system operational costs are on the rise. Customer water rates are on the rise. Environmentalist lawsuits to restrict new withdrawals are on the rise. And economic conditions are in many areas of the U.S. still depressed. Like no other time in the history of regulated water systems, there now exists a perfect storm of environmental, political and economic conditions that drive the management of water loss to center stage.

Recently, the Alliance for Water Efficiency issued a "draft scorecard" for all states across the U.S., providing an inventory and assessment of state-level laws and policies for water efficiency and conservation, which included water loss. The report was based on survey efforts from 2009 and 2011, and indicates that as of 2011 in many states, water loss regulations are misguided if even present at all.

As the regulatory arena is still very much emerging here, the picture already looks different than it did in 2011. This paper explores the notion that we now approach a tipping point in the U.S. for the management and regulation of water losses for our distribution systems. We will examine the implementation of water loss regulations in

those early adopting States, and have a look at which States may be on the cusp.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 46KB
© Release (3): 91KB

Reviewer(s):
- Matthew Williamson, Littlejohn Engineering Associates, Inc.
- Kimberly Martin, CDM Smith

Michael Graves is the water business team leader for Garver in Oklahoma and the firm wide operations specialist. He has over 19 years of experience in water and wastewater planning, design and construction. He is a class A registered water and wastewater operator in the state of Oklahoma and currently serves as the chair for the Oklahoma Department of Environmental Quality Reuse Rulemaking Committee.

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Submission

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ID: 174
Submitted: 2012-12-16
Last Updated: 2012-12-16
Title: Biscuits and Reuse, the State of Reclaimed Water in the South, and One State's Process to Form a Reuse Rulebook
Student: No

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Topic(s): Water Reuse
Keywords: reuse, rule making, indirect potable reuse

Abstract: With an increasing population and the subsequent demand for additional fresh water resources, a new focus on wastewater reuse is emerging—and not just in the arid climates of the deep Southwest. With competing interests for the state's fresh water supply and increasingly stringent wastewater discharge criteria, many utility providers are seeing the millions of gallons discharged by their wastewater treatment facilities as a supplemental water supply and potential revenue stream.

Over the past 10 years, the treatment of wastewater with advanced technology has grown. These advanced technologies deliver superior water quality, and with a growing

number of installations, capital and operational costs more closely resemble those associated with traditional wastewater treatment processes. As source water supplies continue to be restricted and wastewater effluent requirements become more stringent, wastewater reuse will become more paramount. As more utilities in Tennessee and Kentucky evaluate reclaimed water as a viable alternative for disposal and as a replacement for potable irrigation water, a consistent set of reuse regulations would be an advantage for utilities. Similar to Tennessee and Kentucky, Oklahoma utilities have faced increasing pressure to implement reuse as part of their disposal and water supply strategy. To meet this challenge, a group of stakeholders was assembled (representing regulatory, consulting, and municipal interests) to discuss and prepare a set of reclaimed water rules to be adopted by the Oklahoma Legislature.

This presentation discusses the state of reuse in Tennessee, compares it to neighboring states, and presents the process that Oklahoma has recently developed to define and codify a consistent set of reclaimed water regulations for all utilities to use.

Comments: Could be split into two papers if addtional papers are needed

Files: Presentation (1): *not uploaded*
Bio (2): 13KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

SPEAKER DATA FORM

NAME: Kyle Mangum, EIT

TITLE: PROJECT ENGINEER – COLLECTION & DISTRIBUTION

COMPANY: JACOBS ENGINEERING GROUP

Mr. Mangum works as a project engineer for Jacobs' North American Water Infrastructure Group. In this role he provides technical support on collection and distribution systems for public utilities. He is a civil engineering graduate of the University of Tennessee's College of Engineering, an avid reader and wine enthusiast.

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Submission

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ID:	106
Submitted:	2012-12-14
Last Updated:	2012-12-14
Title:	Conserving Water at the Moccasin Bend WWTP
Student:	No

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Topic(s): Water Reuse

Keywords: water conservation, sustainability; reclaimed water

Abstract: The City of Chattanooga's Moccasin Bend Wastewater Treatment Plant (WWTP) currently uses between 8 and 10 million gallons per month of potable water. The water is purchased from the Tennessee American Water Company. The City is undertaking an investigation to improve water conservation at the WWTP in an effort to reduce its use of potable water. Under investigation are:

Using the latest water-conserving fixtures – Today's marketplace contains a myriad of water conserving devices, from low-flow toilets and faucets to efficient spray nozzles. Xeriscaping and other ways to reduce water used for irrigation of landscaping are also being promoted.

Substituting utility or reclaimed water for potable water – Where potable water is used for non-potable purposes, such as for cooling water and chemical preparation, substituting utility or reclaimed water will conserve potable water.

Developing alternate sources of water – Where water does not need to meet potable standards, alternate sources of water supply can be developed. These include underground wells and rainwater harvesting from rooftops, through cisterns or storage tanks.

Installing a reclaimed water production module – Adding a reclaimed water production module to the WWTP will further water conservation both within the plant and for the area surrounding the plant. Reclaimed water could be supplied for landscape irrigation and other non-potable uses at the plant and distributed to the community surrounding the plant.

The City is emphasizing sustainability in developing the water conservation program. Objective ways are used to measure sustainability, such as the Zofnass Rating System, developed by the Zofnass Program for Sustainable Infrastructure at Harvard University. This system is envisioned as a set of benchmarks and guidelines presented as a pass/fail checklist in four categories—resource allocation, climate change, natural world, and quality of life.
Results from the water conservation program will be available to report at the conference.

Comments:

Files: Presentation (1): *not uploaded*
Bio (2): 16KB
© Release (3): *not uploaded*

Reviewer(s):
- Paul Maron, Strand Associates
- Brent Tippey, HDR

This session will focus on leadership development specifically for young professionals. The speaker will cover the various methods to lead organizations and how to identify the type of leader you are.

Dave Vogel is Vice President of Customer Service & Distribution Operations for the Louisville Water Company. He received his undergraduate degree in Mechanical Engineering and his Masters of Business Administration from the University of Maryland.