

Champlain Water District

1973 – 2013

Celebrating CWD's **40th** Anniversary





Ten Year Excellence in Water Treatment Award

A publicly elected eight-member Board of Water Commissioners, one elected from each of the eight member towns, for a three-year term, governs CWD.

Served System	Present Publicly Elected Water Commissioners	Years of Service
Shelburne	Thomas T. Bessette, <i>Chairman</i>	33
Williston	Donald Phillips, <i>Vice Chairman</i>	12
S. Burlington	William Szymanski	40
Winooski	Peter Crowley	7
Essex	Bernard Lemieux	18
Colchester	Karen Richard	14
Milton	George G. Nelson	25
Jericho Village	Robert M. Shand	24



Champlain Water District 1973 – 2013

Celebrating CWD's **40th** Anniversary

Champlain Water District (CWD) is a regional municipal organization chartered by the Vermont Legislature in 1971 that went on line supplying drinking water to its Chittenden County customer base in April 1973. CWD presently supplies drinking water and fire protection to the following twelve municipal water systems: South Burlington, Shelburne, Williston, Essex Town, Essex Junction, Village of Jericho, Winooski, Milton, Colchester Fire District #1, Colchester Fire District #3, Colchester Town, and the Malletts Bay Water Company. CWD functions as the wholesale supply reservoir for high quality water from which approximately 70,000 people and associated businesses obtain their domestic, commercial, industrial, and fire protection needs. CWD's commitment to providing safe drinking water is exemplified again this year by celebrating its thirteenth consecutive year of continuing to attain the Excellence in Water Treatment Award under the Partnership for Safe Water Program.

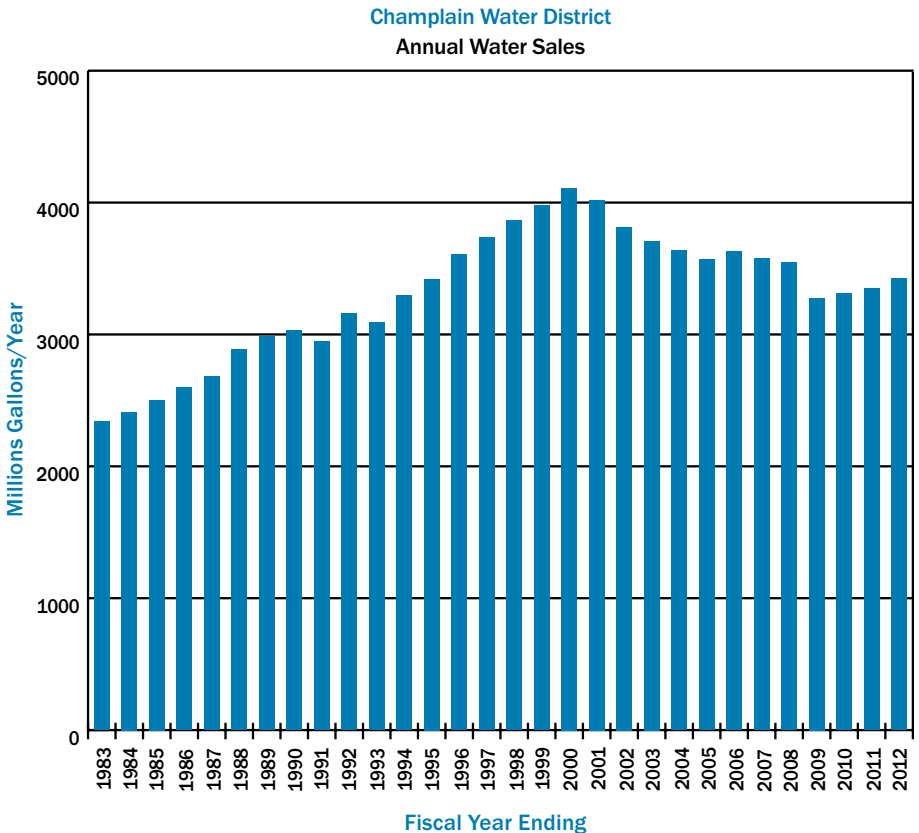
At this time there are only eleven water treatment facilities in the United States that have achieved this level of water treatment optimization, which signifies continuous performance protective of public health. CWD has maintained this level of excellence through successful submission of a comprehensive annual report that is reviewed for water quality test results, as well as demonstration and documentation of the operational tenacity toward continued quality improvement as required by the Partnership for Safe Water Program. CWD was the first water supplier in the U.S. to attain this level of excellence in May of 1999. The Partnership for Safe Water membership collectively serves a combined population of 85 million people, or nearly two-thirds of the U.S. citizens served by surface water.

CWD's primary function is to provide potable water and fire protection service for residential, commercial and industrial users in each municipal water system within the county service area. CWD is made up of two separate divisions, Wholesale and Retail. CWD maintains an annual operating and capital budget for all duties and responsibilities related to its wholesale supply division obligations. CWD also maintains a separate annual enterprise fund budget for all of the retail services it may provide to specific water systems within the

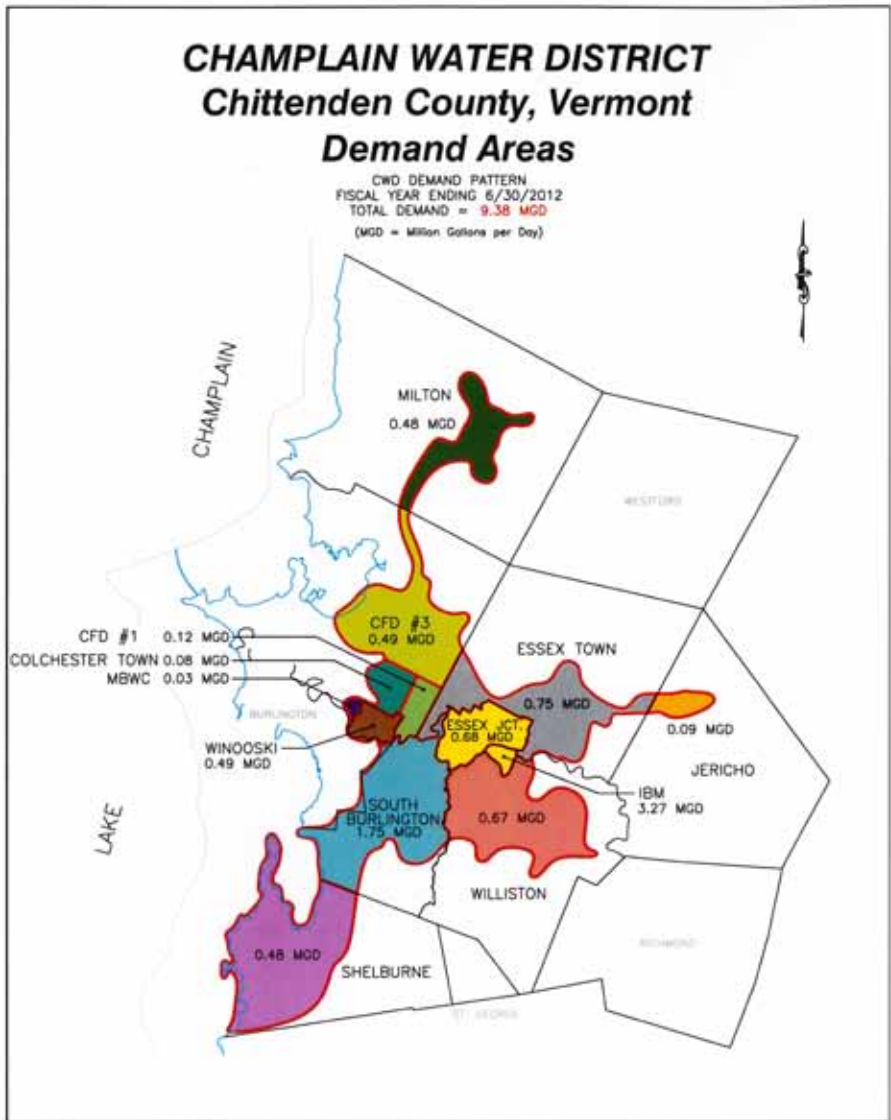
served member towns. The retail department is a separate accounting entity from the wholesale supply division, and is presently involved with operational and maintenance related responsibilities in South Burlington, Colchester Town, Malletts Bay Water Company, Colchester Fire District #1, and the Village of Jericho. Both wholesale and retail activities are combined for financial reporting for annual audit purposes although wholesale budget to actuals, and retail budget to actuals are reported separately.

How Did We Get Here

During the 1960’s most of the communities in Chittenden County were experiencing exceptional economic growth. This, in turn, was generating a greater need for adequate planning and engineering to provide additional water related services and facilities. Some community officials were concerned about the adequacy of their municipal water systems; and it was from this concern that the concept of a regional water supply developed and grew. These officials began to hold meetings to discuss their water needs for the future in the early



part of 1966. Selectmen and councilmen of all cities and towns in the Greater Burlington area were invited to attend these meetings. It was at this time they received the support from both State and Federal agencies. The Federal Department of Housing and Urban Development (HUD) had expressed an interest in helping to finance public water supply improvements on a regional basis rather than on a community by community basis. It was realized that, by working together, the benefits would be greater than if the communities acted individually.



Demand Map



Essex North Tank (prior to recoating in 2012)



Essex North Tank (after recoating summer 2012)

By May 1969, five towns had joined together to form the Champlain Water District and subsequently applied to HUD for a \$2.5 million grant which was approved in late 1970. In April of 1973, the District's water treatment facility went on line serving its County customer base. The CWD treatment and supply system consists of the following three major components: (1) lake water intake and pump station, (2) the water treatment facility and plant storage, and (3) the finished water

pumping and transmission network of CWD owned lines and storage facilities for both a low pressure and high pressure area. The District's water transmission and storage network was interconnected into the existing water storage and distribution systems of its served communities.

At present CWD's average water demand is 9.38 million gallons per day (mgd), with peak demands of 13.53 mgd during the summer months. The District's fiscal year 2012-2012 uniform wholesale water rate is \$1.782 per 1000 gallons, which calculates to \$126.52 per year (\$10.54/month) for the average family using 71,000 gallons per year, or 195 gallons per day. From this base wholesale rate each of the twelve served municipal water systems establish their own retail markup rate. Utilizing CWD's budgeting and capital



Assembling concrete anchors onto 42" diameter south intake at staging area in Shelburne Bay Park (2007)

Photo by: Shirley Chevalier Fli-Rite.com

planning projections we expect this wholesale rate to be stable with the exception of inflationary increases over the next several years.

Overview of CWD

- Chartered by the Vermont Legislature in 1971 as a Municipal Consolidated Regional Water Supply District (Facility “online” April 1973).
- Staff of 24 Wholesale & 7 Retail Employees
- CWD Source – Dual intakes 2500 feet off shore at a depth of 75 feet in the cold, deep, underwater canyon within Lake Champlain’s Shelburne Bay.
- **Water Treatment:**
 - Preoxidation/Zebra Mussel treatment
 - Primary Disinfection to inactivate pathogens
 - Coagulation/Flocculation with adsorption clarification as pre-filtration
 - Deep Bed Multimedia Filtration for particle and natural organic material removal
 - Fluoridation for Vermont Department of Health Dental Division recommendations
 - pH adjustment to consistent, neutral pH
 - Secondary disinfection to ensure safe, effective residual throughout the distribution system, and to reduce formation of free chlorine’s carcinogenic disinfection by-products
 - Corrosion control treatment to reduce lead and copper leaching from home plumbing
- Reliable Capacity: 20 MGD
- 2011-2012 Average: 9.38 MGD
- Peak Day: 13.53 MGD
- **Water Storage Capacity:** 14.75 MG in 19 separate storage tanks
- **Operating Budget FY 2012–13:**
 - Wholesale: \$6,002,115 / Retail: \$855,425
- **Population Served** – ± 70,000



Relocation of Williston North meter vault as part of construction of the High Service Cross-tie Project

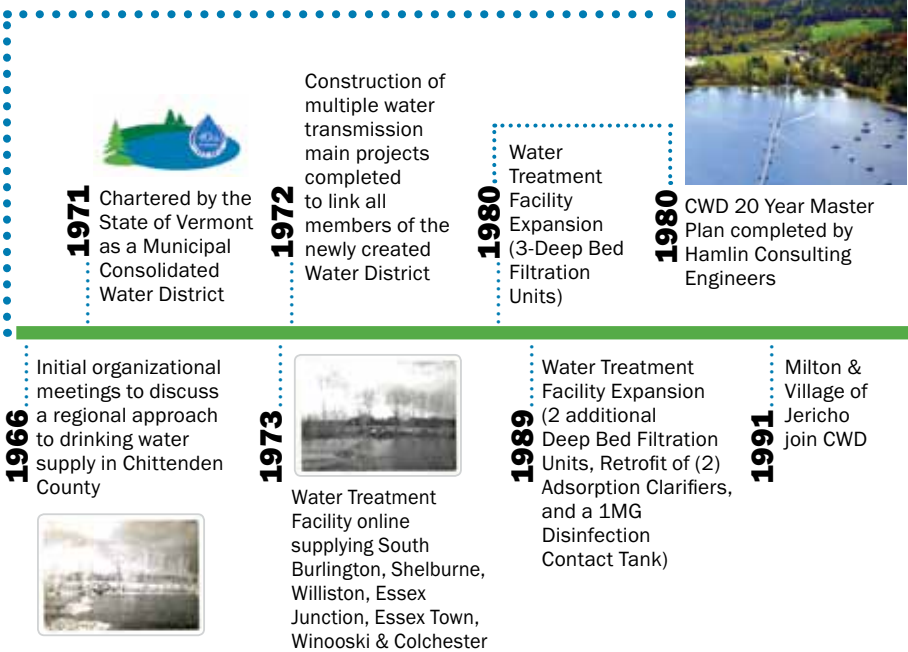
Where Your Water Comes From

The Champlain Water District has dual deep water lake source intakes located at a depth of 75 feet, approximately a half mile off shore, within the Northern channel of Shelburne Bay as it passes into Lake Champlain. CWD pumping and treatment facilities are located at 403 Queen City Park Road in South Burlington. Three water transmission mains from the treatment plant, supply high quality drinking water to user municipalities and nineteen water storage tanks, totaling 14.75 million gallons, strategically located within the CWD county service area. Six booster pumping stations are operated to provide adequate pressure and supply to the higher elevations of the twelve served municipal water systems.

Water Quality & Commitment to Public Health

Drinking water in this country is regulated by the United States Environmental Protection Agency (USEPA) under the Safe Drinking Water Act of 1974 and its multiple subsequent Amendments. CWD has been very aggressive in its effort to supply water which continually exceeds all the Federal and State water quality requirements, and to stay years ahead of the minimum Federal public health mandates. The District approach to treatment is to meet the “intent” rather than

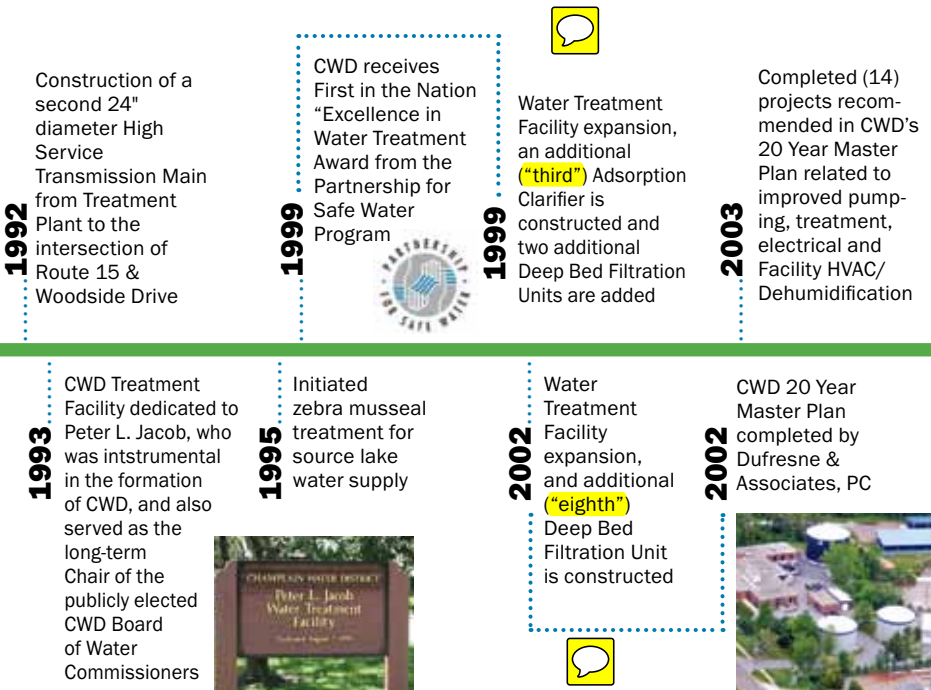
CWD TIMELINE



the “letter” of the law, on regulatory issues. Through this approach the District firmly believes public health protection is optimized. Planning for the future with system improvements, the Peter L. Jacob Water Treatment Facility continues to exceed all safe drinking water regulatory requirements and is well advanced in monitoring, testing and effectively removing drinking water pathogens such as Giardia and Cryptosporidium. The District will continue to be proactive and remain in the forefront of water quality and public health issues.

Champlain Water District practices the “Multiple Barrier Approach” in the treatment of drinking water, as advocated by the American Water Works Association (AWWA). The source protection is the first barrier of this concept, and an effective Watershed Source Protection Plan is the key to this broad approach to water treatment.

The intent of the initial plan for the CWD Shelburne Bay source was to develop the scope and path for a broad ranging, long term continous Watershed Protection Program for Source Protection. This project is ongoing and continually monitored. The objective of the plan is to maintain or improve the quality of Champlain Water District’s Shelburne Bay lake water supply to minimize the cost of future operation upgrades to our treatment facilities. By instituting a continuous program of Watershed Management, including identifying



and tracking of Potential Sources of Contamination (PSOC's) with ongoing source characterization building partnerships with public and private organizations, providing education and training to the watershed population, and developing and implementing action plans, these goals will be met.

The second barrier is optimization of the water filtration processes using the National Partnership for Safe Water Protocol. CWD was one of the first water suppliers to join the National Partnership for Safe Water. The Partnership for Safe Water is a volunteer program to improve the performance of treatment plants across the country, and is endorsed by the USEPA. Because of its extensive previous experience in optimizing filtration performance, CWD was one of eight utilities in the country selected to review and field test the procedures for this program, and resulted



Water Tasting Award

in CWD's First in the Nation Excellence in Water Treatment Award.

The third barrier is optimization of CWD's water disinfection processes at the source, in which the first phase was completed in 1991 with construction of additional plant water storage to give the free chlorine primary disinfectant additional "contact" time to

CWD TIMELINE

2005

Completed construction of primary and secondary electrical supply reliability upgrades for treatment facility and lake water source pumping station.

2009

10 Year Anniversary Award for maintaining Partnership for Safe Water "Excellence in Water Treatment" criteria for public health protection



2013

CWD celebrates 40th anniversary of providing safe drinking water and fire protection to (12) served municipal water systems in Chittenden County

2004

5 Year Anniversary Award for maintaining Partnership for Safe Water "Excellence in Water Treatment" criteria for public health protection

2008

Construction completed on a second lake intake pipe for overall reliability and redundancy



2011

Began phased installation of two (2) miles of High Service "Cross-tie" transmission piping for overall reliability purposes



inactivate pathogens, and was further optimized in 2006 utilizing monochloramine as the secondary disinfectant to reduce the health risks associated with free chlorine disinfection by-products as the water travels throughout Chittenden County to customer taps.

The final barrier is to apply best management practices for ensuring water quality within the distribution, transmission and storage facilities to maintain the integrity of the water to the consumer tap. The Champlain Water District is a Charter Member of the new “Distribution System Optimization Program” under the Partnership for Safe Water program, and commits to optimizing its practices on this final phase of water treatment.

On-Going Activities

As part of CWD’s normal planning process, a 20 Year Master Plan was completed in September 2002 as reported by Dufresne & Associates. Over the past 10 years the District has proactively completed nearly all of the Plan’s recommendations as we steadily continue our efforts toward full completion of this Twenty-Year Master Plan. An overview of these major capital investments completed in the last year are as follows:

- Continued to manage a long term asset management contract with Utility Services Company Inc. for on-going inspection, maintenance, and rehabilitation of (14) of CWD’s welded steel water storage tanks
- Completed the interior and exterior rehabilitation and recoating of two water storage tanks in Essex and South Burlington
- Completed design and construction for Phase I of CWD’s High Service Water Transmission Cross Tie Project thus adding future reliability and redundancy to CWD’s County water supply piping network
- Completed design and permitting to prepare to bid Phase II of CWD’s High Service Water Transmission Cross Tie Project and completed construction of the two mile 24” pipeline for supply reliability and redundancy



Rehab of Williston East Pump Station (2012)

- Completed the rehabilitation and rebuilding of a metering vault within the County served water system
- Rebuilt one deep bed multimedia filter at the water treatment facility
- Completed feasibility and design for a redundant clarifier wash air blower system at the treatment plant site
- Continued CWD's replacement program for supervisory control and data acquisition units that bring in critical county wide information to the treatment control facility, as well as upgrading specific process control technology for redundancy and reliability reasons
- Continued investment with Efficiency Vermont to optimize daily energy usage and reduce overall annual electrical costs
- Continued to serve as the Vermont Training Center for the New England Water Works Association hosting seven separate training sessions in fiscal year 2011-2012
- Coordinated the purchase and installation of a water quality management database system
- Continued a leadership role in the Vermont WARN program, a statewide water and wastewater mutual aid system
- Continued the documentation process toward executing infrastructure ownership Memoranda of Understanding with all served municipal water systems
- Planning for bonding for a future twin water tank at the water treatment site



Aerial view of the CWD Treatment Facility

In Summary

As CWD completed its 20 Year Master Plan in September 2002 by Dufresne & Associates, CWD began to see unprecedented decreases in IBM industrial water usage, and also the beginning of a trend in declining commercial water usage county-wide due to the on-going recession. Since fiscal year 2000 CWD annual average water sales have declined from 11.26 million gallons per day (mgd) to 9.35 mgd in fiscal year ending June 2012, with the IBM facility in Essex Junction dropping from 4.78 mgd to 3.27 over this same time period, or 79% of the water usage total decline.

For the planning period 2002-2021, the Master Plan dictated three phases of construction to meet the growing water needs of the county titled as: Phase I (\$600,000); Phase 2A (\$3,420,000); and Phase 2B (\$2,540,000); for a total estimated 20 year investment of \$6,560,000. The Dufresne & Associates Master Plan Report also identified Phase 3 and Phase 4 projects that were beyond the 20 year master planning period assuming growth in water usage in Chittenden County were to continue at past historical trends. CWD has completed \$5,377,277 in infrastructure investments, or 82% of the master plan's recommendations. Given the drop in water usage within CWD's county wide service area, the District is now solely investing in reliability and redundancy capital projects, since there are no CWD capital investments being driven by water sales growth. At this time CWD has a reliable plant capacity of 20 mgd. As previously discussed, CWD is presently averaging 9.38 mgd, with peak day demands at 13.53 mgd, or a typical peaking factor of approximately 1.5x. Therefore, CWD has very adequate reserve capacity based on present peak day demands, and is certainly poised to supply the future needs



Tug boat towing south intake into position to sink in 80' of water depth (2007)



Fusion welding of high density polyethylene (HDPE) intake pipe (2007)

of its Chittenden County customer base. Because of our past proactive capital investments, CWD will need limited bonded investment for the

future. Therefore, we will continue to operate, maintain, and manage our present assets to the best of our ability.

As we celebrate our 40th anniversary of supplying safe drinking water to our Chittenden County service area, we thank our employees and elected officials for their effort, support, and dedication in allowing CWD to be



High Service Cross Tie Project trenching (2012)

proactively managed and operated to supply a drinking water product protective of public health. As always, we welcome groups of any size to tour our facility. Please call 864-7454 to arrange a tour, or if you have questions, or need further information on Champlain Water District. Please visit our website at: www.cwd-h2o.org.



Main Service System SCADA Overview

Staff & Years of Service

Administration

Jim Fay, General Manager (36)
Tracy Bessette,
H.R. Administrator (31)
Christine Rongo, Accountant (2)

Engineering

Richard Pratt, Assistant General
Manager/Chief Engineer (31)
Melissa Hood, Transmission
System Engineer (13)

Electrical & Technology

Bruce Bushey, Electrical &
Technologies Supervisor (19)
Anthony Higgins, Systems
Administrator (12)
Brian Hilliker, Instrumentation
Tech. (13)
Cory Waterhouse, Electrical Main-
tenance Tech. (12)

Wholesale Maintenance

Paul Tice, Transmission Systems
Director (23)
George Wimble, Maintenance
Foreman (8)
Vilas Gentes, Maintenance
Tech. (24)
Brian Martin, Maintenance
Tech. (13)
Joe Tymecki, Maintenance
Tech. (1)

Water Quality Operations

Mike Barsotti, Director of Water
Quality & Production (21)
Scott Flax, Lead Treatment
& Transmission Specialist
(TTS) (2)
Mark Hamel, TTS (28)
Chris Collins, TTS (25)
James Desorda, TTS (3)
John Heald, TTS (1)
Jay Cairelli, Water Quality
Maint. Specialist (WQMS)
Foreman (5)
Jason Scott, WQMS (15)
Mat Cunningham, WQMS (4)
Evan Stewart, WQMS (2)

Retail

John Tymecki, Retail
Superintendent (2)
Julie Ringuette, Billing
Specialist (30)
Eric Pepin, Distribution
Foreman (16)
Jeff Gilbert, Senior Meter
Tech. (29)
Adam Rule, Meter Reader/
Maint. Tech. (4)
Tyler Button, Meter Reader/Maint.
Tech. (3)
Patrick Gillen, Meter Reader/
Maint. Tech. (2)

CWD Board and management acknowledges that the continued level of excellence in supplying the highest quality drinking water to our served systems and customers could not be maintained without our staff. CWD prides itself on the commitment, talent, longevity, and dedication of our employees, and thanks them for their continued support of CWD and its mission.

Available CWD Publications

Watershed Management Program for Source Protection.

Cryptosporidium—The Filtration Challenge, New England Water Works Association (NEWWA) Journal, *December 1999*.

Applying Self-assessment to Filter Optimization, American Water Works Association Opflow, *February 1997*.

Evaluation of Particle Counters Using Microscopic Counts, Journal of American Water Works Association, *December 1997*.

Count Matching In-Situ Particle Counts to Scanning Electron Microscopic Counts for Treatment Facility Control, AWWA, *1998 Water Quality Technology Conference*.

Why a Water Utility Should Join the National Initiative Entitled Partnership for Safe Annual Conference, September 1998 and Reseau Environnement, St. Hyacinthe, Quebec, March 2000, NEWWA Journal, June 2000. AWWA *Annual Conference 2004*.

Surface Water Source Characterization to Overcome Operational Complacency and Aid Source Delineation, 1999 Water Quality Technology Conference, November 1999. Investigating and Controlling HAASs Within a Complex Transmission System, 2000 Water Quality Technology Conference, *October 2000*.

Exploring the Interrelationship of Water Quality Standards, Source Protection and Wastewater Treatment in Northwestern Vermont, AWWA Source Protection Conference, *January 2001*.

Modeling Storage and the Inlet Reconfiguration, AWWA *International Retention Time Management Symposium 2002*.

Investigating a Stand Pipe Mixing System as a Tool for Managing Retention Time and DBP Formation, 2003 Water Quality Technology Conference, *November 2003*.

CWD Lead Public Information Flyer.

Partnering to Advance Source Protection within the Storm Water Arena, 2005 AWWA Source Protection Conference, *January 2005*.

Parent and Consecutive System Considerations in a Regional Municipal Water District in Northwestern Vermont, 2006 NEWWA Water Quality Symposium, *May 2006*.

Secondary Disinfection, 2008 Green Mountain Water Environment Association Spring Meeting, *March 2008*.

Long Term Experience with Conventional Filtration, 2008 NEWWA Water Quality Symposium, *May 2008*.

The Role of Water Quality and Operational Decision Making in Implementing a Loadshed Program, 2009 NEWWA Water Quality Symposium, *May 2009*.

Complying with the Upcoming Stage 2 Disinfection By-product Regulations, 2011 Green Mountain Water Environment Association Spring Meeting, *May 2011*.

Planning and Maintaining Compliance with the Lead and Copper Rule when Making a Disinfectant Change, 2012 NEWWA Water Quality Symposium, *May 2012*.

Municipal Public Utilities “Watch Program”

We are requesting the public to voluntarily set-up a public utilities infrastructure “WATCH PROGRAM” modeled after the success of existing Neighborhood Watch programs. We are asking the public to report any suspicious activity to their local police department. Examples would include unauthorized use of fire hydrants, or trespassing in water or wastewater related treatment facility areas, such as storage tanks. This type of public surveillance will reduce the costs associated with vandalism, as well as further enhance overall security. Any type of non-emergency questions can be referred to your local public works director within the member communities, or the Champlain Water District’s General Manager. We thank you for your help in assisting us in enhancing public safety and security. This announcement is provided by the Champlain Water District in conjunction with the following communities: South Burlington, Shelburne, Essex Town, Essex Junction, Williston, Colchester, Winooski, Milton, and the Village of Jericho.

Visit us on-line at: www.cwd-h2o.org