



Ohio's AWWA Safety Committee

July is "Safe Lifting" Month. Watch your back!

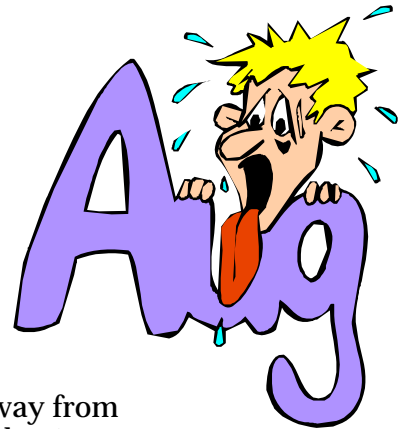


The most prevalent work related injuries tend to be back strains and sprains. Improper lifting may account for many of these injuries. Make sure all employees are aware of safe lifting procedures, and how to stretch and prepare your body before performing lifting tasks. To help keep your back healthy and strong, bend at the knees and keep your back vertical, grip with your hands not your fingers, and let your legs do the lifting. If the load is too heavy, don't play hero – get some help. **Keep yourself and your workers in action – not in traction.**

August - The heat is on!

Take the outdoor temperature into consideration before performing tasks in the hot sun. Dehydration occurs quickly when your body temperature rises. If you feel thirsty, you may have already put your body in danger of heat stress.

- Drink plenty of fluid with high amounts of vitamins and electrolytes, as you body may lose a quart of fluid an hour when sweating in higher temperatures.
- Eat lightly and increase your salt intake if possible while staying away from caffeinated and high sugar drinks, as well as alcohol since they tend to increase dehydration.
- Take breaks to rest and cool off. If possible, work during cooler times of the day.



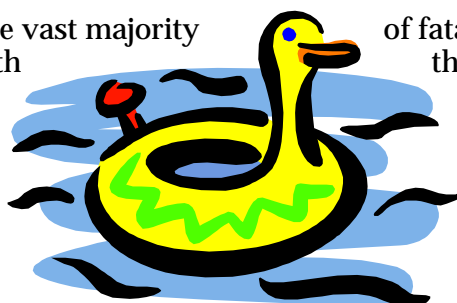
Chill out this summer and PLAY IT COOL!

September - still holds days of summer fun.

Millions of Americans will be fishing, water skiing, and enjoying their boats before they are dry docked for the winter. To have fun and stay safe remember to

- always wear a life jacket,
- don't overload your boat,
- keep a sharp lookout for swimmers, and other watercraft,
- and always carry emergency equipment such as a radio, flashlight, fire extinguisher, whistle or horn, visual distress signal and first aid kit.

According to the US Coast Guard, the vast majority of fatalities (85%) occur on small boats (less than 26 feet in length), with drowning, as well as alcohol being a factor in 27% of all boating fatalities.



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Heat Stress



Working in a hot environment puts stress on the body's cooling system. When heat is combined with other stresses-like hard physical work, loss of fluids, or fatigue-it may lead to heat-related illness, disability, or even death!

The body is always generating heat and passing it to the environment. The harder you work, the more heat your body has to lose. Heat leaves your body in several ways:

- transfer from skin to air.
- evaporation by perspiration.
- exhaling hot air.
- touching a cool object.

Individuals over age-40 need to take extra care when the weather is hot, because our ability to sweat declines as we age. However, heat stress can also affect individuals who are young and fit.

Water is crucial to helping the body adjust to high temperatures. The rate of water intake must equal the increased rate of water loss by perspiration to keep body temperature normal. **When it's hot, drink plenty of water!**

Your body must work even harder to get rid of excess heat when conditions are both hot *and* humid. Unfortunately, perspiration can't evaporate as readily under muggy conditions. The process is easier if the surrounding air is moving. That's why we welcome a cool breeze, or turn on a fan when the air is "sticky".

Sickness and accident rates increase when heavy work is done at temperatures above 30 degrees.

Don't push yourself beyond your limits. It could be harmful to your health, and could put you at increased risk of having an accident.

Heat stroke can kill a person quickly! Once the body uses up all its water and salt, sweating ceases. Temperature can rise quickly. You can assume a person is suffering from heat stroke if their body temperature is over 41 degrees, and any of the following symptoms are present:

- weakness, confusion, distress, strange behavior.
- hot, dry, red skin.
- rapid pulse.
- headache or dizziness.

In later stages heat stroke, a victim may pass out and have convulsions.

Call an ambulance immediately if heat stroke is suspected. The victim's life may be on the line! Until help arrives, move the victim to a cool area and remove excess clothing. Fan and spray them with cool water. Offer sips of water if the victim is conscious.

How can you protect yourself and your coworkers?

The following measures should help prevent the development of heat-related illnesses.

1. Slow down in hot weather. Your body's temperature regulating system faces a much greater workload when temperature and humidity are high.
2. Heed early warnings of heat stress, such as headache, heavy perspiration, high pulse rate, and shallow breathing. Take a break immediately and get to a cooler location. **Watch for heat stress signs among your co-workers.**
3. Dress for hot weather. Lightweight, light-colored clothing reflects heat.
4. **Drink plenty of water.** Don't let yourself "dry out".
5. Increase your salt intake, preferably by adding salt to your food. (Consult your physician if you are on a salt-restricted diet.)
6. Try to get used to warm weather gradually. Take it easy for those first two or three hot days. Your body will have a better chance to adjust if you take it slow.
7. Get out of the heat occasionally. Physical stress increases with time in hot weather. Take breaks in a cool, shady location.
8. Don't try to get a suntan while you are working! It's harder for your internal cooling system to work through sunburned skin. Wear a hat and long-sleeved shirt to prevent burning (which we know can increase the risk of skin cancer.)
9. Train your workforce about heat-induced illnesses.

Walk For The Earth - April 18, 2004

There were 21 participants representing the AWWA Young Professionals comprised of 18 walkers and 3 bikers. The walkers and runners gathered in the Cleveland Metropark Zoo's parking lot adjacent to the Zoo's Compost Facility and the "step off" for the walk and ride took place a few minutes after 9:00 AM. The weather was in the mid-60s making for a very pleasant start and finish to the event. The walk stopped near the Zoo's Compost Facility at which point we were given a brief introduction to the attention required to produce quality compost. The Zoo staff indicated that nothing goes to waste from the Zoo, provided it is a plant based material. They specifically noted that waste from the Zoo's resident carnivores is not used in the compost operation. The walk proceeded westward along Wildlife Way up to Fulton Road, continuing along Fulton Road, and into Brookside Park. After walking through Brookside Park, the group turned back toward the Zoo and along the way, there were several water conservation exhibits for the walkers and bikers to view and ask questions of the attending volunteers. Upon returning to the Zoo, there were many exhibitors on hand to present ways in which everyone can contribute in maintaining a healthy environment.



Service Activities Committee

by: Linda Nelson, Chair

Members from the Customer Services Activities Committee (CSAC) continue to rotate quarterly meetings throughout member cities this year to share information with guests about CSAC activities. Cincinnati Waterworks hosted the April 30th meeting with local arrangements provided by CSAC member Alison Posinski. Members and guests learned more about AWWA and CSAC when Chair Linda Nelson presented an informative slide show about AWWA/membership benefits. The next meeting is scheduled at the City of Cleveland Water Division on July 16th. Wanda Copeland, Sharonda Denson, and Corrine Hunter will handle local arrangements. (See contact numbers listed below for attendance or additional information.)

See You at Conference -- CSAC!

CSAC members are extending their support to the Diversity

Committee at this year's conference as their members present the Goal Setting/Magic LAMP half day workshop. CSAC members agreed to move the round table discussions to a later date. As member Jonisa Portemont said, "Because so many of our utility employees want to attend both Diversity and Customer Service activities, we should schedule workshops at different times whenever possible."

The new full day CSAC workshop titled, "The Cycle of Service" will be offered at Conference this fall. Segments will feature customer service topics targeted for office and field personnel because we are all customer service providers. In addition, Technical Sessions featuring customer service provider options will be offered. A variety of topics are planned including AMR (Automatic Meter Reading), Water Utilities in the Community, Black Out 2003/Customer Service

Impact, along with other pertinent topics to contribute to providing excellent customer service.

For focusing on the service provider, plan to attend the half-day Diversity Workshop, the full day "Cycle of Service" workshop, followed by the service focused technical sessions at the September 14-17 AWWA Ohio Section Conference in Toledo. See you there!

AWWA CSAC Workshops can be made available upon request at a reasonable cost. Workshops, e.g., "Surviving Customer Service", credits attendees with contact hours. To host a session at your facility or join the committee, please contact Linda Nelson at 419-245-1847 or Sharonda Denson at 216-664-2444 or any CSAC member.

The Customer Service Activities Committee welcomes new members!



Proactive Distribution System Management Yields O&M Benefits

By: Terry Engelhardt • Drinking Water Industry Specialist, Hach Company

While much attention and funding have been directed to large water systems and major metropolitan areas as a response to terrorism, smaller municipalities and utilities serving rural areas should be planning their own pre-emptive measures. Many have begun to scrutinize facility security. Another practical strategy is to implement on-line monitoring of treated water distribution systems for practical detection of intentional contamination. Such network monitoring would, at the same time, support best management practices by alerting operators when even accidental contaminations or inherent upsets occur.

Rural water systems are not immune

Water supply is both fragile and powerful, subject to contamination at many points and a potent mechanism for spreading disease once contaminated. This very character of water supply makes it an ideal tool for terrorism. Further, the provision of safe water and treatment of sewage generally enjoyed by this country reflect its prosperity. Compromise of our water and wastewater systems would not only serve to harm but also instill fear, impact all economic, ethnic, social, and racial elements of our society and strike a blow to a symbol of our common well being.

Do you remember where you were the morning of 9-11? We all do. Most of us were glad we weren't near a high-profile target such as New York City or Washington, D.C. Those of us too close to one of the attack sites couldn't get 'home' fast enough, back to less-populated America where it would be 'safe.'

Yet, how much safer are smaller water systems against violation? Terrorism is, by definition, the creation of fear and intimidation. How better to create fear in the society at large than to attack multiple small targets nationwide, randomly, as if

to say, "no where is safe"?

The time is right for distribution system management

The water distribution systems have historically received little attention in terms of water quality concerns. Historically, distribution system operation and maintenance has been a reactive practice: if it breaks, fix it. The closest many utilities come to really managing water quality in the distribution system is periodic flushing of the system. Many systems don't flush at all, and some that do might be surprised at the ineffectiveness of their procedures. (In fact, Improper flushing can create as many problems as it solves.)

However, now is the time to implement proactive distribution system management, starting with a review of public information policies. Not many months ago, water and wastewater utilities encouraged public knowledge of treatment facilities and processes. After all, an informed public best understands the benefits of bond issues calling for a new treatment plant, a new well, a new water distribution line, or wastewater collection or treatment system. Now, with water system security a concern, utilities must exercise more caution in divulging information about the location or nature of critical system components such as mainline valves, vaults, backup generators, pumping stations, lift stations, chemical feed systems, and chemical storage areas.

Rural utilities will want to carefully assess the vulnerability of their distribution systems. Without waiting for funding flow, they can take advantage of supportive information and direction available now from the National Rural Water Association and state rural water associations. State and Federal regulatory and law enforcement agencies also may be able to provide helpful information. Of course, utility

employees know their system and its vulnerabilities better than anyone and should complete a thorough assessment of their own system. Yet, familiarity might cause them to overlook significant security elements. They would be wise to seek assistance from employees of neighboring utilities who can offer a fresh, unbiased look. Don't forget to return the favor. And, ask local law enforcement agencies to participate.

While the majority of State and Federal water quality regulations target water quality as it leaves a treatment plant or well, only a few regulations such as the for distribution system monitoring have been promulgated – coliform testing, the Lead and Copper Rule and the pending Phase II Disinfection/Disinfection By-Products Rule address specific monitoring of the treated water distribution system. Many industry leaders and trade associations, including experts at the National Rural Water Association, envision regulation of distribution system monitoring think this might be the most significant focus of the EPA in coming years.

Multiple O&M benefits of continuous monitoring

The good news is, most utilities are unlikely to have a security problem other than the occasional high school prank of painting school initials on the water tower. Nevertheless, investment in monitoring and physical security will not be wasted; it also can significantly improve a facility's O&M program. With practical water quality monitoring of the distribution system in place, the utility is prepared to detect accidental contaminants, or introduced by an inadvertent cross-connection, a main break, or other system failure.

However, increasing frequency of grab sample monitoring testing probably isn't the answer. In fact, additional manual testing could

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diminish utility efficiency, especially in small systems where an operator often serves as laboratory technician, distribution mechanic, meter reader, bill collector – or even works for other departments such as parks and streets. Detecting intrusion of a unwanted substance requires continuous measurement. Continuous monitoring provides several benefits. Instead, installation of on-line instruments might be less expensive than the labor hours and vehicle costs logged in a limited grab sampling program.

In most cases, truly effective and efficient detection of distribution system contaminants requires continuous water quality monitoring. Consider these benefits:

Detecting possible intrusion of unwanted substances from a terrorist act or backflow from an industrial plant, sprinkler system, cooling towers, pesticide applicators.

Detecting growth of biofilms and byproducts of the metabolic processes that might cause chlorine demand or taste and odor or other aesthetic problems. Keep in mind; the water must be both potable and palatable to gain the public's confidence, trust, and support.

Detecting cross-connections to private water systems, inflow from sewers, or even presence of an illegal water tap.

Minimizing the need for grab sampling for compliance with the Phase II DDBP Rule, the Lead and Copper Rule, and the upcoming Groundwater Rule

Providing another tool for improving public relations and satisfying regulatory reporting requirements. In the event a purposeful or inadvertent water quality problem occurs, data from the continuous monitoring can assist in providing needed information to customers, news media, city council, water system managers, regulatory agencies, or, when appropriate, to law enforcement.

Providing a record of water quality at the point where the water leaves a wholesaler's system and enters the buyer's system and evidence that protects both wholesaler

and purchaser.

Detecting the need for additional chemical feeds for pH adjustment, and rechlorination.

Signaling the need for attention required by post-treatment problems such as accumulation of corrosion products from the distribution piping or post-precipitation of iron or aluminum flocs.

Think that distribution monitoring benefits apply only to surface water-sourced systems? Not so, when considering the factors that can affect ground water quality any time, including structural changes in the well; changes in the aquifer due to geologic forces such as tremors; contamination from underground chemical (gasoline) storage tanks or industrial solvents that have been improperly discarded; contaminated from surface water intrusion due to improper wellhead construction; and finally, precipitation of iron and/or manganese after chlorination.

What should be involved in continuous network monitoring?

Determining what parameters to monitor requires knowledge of the specific system. But there are some basic, general-indicator parameters every water system should consider monitoring continuously in the distribution system. These basic parameters include turbidity, pH, chlorine residual, and conductivity.

Turbidity is, of course, both a measure of potability and the aesthetic quality of water. It is one of the parameters that can alert operators to the accumulation of sediments, growth of biofilms, and the presence of post-precipitation of coagulants.

Measurement of pH is essential; it is perhaps the single-most indicative water quality measurement. Knowledge and control of pH is central to control of corrosion in the distribution system. Most modern pH monitors include a built-in temperature probe, necessary to accurately determine corrosivity.

Operators can apply conductivity measurements to the estimate of total dissolved solids and also water corrosivity. Conductivity might also

change in response to presence of organic and inorganic compounds. And, measurement of chlorine residual not only helps ensure integrity of the disinfection process but also can signal an unexpected disinfectant demand.

Additional monitoring parameters might be appropriate, depending on the chemicals (i.e. fluoride) used in the specific system and physical or chemical characteristics of the water (i.e. alkalinity). In the event any of these measurements exceeds a pre-determined set point, high or low, an automatically triggered sampler would supply the discrete sample that could help laboratory analysts quickly determine the cause of the excursion.

Start baseline testing now

In order to apply continuous distribution system monitoring to detect suspicious water character changes or O&M situations, a utility must first identify normal variation in water quality parameters due to daily changes in flow, flow direction, temperature, or even a change of seasons. The system instituting efficient distribution monitoring will need to accumulate data for several weeks or even months to determine what system variations are routine. Once operators establish a "normal" characterization of system, the utility is equipped to detect changes due to system maintenance needs or the introduction of a hazardous chemical or biological material.

The point to remember: any utility can, and should, be proactive in strengthening its security. Rural areas must not feel immune; waiting for a trickle-down mandate before taking action would be irresponsible. Understanding your distribution system's typical water quality profile, scrutinizing the physical system for opportunities to improve security, reviewing public relations practices, and continuously monitoring key indicator parameters throughout the network all reduce the susceptibility of your system to attack and improve management of the entire system.

Announcements

Obituary – Dick Melick

June 1, 1917 – April 16, 2004

Richard Frank Melick, 85, of the Glenellen Senior Suites and Villas Lakeside, died April 16 at his residence. He was born June 1, 1917 in Columbus, Ohio, a son of Walter and Blanche Matchett Melick. He came to the area in 1999. A graduate of Columbus Central High School, he attended Ohio State University. Dick was a water treatment chemist and educator. He had worked for the City of Columbus water department from 1934 to 1972, where he was head of the water treatment plants and did consulting work in Ohio, West Virginia, and Kentucky, retiring after 38 years. He then became the Executive Director of the Operator Training Committee of Ohio, training operators throughout the state. He retired from that position in 1989 after 17 years. He was a member of the Worthington United Methodist Church where he served in the Stephens Ministry and as an usher, and a member of the Living Bible Class. He attended the Glenellen Church where he was a greeter. He was a member of the Full Gospel Businessmen's Fellowship International, the American Water Works Association, and the Public Employees Retirees Association. The American Water Works Association honored him with the Richard F. Melick Award which is presented to an outstanding Water Works employee annually. He leaves his wife, the former Frances Elizabeth Kohl whom he married May 30, 1941; a daughter, Karen Anne (Shige Umemoto) Melick; two sons, the Reverends James R. (Jane) Melick of Boardman, Ohio and Daniel C. (Linda) Melick of Lewistown, Montana; three grandchildren and three great-grandchildren. A sister Ruth Luttrell and a brother Walter Melick are deceased. Dick will be remembered by his family as a loving husband, father, and grandfather.

Consumers Ohio Water Company Changed Name to Aqua Ohio

The Board of Directors of Philadelphia Suburban Corporation (NYSE: PSC), the parent company of Consumers Ohio Water Company (COWC), announced that in October, 2003, the company will change its name to Aqua Ohio, Inc. to reflect its position as the largest investor-owned water utility based in the U.S. The company will change the names of each of its subsidiaries, now operating in 15 states effective with the company's acquisition of the water and wastewater utility operations of AquaSource, Inc. from DQE. Consumers Ohio Water Company has become Aqua Ohio, Inc.

PSC and COWC has spent months transitioning customers, shareholders and other key constituencies to the new name and logo.

PSC Chairman Nicholas DeBenedictis said that PSC's expansive customer growth (more than 300 percent in the past 10 years) from a regional company in Pennsylvania to a 15-state company weighed heavily in the decision to change the company's name. "We are now the largest U.S.-based investor-owned company, operating in multiple regions of the country and providing water and wastewater service to approximately 2.5 million people. The name Aqua Ohio is perfect for our new expanding footprint in the water utility sector as it clearly states our business focus and demonstrates our position as a large domestic water utility."

COWC customers will not see changes to their existing service. "The phone numbers customers currently call for routine customer service and emergencies, as well as our hours of operations, will remain the same," said Walter J. "Buzz" Pishkur, COWC president. "Water rates will also remain the same. We are simply changing our name to reflect the national scope of our parent corporation," he said. "We will continue to be a local

company with expanding national resources and expertise."

COWC, Ohio's largest investor-owned water utility, serves more than 260,000 people in 44 communities in Ashtabula, Lake, Mahoning, Richland, Stark, Summit and Trumbull Counties.

Jeff Hubbard Retires from City of Columbus

Jeff Hubbard retired March 31, 2004 after 31 years with the City of Columbus



Division of Water. In 1973, after earning his degree in Civil Engineering from OSU, Jeff joined the ranks at the Division of Water. He

served as an Engineer-in-Training on the Survey Crew gaining front line experience while learning infrastructure, policies, and procedures.

By 1977, Jeff had earned his licensure as a Professional Engineer and became the Construction Engineer for the Division. In 1983, Jeff was promoted to the role of Chief Engineer over the Engineering Group, and the Division's main offices were relocated from downtown to the newly constructed site at 910 Dublin Road. Jeff served as the project engineer on the construction of the Utilities Complex building and was able to experience the fruits of his labor first hand.

In 1988, Jeff's responsibilities significantly expanded when he advanced to Assistant Administrator for the Division. He was in a position to directly affect policy, work more directly with union representatives, and assist all sections of the Division on projects and with issues.

In 1999, Jeff took over the reigns of the Division as the Administrator. Congratulations on

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your retirement and the conclusion of a truly meaningful career.

Cheryl Roberto Appointed Director

Columbus Mayor Michael Coleman appointed Cheryl Roberto to be Director of Public Utilities.

Cheryl will serve as the first female director. She has been a part of the Department's leadership team since February 2001, where she served as Deputy



Director. Prior to that position, Cheryl served as a Policy Advisor to the Mayor from 2000-01. Before working for Mayor Coleman, Cheryl served as assistant City Attorney from 1997 to 2000, as Assistant Counsel for the Commonwealth of Pennsylvania from 1996-97, as a private attorney, and as Assistant Attorney General for the State of Ohio from 1987-92. She earned her Bachelor's Degree in political Science from Kent State University, and her Juris Doctorate from the Ohio State University.

AWWA Names New Deputy Executive Director

The American Water Works Association (AWWA) named Paula MacIlwaine, the association's director of Convention, Education and Section Services, as its next deputy executive director.

"Paula MacIlwaine has earned the respect of the water community and AWWA's volunteers over the past 18 years, and we're pleased she has accepted this new leadership role," said Jack Hoffbuhr, AWWA executive director. "AWWA is committed to providing the very best services and products for the water community. Paula will make certain we continue to do that."

With more than 19 years experience in leading staff and volunteers, MacIlwaine is known for promoting extraordinary customer service, communication and teamwork. She has hands-on experience managing programs that provide current technical, regulatory and management, information.

"AWWA is fortunate to have association staff, hundreds of volunteers and thousands of members that are dedicated to public health through the provision of safe drinking water," MacIlwaine said. "I am grateful to those who have mentored me, educated me or guided me throughout the past 18 years. It has been my privilege to further AWWA's mission, and I am excited about the opportunity to support the association in a new capacity."

MacIlwaine is an alumnus of the University of Northern Colorado with a Bachelor's Degree in Psychology. She's been with AWWA since 1986.

She replaces Robert Renner, who will leave AWWA in June to become the executive director the Instrumentation, Systems and Automation Society (ISA) in North Carolina.

Reiss Environmental and Poggemeyer Design Begin Pathogen Testing

Reiss Environmental, Inc. recently began working in collaboration with Poggemeyer Design group, Ins., on the Pathogen Testing Protocol for the City of Bowling Green. This project will develop a protocol for Ohio EPA approval to accredit the City's ongoing water treatment plant expansion. The project will define specific procedures to assess pathogen removal for the plant's key treatment processes spanning four seasons. The pathogen evaluation will allow the City to supplement its granular activated carbon process with low pressure reverse osmosis to remove total organic

carbon and nitrates. The Reiss Environmental, Inc. and Poggemeyer Design Group, Inc. team will also be performing a low pressure reverse osmosis pilot for the City of Bowling Green in 2005.

Reiss Environmental, Inc., headquartered in Winter Park, Florida, remains one of the premier consulting firms specializing in advanced water and wastewater treatment processes and regulatory compliance. Led by President and CEO, C. Robert Reiss, P.E., the firm is recognized for its water and wastewater treatment expertise, which includes membrane processes, pilot testing, and hydraulic modeling. Headquartered in Bowling Green, Poggemeyer Design Group provides clients with a full range of engineering, architecture, and community planning services.

Norman Gadzinski Promoted to Manager of MWH Midwest Region

MWH is pleased to announce that Norman Gadzinski has been promoted to Midwest Region Manager within the America's State and Local Government - East Operation. The Midwest Region includes the Cleveland, Indianapolis and Kansas City, Missouri Business Units. Norm has been with MWH since 1986, and has deep roots within the Midwest region, having earned his BS of Geology from Cleveland State University in 1982.

Norm has served MWH in a variety of roles, with a primary focus on construction, project management, risk mitigation and business development. Norm's experience in general contracting facilitated his vanguard involvement in MWH's design-build initiative as well as his assignment with MWH



Constructors, MWH's in house general construction company. Norm has also been involved in other MWH growth initiative areas including Knowledge Management and third party Construction Management.

AWWA to U.S. House Subcommittee: Aging pipes, security needs, lead service lines addressed

Increased federal investment and higher consumer rates will be required to meet \$250-300 billion in drinking water infrastructure needs during the next three decades, AWWA

Water Utility Council Chairman Howard Neukrug told a U.S. House of Representatives subcommittee yesterday.

Speaking April 28 before the Water Resources and Environment Subcommittee of the Committee on Transportation and Infrastructure, Neukrug said America needs "a new partnership for reinvesting in drinking water infrastructures."

"AWWA remains committed to the principle of full cost recovery through rates," Neukrug said. "However, AWWA does believe that due to concurrent needs for investment in water and wastewater infrastructure, security projects, replacement of treatment plants, new drinking water standards, and demographic changes, many utilities will be very hard pressed to meet their capital needs without some form of federal assistance."

Water utilities are facing several challenges in maintaining and replacing drinking water infrastructure. Neukrug's testimony focused on costs associated with pipe repair, increased regulation, security needs and replacement of lead service lines.

AWWA's complete testimony is available at http://www.awwa.org/Advocacy/govtaff/legislat/leg_test.cfm

Moody Relocates to Houston PA

Moody and Associates, Inc. is pleased to announce the relocation of its Washington, PA regional



office to Houston, PA. The office's success and rapid growth has required an expansion of facilities to serve our clients in southwestern

Pennsylvania, West Virginia, and Ohio.

Concurrent with the office relocation, William Wright, PG, a Senior Geologist specializing in environmental consulting for the mining industry, has joined the Moody staff. The new office will be managed by Barry Sutphin, PG, a Senior Geologist with 35 years of experience in the consulting, mining, and construction industries. Moody has also recently added Christian Breckenridge, PE, a mining engineer with more than ten years of experience. The addition of these professionals will allow for expanded project management and range of services to our mining clients.

The new office is currently supported with a local professional consulting staff of thirteen, and is comprised of Geologists, a Mining Engineer, and environmental Scientists involved in ground water, surface water, and other related environmental projects.

The location for the new office is in Foxpointe Centre's Building One on South Johnson Road near the Meadowlands Race Track Road exit on I-79, north of the City of Washington, PA.

The company was founded in 1891 and has offered continuous mining, environmental and groundwater supply services since incorporation in 1954. Currently, Moody and Associates, Inc. have three offices located in Houston, Meadville, PA and New York. Jeff

Moody is the 4th generation president and owner.

Applegate has Baby Boy

Jacob Nathaniel Applegate was born at 5:08 am on March 21, 2004. Jacob tipped the scales at 8 lbs. 9 oz. and was 20.5 inches long; quite a big bundle considering that he wasn't



due until April 2nd! After a very nice hospital stay and quick recovery from a C-section, mom is back at work. Susan is working part-time right now and trying to enjoy every moment with Jacob. It's amazing how much he changes everyday! Jacob definately rules the house and keeps his mom and dad on their toes!

Ron and Jill Wed

Ron Schwarzwaldler and Jill Taptich exchanged wedding vows on June 5, 2004.



Following a church ceremony, an outside reception was held with family and friends at their Bexley home.

A second reception for AWWA friends and family was held at the Annual AWWA reception in Orlando on June 12th. Congratulation Ron and Jill!

Rick Westerfield Appointed Administrator

Rick Westerfield was appointed Administrator for the Columbus Division of Water. Rick graduated from the University of Cincinnati

with an undergraduate degree in Civil Engineering, furthered by obtaining a master's degree in Sanitary Engineering and doctorate in Public Administration. Rick



worked for a consulting engineer for 8 years designing water and sewer systems, designing water and sewer master plans as well as other engi-

neering studies.

Rick served as plant engineer for the City of Dayton 70 MGD wastewater treatment plant interacting with operations and maintenance personnel to improve various programs and facilitate \$100M in improvements. For the past 15 years, Rick worked as Deputy Director of Operations for the Montgomery County Sanitary Engineering Department overseeing customer service, safety, water supply and distribution, wastewater collection and treatment, maintenance, and environmental laboratory.

Rick likes spending time with his family, and loves sports, fishing, exercising, and gardening.



Rice has Baby Girl

Rachael Margaret Chenoweth Rice was born at 6:15am on May 8, 2004. Rachael was 19 inches long and tipped the scales at 8 lbs. 6 oz. Proud mom, Nancy Rice, serves as Chief of the Division of Drinking and Ground Waters at the NE District Office of OEPA in Twinsburg. Mom, dad, and baby are doing well.



Bob Eagleton Retires

Bob Eagleton retired on February 29th following 34+ years of public service. Bob worked for the City of Cleveland Division of Water for 18 years, serving as Baldwin Water

Plant Manager for 5 years, Civil Engineer and Consulting Engineer for 7 years, and finally as Capital Projects Manager, a position he held for 6 years.

Prior to his Cleveland service, Bob worked 16 years as Assistant Engineer for the Mahoning Valley Sanitary District. Bob is a Youngstown State University engineering graduate, has a Class 4



water license, was listed in the Who's Who of American Science and Industry, served as an officer of the NE Chapter of the Project Management

Institute where he was in charge of Professional Development Day.

Bob served in various AWWA capacities - Section Secretary Treasurer 1998-2000, Local Arrangements Chair for several Cleveland Conferences, and Northeast District Secretary for 7 years.



City of Dayton, Ohio Career Opportunity

WATER TREATMENT PLANT SUPERVISOR II

Requires an OEPA Water Supply Class III Operator's license at time of Application. Must possess and maintain a valid Ohio driver's license; background check required.

Other requirements include meeting one of the following requirements:

- 1) Bachelor's degree in engineering, chemistry, environmental science or related field; and two (2) years of experience in the operation and maintenance of a water treatment or lime reclamation plant; one (1) year of this experience must have been in a supervisory capacity; OR
- 2) Associates degree in above areas with five (5) years experience in same areas above; one (1) year of this experience must have been in a supervisory capacity; OR
- 3) High school diploma or GED and eight (8) years of experience enumerated above with one (1) year of this in a supervisory capacity.

SALARY RANGE: \$44,907.20 TO \$71, 864.00 PER YEAR

Applications must be filed in person from July 12 thru July 22 (Mondays & Tuesdays 8:30 a.m. to 2 p.m. OR Wednesdays & Thursdays 11:00 a.m. to 4:30 p.m.) at the Dayton, Ohio Civil Service Board Office, 371 West Second Street (across from Montgomery County Jail), Dayton, Ohio 45402. Applicants must bring a copy of the Water Supply Class III certification. It is anticipated that the Structured Oral Interview process will take place on either August 16 or August 17, 2004. Applicants seriously interested in this position should reserve these days on their calendar.

An Equal Opportunity Employer
M/F/H

City of Delaware Takes a Proactive Approach on Water Treatment Plant Filters

By: Mark Chiovarelli, P.E., • URS Corporation

The City of Delaware is located in Delaware County in central Ohio. The City continues to experience significant growth, with a current estimated population of 29,760. Additional housing is in the pipeline for the City, which would result in a population increase of about 14,820 persons based on 2.45 persons per household. This “boom” in housing could result in a total population of 44,580 persons. To meet the drinking water demands of this population growth and assure the highest quality product, the Department of Public Utilities decided to make some changes at its existing surface water filtration plant.

The treatment plant has been in operation for over thirty years and is a traditional coagulation/flocculation, filtration water treatment plant (WTP) with chlorination disinfection. Several expansion proj-

source water from the nearby Olentangy River, but also has a supplemental groundwater supply of 2 MGD.

Average monthly water data records taken from January 2001 through February 2003 revealed an average usage for the 26-month period of 3.4 MGD of surface water and 0.685 MGD of groundwater. Average raw and finished water quality data for the sampling period are shown in Table 1.

In early 2001, Delaware Water Treatment Plant personnel began to experience some higher than normal turbidity readings at the filter effluent lines. A review of water quality data at various locations throughout the plant did not disclose any significant changes in the water quality upstream of filtration. After investigating other possible causes, plant personnel concluded that the problem must be filter related. As a result, they

In 2002, Delaware contracted URS Corporation (URS) to investigate options to rehabilitate the existing eight filtration units at the Water Treatment Plant. The primary goals for the project were to; (1) Increase overall filtering capacity by bringing filters #1 & #2 on-line and connecting them to the main filter piping system; (2) Investigate current filtration technology that will work with the filter box configuration (including replacement of filter media and underdrains); and (3) Improve operating efficiencies and quality of operations for filtering/backwashing systems. Additionally, the City desired a filter-to-waste (FTW) system as a retrofit to the existing piping gallery.

EXISTING CONDITIONS

The four oldest filters have approximately 175 square feet (sf) of filtering area and the newer

Table 1 – Average Monthly Plant Water Data

Sample Location ID	Hardness (mg/L as CaCO ₃)	Alkalinity (mg/L as CaCO ₃)	Max. Turbidity* (NTU)
Raw Blended Water	310	179	40
2 nd Stage Settling Effluent	206	65	1.6
Filter Feed	NA	57	0.8
Finished Water	199	51	0.12

*Represents an average of the highest readings observed in any given month.

ects over the facility’s lifetime have enabled it to reach its current capacity of 6 million gallons per day (MGD) through the six operational filters. Additionally, there are two filters that are currently out of service and empty. Although the exact year they were taken offline is unknown, it is believed that they have been unoperational since at least 1975. The WTP derives most of its

decided to increase the frequency of the backwashing cycles to reduce the filter runtimes in an effort to alleviate the turbidity breakthrough that was occurring. Subsequently, the Public Utilities Department issued a Request for Proposals (RFP) to investigate and recommend possible solutions to bring the filters back to the normal performance that was experienced traditionally.

ones provide 196 sf of filtering area. According to the historical design plans, the filter beds were constructed with 25 inches of media (combined anthracite & sand). The media rests upon 16” of support gravel in which a pipe header-lateral underdrain system is located. Each filter has three backwash troughs sized at 15” w x 16” d. A typical pipe header-lateral installation is shown in Figure

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1. Filter inspection reports conducted by the City in January/February 2000 showed that media depths ranged from 20.5" to 24" (for filters 3-8) suggesting media loss during backwash operations.

The filter inspections also showed that the average backwash rate across the six active filters was 16.05 gallons per minute per square foot (gpm/sf) with a minimum of 15 gpm/sf and a maximum of 17.1 gpm/sf. The average backwash rate correlates

SUMMARY OF OPTIONS:

There are several main components of the filtration process that are integral for efficient operation and optimal performance. These include the filter media, the backwash system, the underdrain system, and the control system. Typical recommended media depths range from 24-30 inches suggesting that, at best, the filter depths at the plant are at the lowest end of this range. In addition, backwash troughs would need to be repositioned such that the trough bottom elevation allows for

An alternatives matrix was developed, based on discussions with City of Delaware personnel, identifying several general project options. Rehabilitation of all filters and filter-to-waste capabilities were recommended to achieve lower turbid water and reduce the amount of backwashing that was currently taking place.

Filter Media

There are several general filter media configurations to consider in the design of a filtration system. Some of these are monomedia, dual-media, tri-media, and mixed media. Ten States Standards requires 24" - 30" of media depth and a 50% bed expansion during backwashing. Monomedia filters are constructed of only sand. Dual-media filters traditionally consist of a layer of anthracite above a layer of sand. Tri-media filters, used primarily for advanced treatment facilities, can provide a layer of garnet under the sand layer, which increases the cost but can produce lower turbidities. Mixed media filtration is used in some proprietary designs but is less common. Dual-media filters are the most common for water treatment applications since they allow higher filtration rates and longer filter runs, as compared to monomedia sand filters.

Based on the elevation constraints of the filter boxes, it was recommended that the current media be replaced with 14-18 inches of anthracite above 12 inches of sand. A higher percentage of bed expansion than currently exists necessitated raising the filter troughs a minimum of 10" to a maximum of 16", depending on the selected depth of media. Concrete would need to be added to the top of the gullet walls in filters 1-4 to achieve the higher elevation.

Underdrain Options

The primary purpose of the underdrains is to support the filter media, collect the filtered water, and convey it to the clearwell. The secondary purpose, equally as

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TYPICAL PIPE LATERAL UNDERDRAIN INSTALLATION

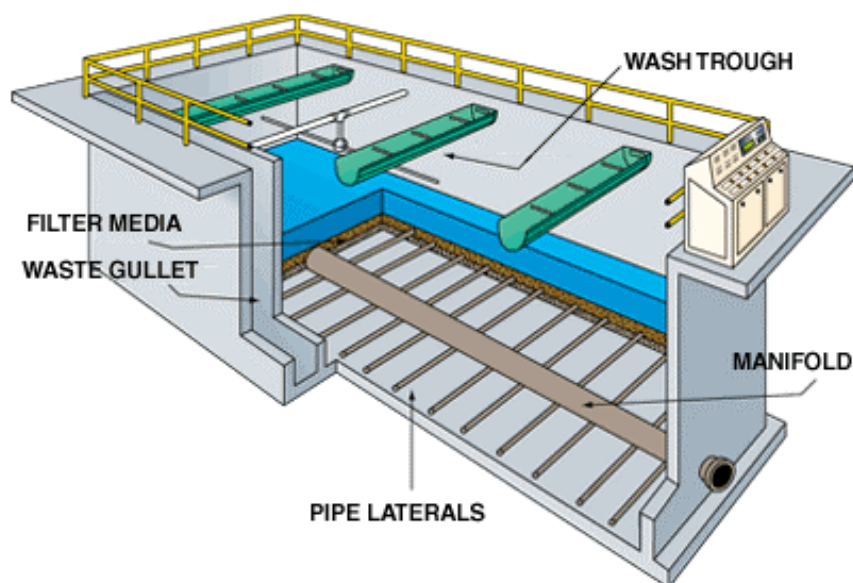


Figure 1 - Typical Pipe Header-Lateral

to an average bed expansion of only 4-inches or an 18% bed expansion. The maximum bed expansion was reported at 5" or 22% bed expansion. By comparison, Ten States Standards recommends the ability to achieve a backwash rate of 20 gpm/sf (or more) to achieve a 50% bed expansion during backwash.

Maximum filtration rates for the facility are currently rated at 4 gpm/sf. At 4 gpm/sf, the facility would have the potential to treat 8.0 MGD with filters #1 & #2 back in service or 1.0 MGD per filter. This equates to a 33% increase in capacity potential.

a 50% bed expansion during backwash operations.

Since the overall dimensions of the filter boxes could not be increased, the filter rehabilitation was summarized into the following key choices:

Provide a new underdrain system or retain the original system;
Retain a water only backwash or modify to an air/water backwash;

Provide new media for filters 1 & 2 only or provide new media for all filters; and

Provide a filter-to-waste system including piping/valves, and pump, if necessary.

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important, is to evenly distribute the backwash water. In order to accommodate the deeper media

replace the use of a gravel support system. The primary benefit of a support cap is that it significantly reduces the overall filter elevation,

gravel becoming clogged. However, due to the small openings in the support cap, care must be exercised to ensure that the feed water to the filters is stable (non-depositing) so that the cap does not clog. Unlike support gravel, the cap cannot easily be cleaned without the use of acid and considerable effort. A minimum stabilization time of 40 minutes is recommended to achieve consistent precipitation of excess calcium carbonate in the pre-filter settling unit. The settling tank at Delaware provides an approximate 50-minute stabilization period, which suggests that the pre-filtered water would be sufficiently stable, provided that adequate CO₂ is added for pH adjustment. However, it was recommended that water samples be taken from the settling basins and Langelier Saturation Index (LSI) be calculated to determine the water stability.

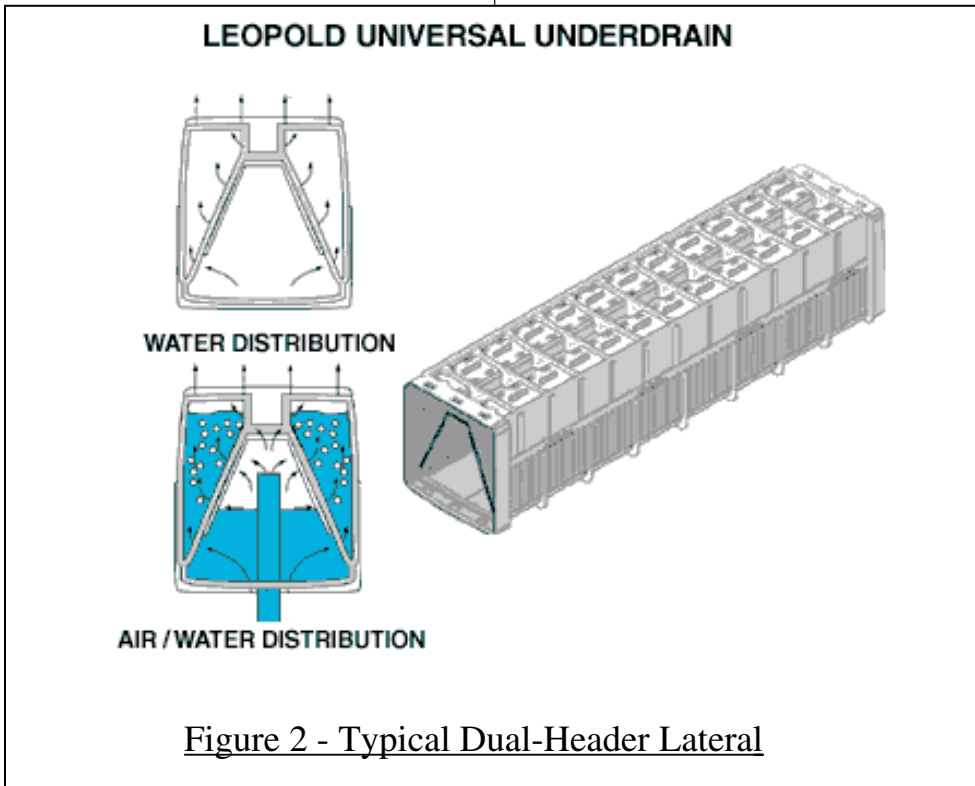


Figure 2 - Typical Dual-Header Lateral

bed in conjunction with allowing an increased bed expansion during backwashing, it was paramount that the underdrain system be as shallow as possible. An alternative to the current gravel support system would need to be investigated. The design engineers recommended low profile dual-lateral underdrain blocks with a media support cap. The nominal height of the underdrain block is 9 inches.

The dual-lateral system employs a feeder lateral and two parallel compensating laterals (Figure 2). Control orifices in the feeder lateral distribute washwater into the compensating laterals. Automatic and complete equalization of pressure is achieved before entering the filter, which creates uniform discharge along the length of the underdrain. The dual-lateral design also provides a distinctive ability to uniformly distribute air.

Most manufactures of the dual-lateral underdrain offer a composite support cap (i.e., IMS) to

allowing for more freeboard area and/or filtering media, as illustrated in Figure 3. Secondly, it eliminates the potential of the

Backwash Options

The traditional method of filter cleaning is to bring water up from the bottom of the filter bed at a rate sufficient to fluidize the media and shear off the floc.

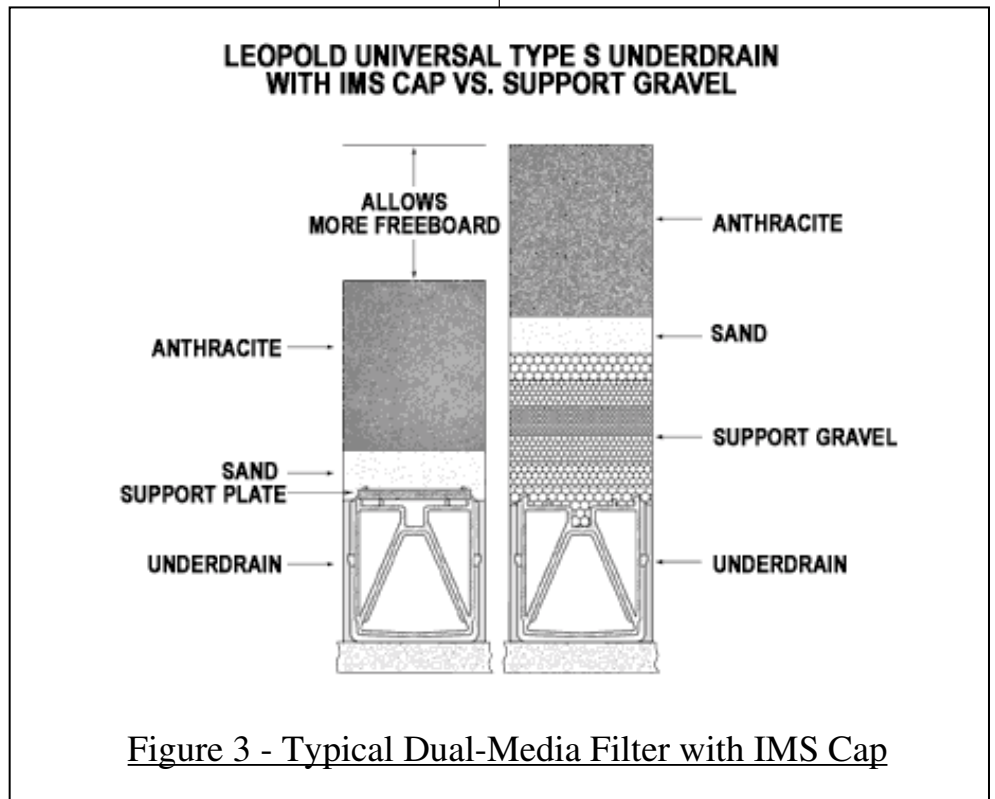


Figure 3 - Typical Dual-Media Filter with IMS Cap

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Employing upward backwash flow alone is not the most effective cleaning mechanism because the shearing action may not be adequate to remove chemical floc. As a result, floc buildup over time

oughly remove mudballs nor clean the entire bed.

The process of utilizing air scouring in place of surface washing has become widely used in Europe and the United States. Air

AIR & WATER WATER ONLY

The hydraulics of the existing washwater conveyance system was analyzed to determine the maximum possible backwash rate for filter #8 (worst case) based on the headlosses of the system. The maximum possible “worst case” backwash rate for filter #8, when the backwash holding tank is at overflow level, was calculated to be 12.5 gpm/sf. Backwash rates for filters 1-7 would therefore be ≥ 12.5 gpm/sf since fewer headlosses exist. If, however, the holding tank overflow level is lowered, the backwash rate can be increased to 16.0 gpm/sf without the filter water level rising above the troughs.

By raising the troughs one foot, the maximum possible backwash rate for filter #8 would increase to 17.4 gpm/sf (using the revised overflow elevation). Therefore, it appeared that the backwash hydraulics would be sufficient without further plant improvements. It is important to note that block-type underdrains with the support cap option have inherently similar headlosses as a pipe header-lateral underdrain with gravel support.

Controls

The six operating filters at the water treatment plant are controlled from three consoles. All filter operations are manually controlled from these consoles. Each valve must be opened or closed from the hand controls on the top

Table 2 – Typical Backwash Sequence

AIR & WATER		WATER ONLY	
Air Only (4 scfm/sf)	2 min	---	---
Air/Water (4 scfm/5 gpm)	3 min	Low Wash (7 gpm/sf)	2 min
Water Ramp to High Wash (5 gpm/sf)	1 min	High Wash (15 gpm/sf)	15 min
High Wash (15 gpm/sf)	5 min	Low Wash (7 gpm/sf)	3 min
105 gal/sf	WATER USAGE		290 gal/sf

can cause “mudball” formation, which will hinder the filter performance. Enhanced versions of water backwash include the addition of a surface wash or air scour.

A surface wash is commonly utilized to alleviate the formation of mudballs. The surface washer is normally turned on for 1 or 2 minutes to scour the media surface at which time the upflow backwash begins. The surface washer remains on to scour the deeper media. Surface washing greatly improves the cleaning process; however, it may not thor-

scouring provides a more vigorous agitation at the media/floc interface. The vigorous agitation results in a greater potential for the media particles to collide, thus “releasing” the floc at a higher rate. An added benefit is that less backwash water is required and cleaning times are reduced, as shown in Table 2. Using the water usage rates listed in the table, the Delaware WTP would have the potential to save 259,000 gallons of water per backwash cycle of all eight filters (32,375 gal/filter).

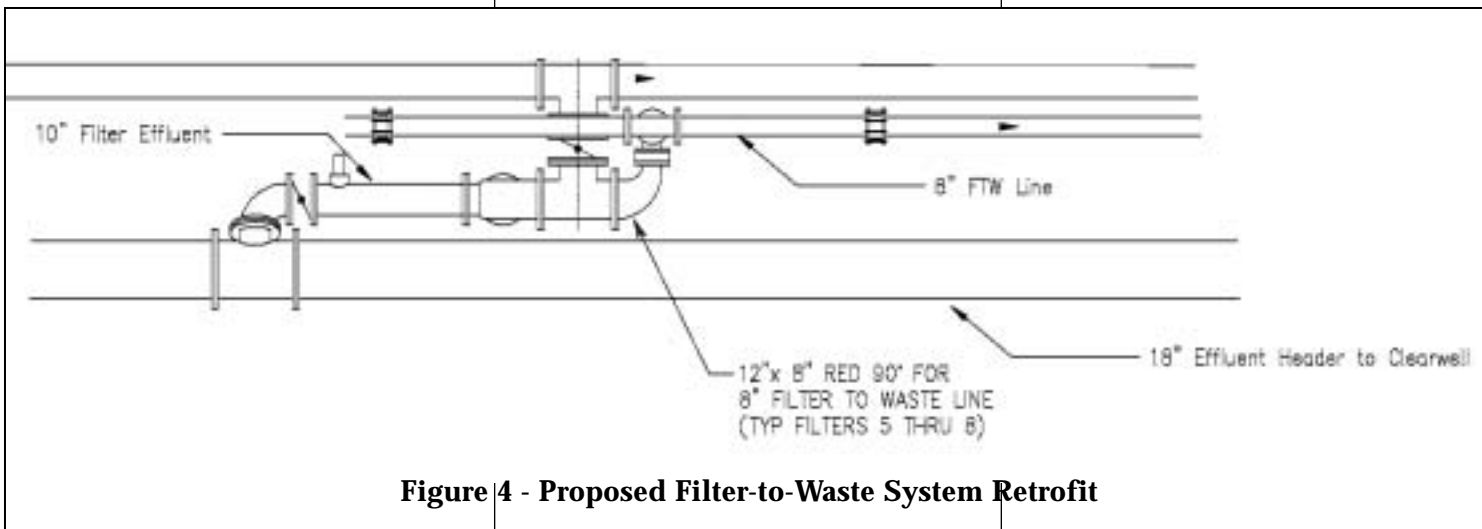


Figure 4 - Proposed Filter-to-Waste System Retrofit

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of the filter console. There is some limited monitoring of the filter console through the existing plant programmable logic controller (PLC) remote input/output (I/O) rack in the filter room.

Filter control improvements were discussed with the City WTP personnel, however, are not discussed in this article.

Filter-to-Waste

The City of Delaware personnel expressed interest in incorporating a filter-to-waste (FTW) system at the water treatment plant. The FTW would allow the plant operator to "waste" a certain quantity of filtered water immediately following a backwash cleaning cycle. This would be accomplished by providing separate piping from the effluent manifold of each filter. The "wastewater" from the FTW line can either be conveyed to a holding area for storage / disposal or sent back to the head of the plant. If the filter piping is at a lower elevation than the holding point, pumping is usually required to achieve wastewater conveyance. However, systems can be designed to transfer the FTW by gravity from each filter to a holding tank or structure for future pumping to the final destination.

During a filter-to-waste run, the filter influent valve is opened, the filtered water effluent (to clearwell) and backwash effluent valves are closed, and the FTW valve is opened. The FTW runtime can be developed from turbidity measurements taken when the filter is placed back in service, essentially stopping once the turbidity has reached effluent criteria, but can range from 5-15 minutes at a filtration rate approximately equal to the filter influent flow. A turbidimeter can be placed on the common FTW line to monitor turbidity for determination of an appropriate runtime.

The filter-to-waste system would have to be tied-in to each filter's effluent piping. The simple configuration (Figure 4) would

involve removing the upper 12" x 10" reducing 90° elbows leading to the main 18" clean water effluent pipe. In lieu of each 90° elbow, a 12" tee and 12" x 8" 90° elbow would be installed to accommodate the FTW header pipe tie-in.

Valves would be installed at each FTW branch to allow flow to the main header. The filter-to-waste header pipe would be retrofitted into the existing pipe gallery to transfer the flow by gravity.

Initially, several sump options were considered for intermediate "holding" before conveyance to the final destination. The options offered varying degrees of construction effort and installation costs. Potential options included; (1) connecting to the washwater holding tank via the 14" washwater header/drain, (2) using filter #1 as the holding basin, (3) using an old closed-off area between filters 4 & 5 as the holding basin, or (4) constructing a new holding basin adjacent to the filter building.

Following supplementary analysis, it was recommended to convey the FTW product to the 14-inch washwater header by gravity via an 8-inch PVC line. In order for this to work hydraulically, the overflow pipe in the holding basin would have to be lowered to 889 ft or less to guarantee the maximum water level, and the maximum filtration rate during FTW must be held at 3 gpm/sf.

SUMMARY and RECOMMENDATIONS:

Based on the preceding variables and discussions with the WTP staff, the following filter repairs were recommended:

Filter Rehab Option – Provide low profile dual-lateral underdrains, new filter media (18" anthracite, 12" sand), new troughs, and water/air backwash system for all eight filters.

Filter-to-Waste (FTW) – Utilize an 8-inch header reducing to a 6-

inch outfall and provide a 12-inch air gap to discharge the FTW to the existing backwash holding sump. Lower the holding tank overflow to a maximum elevation of 889.0 and restrain the filtration rate to 3 gpm/sf during wasting.

Control System – Provide a semi-automatic control system to allow automatic sequencing of filter backwashing after manual initiation (manual operation will also be available). This will be accomplished with the following additional considerations:

Provide a separate power disconnect for each filter console,

Provide an uninterruptible power supply (UPS) for closing the filter effluent valves during power failure.

Filter Box Coating System – Tnemec Type S epoxy system applied to the interior of each filter prior to reconstruction.

The City of Delaware bid the filter rehabilitation project in April 2004 with a base bid for reconstruction of filters 1 and 2 and the filter to waste system. Additionally, several alternates were offered including complete filter rehabilitation of the existing operational units on a filter pair basis.

