JOURNAL OF THE

NEW HAMPSHIRE WATER WORKS ASSOCIATION

SUMMER 2016

DESIGNED TO BE LEFT

OUT IN THE COLD

New Hampshire winters are tough...

DN TANKS are tougher

DN TANKS

Chris Hodgson, Regional Manager

781.246.1133 | chris.hodgson@dntanks.com

www.dntanks.com

Weston&Sampson®

Innovative Solutions Since 1899



- surface and groundwater supply
- source approvals and well development
- distribution system master plans and mapping
- water storage tanks
- treatment facility design and pilot studies
- meters and meter reading systems
- environmental permitting
- rate and meter replacement studies
- water main cleaning and lining

1-800-SAMPSON

www.westonandsampson.com

100 INTERNATIONAL DRIVE, SUITE 152
PORTSMOUTH, NEW HAMPSHIRE 03801
tel: 603-431-3937 ▪ fax: 603-433-4358

OFFICES IN: NH, MA, CT, VT, NY, NJ, PA, SC & FL


Premier Engineered
Storage & Cover
Solutions from
the World's Largest
Tank and Dome
Manufacturer
Serving YOU locally, one
customer at a time.
Always there when you need us, just a phone call away...
Since 1980, Statewide Aquastore, Inc. has been providing and servicing local communities with premium glass-fused-to-steel Aquastore® tanks.
STATEWIDE
AQUASTORE, Inc.
Premium Water and Wastewater Storage Tanks
Authorized Aquastore
Dealer Proudly Serving
New York
Northern Pennsylvania
Massachusetts
New Hampshire
Maine
Vermont
Rhode Island
Connecticut
"Statewide Aquastore, Inc. has provided over 1,200 professional installations"
For more information, call 315.433.2782 or visit besttank.com
Statewide Aquastore, Inc. | 6010 Drott Drive | East Syracuse, NY 13057
©2016 Statewide Aquastore, Inc. Aquastore is a registered trademark of CST Industries, Inc.
AQUASTORE®

Journal of the
New Hampshire Water Works Association

Contents

Front Cover Photo: One of Manchester Water Work's twin 6.5 million gallon water tanks that were placed into service on July 1, 2016.

JOURNAL STAFF

Charity Ross, Editor

Susan Kowalski, Desktop Publishing

NH Water Works Association
Board of Directors

Officers

President
Francis X. Lyons, FX Lyons, Inc.

Vice-President
Ian Rohrbacher, Rochester Public Works Department

Treasurer
David Miller, Manchester Water Treatment Plant

Directors

Rene Pelletier, NH Department of Environmental Services
Mark Naylor, NH Public Utilities Commission
John Lyons, Granite State Analytical Services, LLC
Lee Ransom
Charles Roberts, Concord Water Treatment Plant
Carl McMorran, Aquarion Water Company
Donna Hanscom, Keene Water Works
Guy Chabot, Manchester Water Works, Ex-Officio

Charity Ross, Executive Director

NEW HAMPSHIRE WATER WORKS ASSOCIATION
18 N. Main St., Suite 308, Concord, NH 03301
info@nhwwa.org/www.nhwwa.org
(603) 415-3959

Past Presidents of NHWWA

Donald C. Calderwood, P.E., Nashua *	1945-1946
Ernest E. Tankard, P.E., Berlin*	1946-1947
Charles Easter, Claremont*	1947-1948
James A. Sweeney, Manchester*	1948-1949
Harry A. Nutting, Newmarket*	1949-1950
William H. Daniels, Hudson*	1950-1951
Clarence L. Ahlgren, P.E., Manchester*	1951-1952
G. Arthur Faneuf, P.E., Concord*	1952-1953
Salvatore P. Grasso, P.E., Milford*	1953-1954
Clarence E. Ferry, P.E., Manchester*	1954-1955
Walter A. Goss, Littleton*	1955-1956
Harold I. Leavitt, Durham*	1956-1957
Martin G. Ferry, P.E., Pembroke*	1957-1958
John B. Mulaire, Hooksett*	1958-1959
Harold H. Bean, Derry*	1960-1961
Fred B. Parker, Gorham*	1961-1962
Richard G. Pike, Nashua*	1962-1963
Joseph R. Bruce, Keene*	1963-1964
Harry M. Fitz, Durham*	1964-1965
Rev. John W. Wright, Merrimack*	1965-1966
Reginald Libby, Gorham*	1966-1967
Hubert A. Parker, Franklin*	1967-1968
Robert A. Morin, Laconia*	1968-1969
Richard A. Picard, Lebanon	1969-1970
Arthur Rollins, Durham*	1970-1971
Richard Chinnock, No. Conway	1971-1972
James E. Bewley, New London*	1972-1973
Robert N. Gillis, Concord*	1973-1974
John R. Wood, Plymouth	1974-1975
Frederick H. Elwell, P.E., Manchester	1975-1976
Augustus Grikas, P.E., Nashua	1976-1977
David Kittredge, P.E., Manchester	1977-1978
Joseph E. Rehler, P.E., Dover*	1978-1979
John N. Isham, Peterborough*	1979-1980
Carl Brink, Jr., Hanover	1980-1981
Rance Collins, Portsmouth*	1981-1982
Chester Hoadley, Concord	1982-1983
Albin Johnson, Berlin	1983-1984
Stephen Lovejoy, Raymond*	1984-1985
Lorraine Saltzer, Hudson*	1985-1986

Ernest Cote, Hampton	1986-1987
Doug Damelio, Keene	1987-1988
Bob Gordon, Jaffrey	1988-1989
John Forrestall, Concord	1989-1990
Roger Gauthier, Exeter	1990-1991
Dale Sprague, Farmington	1991-1992
Richard K. LaPorte, New London	1992-1993
Stephen Densberger, Nashua	1993-1994
Robert E. Courage, Milford	1994-1995
Thomas Bowen, Manchester	1995-1996
Keith Bossung, Hampton	1996-1997
Victoria Abbey Del Greco, Exeter	1997-1998
Edwin Betz, Littleton	1998-1999
Pierre C. Lavoie, Dover	1999-2000
Bernard Rousseau, Nashua	2000-2001
Robert Beaurivage, Manchester	2001-2002
Sharon Ostrander, Lyndeborough	2002-2003
David Brennan, Sunapee	2003-2004
Brian Wilson, Ti-SALES, Inc.	2004-2005
Thomas Cravens, Portsmouth	2005-2006
Lee Minnich, Goffstown	2006-2007
Brian Goetz, Portsmouth	2007-2008
David Paris, Manchester	2008-2009
Philip Bilodeau, Concord	2009-2010
Steve Guercia, Secondwind Water Systems	2010-2011
Michael Metcalf, Underwood Engineers	2011-2012
Marco Philippon, Concord	2012-2013
William Boulanger, Dover	2013-2014
Guy Chabot, Manchester	2014-2015

*Deceased

Water Works Superintendents and Other Officials

STATE OF NEW HAMPSHIRE

Town	System	Name
Alton	Alton Water Works	William Curtin
Amherst	Amherst Village District	Chris Countie
Andover	Andover Water Works	Todd Cartier
Antrim	Antrim Precinct	Jim Cruthers
Ashland	Ashland Water Works	Russell Cross
Bartlett	Bartlett Village Precinct	Scott Hayes
Bartlett	Lower Bartlett Precinct	Gary Chandler
Bath	Bath Village Water Works	Spencer Richardson
Belmont	Belmont Water Works	Jim Fortin
Bennington	Bennington Water Department	Jim Cruthers
Berlin	Berlin Water Works	Craig Carrigan
Bethlehem	Bethlehem Village District	Terence Welch
Boscawen	Penacook-Boscawen Water	Peter Miner
Bow	Bow Municipal Water System	Eric Burkett
Brentwood	Rockingham County Home	Tom Schulte
Bristol	Bristol Water Works	Jeffrey Chartier
Campton	Campton Village Precinct	Joseph Vaillancourt
Campton	Waterville Estates Village District	Corey Smith
Canaan	Canaan Water Department	John Coffey
Carroll	Carroll Water Works	Scott Sonia
Carroll	Rosebrook Water System	Nancy Oleson
Charlestown	Charlestown Water Works	Dave Duquette
Claremont	Claremont Water Works	Robert Lauricella
Colebrook	Colebrook Water Works	Brian Sullivan
Concord	Concord Water Treatment Plant	Marco Philippon
Contoocook	Contoocook Water Precinct	Steve Clough
Conway	Conway Village Fire Precinct	Gregg Quint
N. Conway	N. Conway Water District	David Bernier
E. Conway	Fryeburg Maine Water Company	John Hastings
Derry	Derry Water Works	Thomas Carrier
Dover	Dover Water Works	Doug Steele
Durham	UNH/Durham Water Works	Wesley East
Enfield	Enfield Village Fire Precinct	Bruce Prior
Epping	Epping Water Works	Norman Dionne
Epsom	Epsom Village District	Joe Damour

Town	System	Name
Errol	Errol Water Works	Pierre Rousseau
Exeter	Exeter Water Works	Paul Roy
Farmington	Farmington Water Department	Dale Sprague
Fitzwilliam	Fitzwilliam Village Water District	Joseph Damour
Francestown	Francestown Village Water	Dennis Orsi
Franconia	Franconia Water Works	Tom Mason, Jr.
Franklin	Franklin Water Works	Brian Sullivan
Freedom	Freedom Water Precinct	Francis Lyons
Georges Mills	Sunapee Water Works	Dave Bailey
Gilford	Dockham Shores Estates	Colin Robertson
Gilford	Gilford Village Water District	Norm Harris III
Gilford	Gunstock Acres	Alex Crawshaw
Goffstown	Goffstown Village Fire Precinct	Lee Minnich
Goffstown	Grasmere Village Water Precinct	Keith Moore
Gorham	Gorham Water Works	Jeff Tennis
Grantham	Village District of Eastman	Tim Hicks
Greenville	Greenville Water Works	Gerald Curran
Hampton	Aquarion Water Company	Carl McMorran
Hancock	Hancock Water Works	Kurt Grassett
Hanover	Hanover Water Works	Todd Cartier
Haverhill	Haverhill Corner Precinct	Robert Fagnant
Haverhill	Woodsville Water & Light Precinct	Robert Fagnant
N. Haverhill	N. Haverhill Water & Light	Robert Fagnant
Henniker	Cogswell Springs Water Works	Norman Bumford
Hill	Hill Water Works	John Benham
Hillsborough	Hillsborough Water Works	Peter Mellen
Hillsborough	Emerald Lake Village District	Joe Damour
Hinsdale	Hinsdale Water Works	Dennis Nadeau
Hooksett	Hooksett Village Water Precinct	Michael Heidorn
Hooksett	Central Hooksett Water Precinct	Jay Smith
Hopkinton	Hopkinton Village Precinct	Joe Damour
Hudson	Pennichuck Water Works	Chris Countie
Jackson	Jackson Water Works Company	Scott Hayes
Jaffrey	Jaffrey Water Works	Tom Lambert
Keene	Keene Water Works	Benjamin Crowder
Laconia	Laconia Water Works	Seth Nuttelman
Lancaster	Lancaster Water Works	Timmy Bilodeau
Lebanon	Lebanon Water Works	Jim Angers

Town	**System**	**Name**
Lincoln	Lincoln Water works	David Beaudin
Lisbon	Lisbon Village District	Terence Welch
Littleton	Littleton Water & Light	Tom Considine
Madison	Village District of Eidelweiss	Ronald Sandstrom
Manchester	Manchester Water Works	Phil Croasdale
Marlboro	Marlboro Water Works	Neil Goodell Jr.
Meredith	Meredith Water Department	Daniel Leonard
Meriden	Meriden Village Water District	Bill Taylor
Merrimack	Merrimack Village District	Ronald Miner, Jr.
Milford	Milford Water Utilities	Dave Boucher
Milton	Milton Water District	Mark Badger
Monroe	Monroe Water Department	Robert Fagnant
Nashua	Pennichuck Water Works	Chris Countie
New Castle	New Castle Public Works	Brian Goetz
Newfields	Newfields Village Water & Sewer	Peter Hellfach
New Hampton	New Hampton Village Precinct	Joseph Powers
New London	New London/Springfield Water	Rob Thorp Jr.
Newmarket	Newmarket Water Works	Sean Grieg
Newport	Newport Water Department	David Brennan
Northumberland	Groveton Village Precinct	Reginald Charron
Orford	Orford Village District	Bill McKee
Center Ossipee	Ossipee Water Department	Wayne Eldridge
Pembroke	Pembroke Water Works	Matt Gagne
Peterborough	Peterborough Water Works	Nate Brown
Pittsburg	Pittsburg Water District	Richard Sargant
Pittsfield	Pittsfield Aqueduct Company	Curt Sheing
Plainfield	Plainfield Water District	Jim Angers
Plymouth	Plymouth Village Water Works	John Crowley
Portsmouth	Portsmouth Water Works	Brian Goetz
Raymond	Raymond Water Works	Scott Keddy
Rochester	Rochester Water Works	Ian Rohrbacher
Rollinsford	Rollinsford Water District	Scott McGlynn
Rye	Rye Water District	Kenneth Aspen
Salem	Salem Water Works	Frank Giordano
Seabrook	Seabrook Water Works	Curtis Slayton
Somersworth	Somersworth Water Works	Gregory Kirchofer
Stewartstown	W. Stewartstown Water Works	Wilman Allen
Stratford	N. Stratford Water	Carleton Harris

Town	System	Name
Sunapee	Sunapee Water Works	Dave Bailey
Swanzey	N. Swanzey Water & Fire Precinct	Sly Karasinski
Tamworth	Tamworth Water Works	Tom Mason, Jr.
Tilton	Tilton/Northfield Water District	John Chase
Troy	Troy Water Works	Justin Frazier
Wakefield	Sanbornville Water Department	Dean Giffin
Walpole	Walpole Water Department	Mark Houghton
Walpole	N. Walpole Village District	Robert McGuirk
Warner	Warner Village Fire District	Joseph Damour
Waterville Valley	Waterville Valley Water	Robert Burhoe, Jr.
Whitefield	Whitefield Village Precinct	Bill Thompson
Wilton	Wilton Water Works	Michael Bergeron
Winchester	Winchester Water Works	Richard Meleski
Wolfeboro	Wolfeboro Water & Sewer	Janine Gillum
Woodstock	Pennichuck Water Service	Bernie Rousseau

New Hampshire Water Works Association

A Report of the 2016 Legislative Session

Below is a recap of some of the noteworthy bills that came before the legislature this year.

HB 1428 – E*stablishing the clean water state revolving fund non-program fund account in the department of environmental services for the purpose of funding eligible and completed wastewater projects under the state aid grant program.*

This bill passed both the House and Senate with amendments. A number of amendments were tacked onto the bill in the Senate which the House did not agree with. When it returned to the House they did not concur with the Senate amendments and it was subsequently sent to a Committee of Conference. After hashing it out in the Committee of Conference, this bill was sent back to both bodies for a subsequent vote and the bill passed as amended by the Committee of Conference. It was then sent to Governor Hassan who signed it into law on June 24.

The purpose of this bill is to fund eligible and completed wastewater projects under the state aid grant program. These are projects that have been on the “Delayed and Deferred” list under the State Aid Grant Program, and have not yet received anticipated funding by the state. Although all these projects are wastewater projects, in the future this legislative concept may be applied to completed drinking water projects yet to be funded.

HB 1382 – *Relative to the referendum procedure for public water systems.*

NHWWA did not take a position on this bill. It pertained to the petitioning of a public water system in order to vote on whether or not to add fluoridation to the water system. The bill passed the House but came out of the Senate as Inexpedient to Legislate.

HB 1461 & HB 1595 – Both of these bills address instream flow. NHWWA worked with Senators, NHDES and stakeholders on changes to some of the language in both bills, specifically with regard to riparian rights. NHWWA advocated that "respect" riparian rights be changed to "protect" riparian rights. After several meetings in which the language was hashed out, the word "protected" was added to the bill text in both pieces of legislation. More detail on each of the bills is as follows:

> **HB 1461** *extending the advisory committee to study the impact of water withdrawals on instream flows.*
>
> HB 1461 extends the advisory committee to study the impact of water withdrawals on instream flows. The major components of this legislation are that it changes the definition of "Protected Instream Flow" to "a pattern defined in terms of flow magnitude, duration, frequency, and timing that occurs within that stream's natural range and variability". In existing statute, it is simply flow.
>
> It also requires NHDES to conduct a public hearing jointly with the Senate committee and House committee with jurisdiction over river management issues and provide a report within 30 days prior to

beginning a protected instream flow study on a designated river.

This bill came out of both the House and Senate with amendments. The House concurred with the Senate's amendment and the bill was sent to Governor Hassan who signed it into law on June 21, 2016.

<u>**HB 1595** *relative to the rivers management and protection program.*</u>

This bill made several changes to existing statute language, including adding definitions to aquatic connectivity, fluvial geomorphology and more. It expands the criteria for nominating a river to the Rivers Management and Protection Program. And it changes the mechanism by which members of the Rivers Management Advisory Committee are selected. It requires a representative of public water suppliers to be "nominated by the New Hampshire Water Works Association".

This bill passed the House and the Senate with an amendment. The House concurred with the Senate's amendment and the bill was sent to Governor Hasan's office and was signed into law on June 21, 2016.

<u>**SB 368-FN-A** *making a capital appropriation for department of environmental services monitoring equipment.*</u>

This bill cycled through both bodies of the legislature as originally drafted. Without any amendments its original draft was signed into law by Governor Hassan on May 27, 2016.

<u>**SB 380** *establishing the drinking water and groundwater trust fund and establishing the New Hampshire drinking water and groundwater advisory commission.*</u>

This legislation establishes a trust fund that will be kept "distinct and separate" from all other funds, and which will be used to remediate damages resulting from MtBE contamination. It also establishes a drinking water and groundwater commission.

An amendment to this bill added the language to "provide funding through cost-sharing grants to municipalities, municipally-owned water utilities, and water utilities regulated by the public utilities commission for the design, construction and extension of public water systems, and the establishment and expansion of wellhead protection areas where they provide the most cost effective method for providing safe and clean drinking water".

This bill was amended by both the House and Senate and each body concurred with the amendments. The bill was signed into law by Governor Hassan on March 31, 2016 after which recommendations could be made for appointments to the Commission.

The MtBE settlement funds have since been received by the state and are being held in investments while the Commission meets and determines it's distribution. Recommendations for the various appointments to the commission were sent to the House, Senate and Governor's office and of the appointments made, three NHWWA members have been appointed to the commission: Brian Goetz, David Paris and Bernie Rousseau.

The Advisory Commission had its first meeting on September 20 in which they discussed the purpose of the committee and were provided a history of how the trust fund and commission came to be. The presentation was led by DES representatives: Sarah Pillsbury, Drinking Water and Groundwater Administrator; Mike Wimsatt, Waste Management Division Director; and Gary Lynn, MtBE

Remediation Bureau Administrator. The next meeting has not yet been set.

Of the remaining drinking water related bills introduced this past year all but two were Inexpedient to Legislate and the other two were referred to interim study.

HB 1133 – R*elative to the maximum amount of a customer deposit which may be required under the rules of the public utilities commission.* INEXPEDIENT TO LEGISLATE (House).

HB 1155 – R*elative to providing choice of meters to electric customers.* INEXPEDIENT TO LEGISLATE (House).

HB 1337 – R*elative to rules of the public utilities commission on requiring deposits after disconnect notices to customers.* INEXPEDIENT TO LEGISLATE (House).

HB 1362 – R*equiring telephone notice where an electrical outage is expected to exceed 4 hours.* INEXPEDIENT TO LEGISLATE (House).

HB 1427 – *Suspending the water and air pollution control facility property tax exemption and appropriating certain revenues for water pollution control grants to municipalities.* INEXPEDIENT TO LEGISLATE (House).

HB 1505 – *Allowing municipalities to exempt water and sewer/pollution control properties owned by private non-profit educational institutions from the local property tax.* INEXPEDIENT TO LEGISLATE (House).

HB 1523 – R*elative to government construction contracts.* REFERRED TO INTERIM STUDY (House).

HB 1533 – R*elative to the noise level limitations for permanent machinery.* INEXPEDIENT TO LEGISLATE (House).

HB 1693-FN-LOCAL – *Abolishing fluoridation in water*. INEXPEDIENT TO LEGISLATE (House).

<u>SB 311</u> – R*elative to standards for radon in water*. REFERRED TO INTERIM STUDY (Senate).

<u>SB 367-FN</u> – I*ncluding state water pollution control and public water system grants proposed by the department of environmental services in the capital budget.* INEXPEDIENT TO LEGISLATE (Senate).

2017 Legislative Program

If you subscribed to the 2016 Legislative Program you know that you were kept informed with monthly updates on pending legislation. You also know how important it is for NHWWA to be actively involved in the legislative and rule making process. For those of you that did not participate, this is your chance to get involved!

Participating members receive monthly legislative updates which includes the bill status, a schedule of bill hearings and other important information. Updates are traditionally sent by mail but we will be focusing on sending more timely updates via email in the upcoming year. The financial support is also allocated for the time spent attending hearings, testifying and advocating for NHWWA and public drinking water.

NHWWA, and its Legislative Committee, have a proven track record of monitoring pending legislation and administrative rules that impact our business. They have established themselves as a trusted resource with our elected officials. Funding of the Legislative Program will allow the Legislative Committee to continue reporting and monitoring legislation and administrative rules that impact our business.

The cost will remain the same at only $.10 per service connection ($100 minimum). For support members, the annual fee is $250. **For more information, or to indicate your interest in participating in the 2017 Legislative Program, please contact Charity Ross at (603) 415-3959 or email cross@nhwwa.org.**

With so much focus on emerging contaminants we are bound to see legislation in the upcoming year addressing these concerns. Likewise, the Department of Environmental Services is already in the drafting process for new administrative rules pertaining to Instream Flow. Both of these issues will require time and dedicated funds to lobby for the best interests in our industry. The support provided to the Legislative Program is imperative to the success of our lobbying efforts.

Please consider participating in the 2017 Legislative Program when paying your annual membership dues. Your support is greatly needed to continue protecting our resources and our industry.

Sincerely,

The Legislative Action Committee

Variable Frequency Drive (VFD) Applications – Up and Running

by Bruce W. Lewis, P.E., Lewis Engineering, PLLC – Litchfield, NH

Abstract and Introduction:

The proper design and installation of variable frequency drive (VFD) and programmable logic controller (PLC) technology provides constant pressure, eliminates unnecessary wear and tear on mechanical and electrical parts, often lowers energy costs, and adds value to water customer satisfaction. This technology has been successfully used in NH and New England Water Works applications for many years. One exciting feature of using this technology is that it can immediately lower energy operating costs, as electric motors only run at the speed needed for the specific application and time of day demand. This may provide significant energy savings over the life cycle of the pumping and control equipment, as well as lower maintenance costs, and extend the life of pumps and motors.

VFD's using PLC's are now found in many areas of the water works business. A few examples include well pumps, water treatment applications, and all types of water pumping applications. In many applications VFD's allow cost savings through more efficient use of electrical power. One primary advantage is to allow a water pumping system to efficiently maintain a constant discharge pressure over a wide range of flows, only running the pumps as fast as necessary during wide variations in the daily system demand. As an example, from NE Water and Wastewater News, an operator installed a VFD on a pump and motor where there was a large variation in time of day and time of year water demand. The station pumped approximately 1.94 million gallons of water. Prior to the VFD installation this consumed 5,260 KWH of electricity. After the installation the electrical consumption dropped to 1,622 KWH for the same amount of water pumped.

In today's cost conscious environment, it is important that the water system operator be aware that there are a variety of practical, functional, cost saving, options through automated control. This applies to many applications. Overall, the water system will be able to provide enhanced service to its customers, as well as provide improved water system operations.

Typical Water Works related problems and VFD solutions:

The use of VFD's with PLC controllers and support data input devices are now very reliable and commonly used in both new and remodeling applications. This may include water meters that generate flow signals, and pressure transmitters (PT's) that generate pressure signals. These devices provide input signals that are used for controlling pump operations.

Reported problems may include:

- Large pumps start and stop often and the water system sees wide variations in pressure.
- Suction pressure coming into a station varies dramatically, depending on time of day, and season of year.
- Customers near the end of the system report large swings in water pressure, as well as the utility receiving many routine complaints of low water pressure.
- New customers need to be added to the service area.

- A new customer connects to the system with a new set of large water needs resulting in added peak demands.
- Irrigation demands from residential and commercial customers can create hours of summertime high water use demands, which are much lower during non-irrigation months.

Solutions using VFD / PLC controls may include:

- Varying suction and flow conditions do not have a significant impact on system discharge pressure.
- System discharge pressure variations are able to be reduced 0 – 5+/- psi, over a very wide range of flows.
- Pumps only run as fast as needed, saving energy costs. Overnight and other low demand period times use less electrical power than had previously been required.
- Additional customers may be added to the system, without changing the pumps, station dimensions, piping or operating conditions, using this more efficient technology.

Operational Considerations:

There are a number of practical items to consider relative to implementing VFD/PLC improvements.

- Prior to starting system design and/or construction, a proper evaluation of the specific application based on desired operating conditions, is very important. Please note that VFD technology may not be the best application for some project circumstances.
- There is a lot of flexibility in how VFD / PLC technology may be applied to, and integrated into, your system. As such, as the operator or water system superintendent ask about features that would be

helpful to your specific operation. How would you like to see the station operate? What type of data collection and reporting would be most helpful to your water system?

- Utilizing an overall design approach that is reliable, understandable, easy to operate, easy to upgrade and use, is very important.
- Being able to easily change certain operating parameters is helpful. This is often done with password protection being part of the process.
- Standardization in the design approach utilizing high quality, non-proprietary, readily available, component parts is the practical approach.

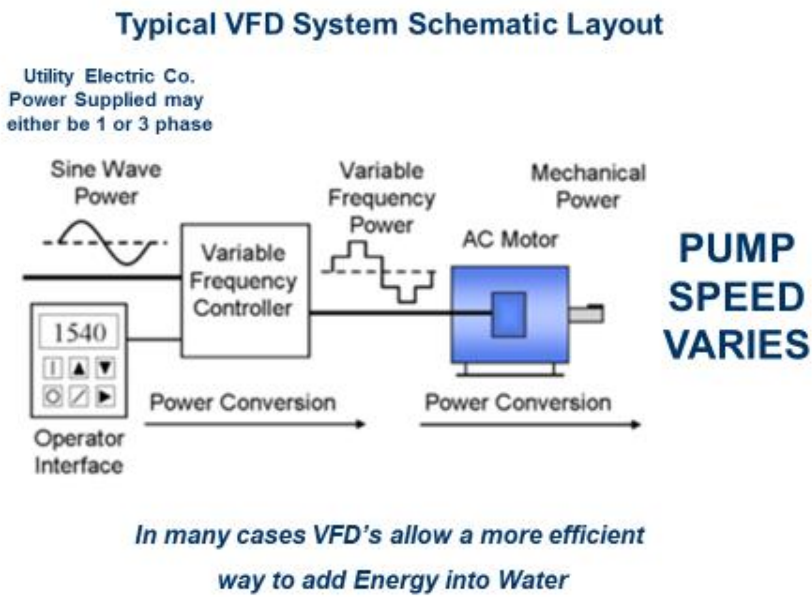
VFD Operations:

VFD's are devices that accurately change the frequency of alternating current (AC), which in turn, changes a pump's motor speed. Today's VFD drives are solid state electronic power conversion devices.

- The device first converts AC input power to direct current (DC) intermediate power.
- The DC intermediate power is then converted to quasi-AC power using an inverter circuit.
- The inverter circuit changes the DC energy into three channels of AC energy that can be used by an AC motor. Figure 1 provides a schematic layout.
- An important note is that three phase AC motors used with VFD applications need to be designed for use with them, i.e. VFD rated, high efficiency motors. The exception is submersible well pumps where the motors are industry standard, but the VFD sizing

should be reviewed with the well pump manufacturer, as they are often oversized. This allows the drive to safely operate at a higher amperage draw by the well pump's motor without any overheating.

Figure 1 Allen - Bradley



VFD Notes:

Since incoming power is first converted to DC, most VFD units will accept either single-phase or three-phase input power. When using single phase power, the VFD will act as a phase converter creating three phase power. This allows the drive to also control motor speed by varying the frequency (hertz) to the motor.

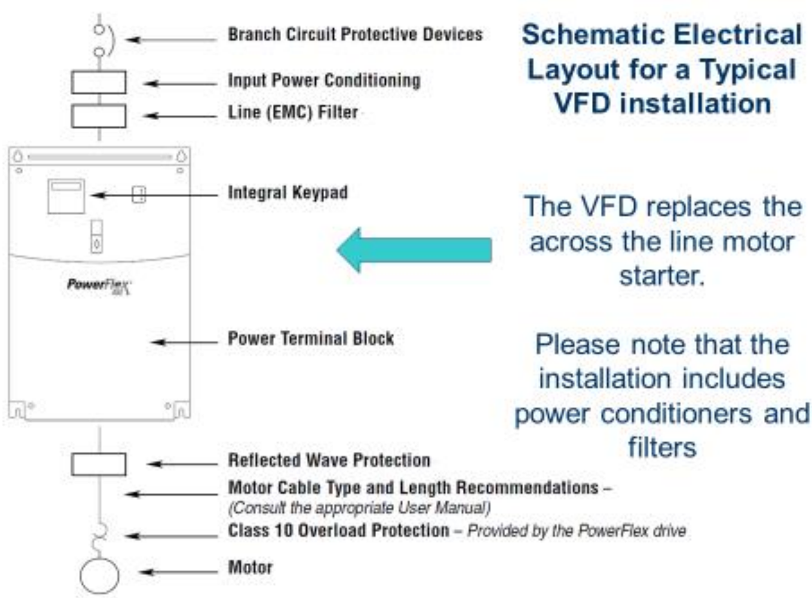
As a note, proper VFD sizing is important when using single phase input power and converting it to 3-phase power. The supplier of the VFD may be consulted when this type of application is desired.

Single phase to three phase applications are very useful when the electric utility company does not have three phase power available nearby the application site. It is important to evaluate the single phase amperage draw that will be required for the specific three phase motor application.

Typical VFD Installation:

Figure 2 provides a typical schematic layout for a VFD installation.

Figure 2 Allen – Bradley



Notes:

- The integral keypad on the face of most drives provides a means for an operator to start and stop the motor and adjust the operating speed.
- The operator interface often includes a display and/or indication lights to provide information about the operation of the drive.
- Automatic control from an external process control signal is the usual operational mode. This might include pressure and/or flow signals.
- The input signals and operations are often part of a PLC program, although many VFD's now allow direct inputs, and offer a level of control programming.

Electric Motor Operations using a VFD:

- When a VFD starts a motor, it initially applies a low frequency and voltage to the motor.
- The VFD controls the applied frequency and voltage. As they are increased at a controlled rate or "ramped up", the motor accelerates to its correct operating speed without drawing a high in-rush current.
- This starting method typically allows a motor to start smoothly while the VFD is drawing less than 50% of its rated current from the electric utility company. Smooth starting of pumps also helps avoid hydraulic shock/water hammer to a water system when pumping water in certain applications.
- The stopping sequence is just the opposite as the starting sequence. The frequency and voltage applied to the motor are ramped down at a controlled rate.

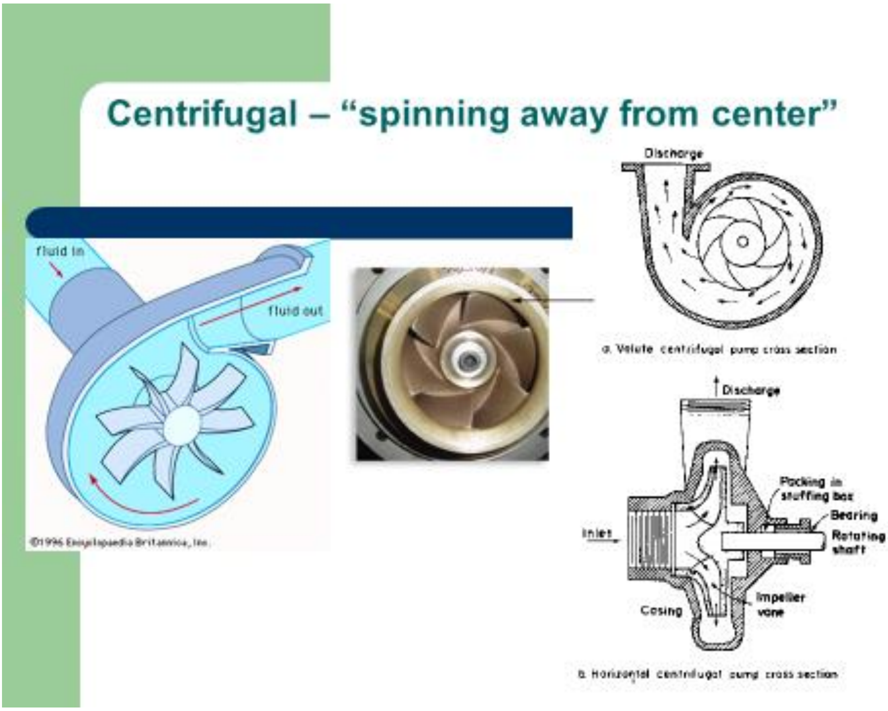
When the frequency approaches zero, the motor is shut off.

- One potential drawback of using a VFD with a standard electric motor is that if it is running at low speed for extended periods the motor may overheat. The reason for this is that the motor's built in cooling fan is not rotating at full speed. As such, the fan is not moving enough air. As a solution, supplemental fan cooling or the installation of a VFD rated motor may be required.

Application for Pumping water with a VFD controlling speed:

- The most frequently used pumps in the water works industry are centrifugal pumps. This is the most common pump used in water works applications. Energy is transferred into the water by "whirling" the water around and increasing its velocity. At full speed using an electric motor, with power provided at a certain voltage and 60 hertz the impeller is spinning at a fixed speed. Many pumps operate at 1800 or 3600 revolutions per minute (rpm).
- Energy is then transferred into the water through the spinning impeller. The efficiency of this energy transfer varies widely across a pump's operating curve. Figure 3 (page 28) is a summary of key components of a centrifugal pump and its operation.

Figure 3 Misc. Sources



A Typical Water Booster Station Application – the Pennichuck Water Works Tara Heights Booster Station Nashua:

Figures 4 and 5 represent a typical water booster station application where the station provides a constant discharge pressure over a wide range of flow. The station provides domestic and irrigation demands including fire flow demands. This station was designed and constructed to service a portion of Pennichuck Water Work's (PWW) existing water system where elevations are such that the existing gravity fed system could not provide enough water pressure for new apartments, and commercial/light industrial areas.

Figure 4 shows the pumping arrangement that includes two 7.5 hp jockey pumps, two 20 hp domestic pumps, and a 250 hp fire flow pump. **Figure 5** shows the electrical and control panels area.

Figure 4 Tara Heights - Nashua

Figure 5 Tara Heights - Nashua

460/277V/400A – 3 Phase Elec. Service, 5 VFD Pumps, & a Harmonic Filter for the 250 hp Motor

The well planned use of VFD/PLC applications in today's water works environment provide multiple benefits for the water system operator and for their customers. Not all applications call for VFD's, but there are many instances that support and provide benefits to the water system. These devices and applications are highly reliable, operationally cost effective, and provide enhanced service.

Author Information:

Bruce W. Lewis is the manager of Lewis Engineering with offices located in Litchfield, NH. Lewis Engineering specializes in a wide range of water works engineering services for new as well as existing public and private drinking water systems. Mr. Lewis has been actively associated with a broad spectrum of engineering, operation, and construction of projects associated with the water works industry for more than 40 years, the last 30 of which have been in private practice. He is a Lifetime Member of American Water Works Association (AWWA), and received the New England Water Work's (NEWWA) Award of Merit in 2015. He may be contacted by email at lewis.h2o@comcast.net, or by telephone at 603-886-4985.

18th Annual Construction Day

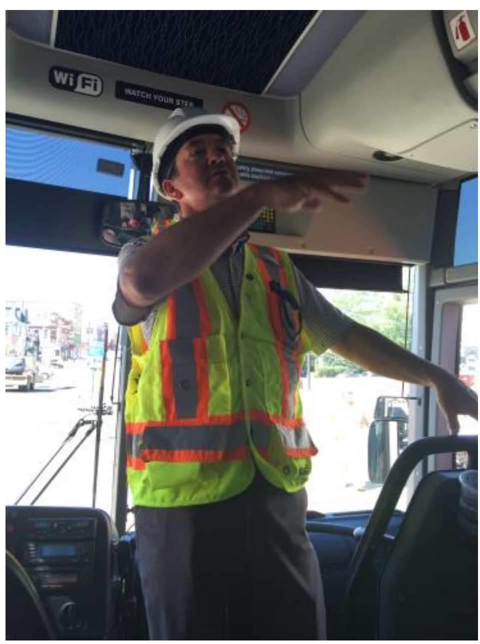
Wednesday, August 3, 2016

Left: The first stop on Construction Day was the Bedford Hills Booster Station.

Below: On the second stop, attendees viewed Manchester Water Works' Radial Collector Well on the Merrimack River.

Left: The third stop was a follow-up visit to the newly erected 6.5 MG storage tanks in Manchester.

Above: After lunch at White Park in Concord, the bus traveled to Penacook to visit a water main replacement project and then on to the Sewalls Falls Bridge project.



Right: The day finished with a stop in downtown Concord to see the last phase of the Main Street Project.

ADDRESSES OF MANUFACTURERS

COMPANY & ADDRESS	REPRESENTATIVE(S)	PHONE NUMBER
BAU/HOPKINS, INC.		
310 South Street	Alan Hopkins	800-733-1860
Plainville, MA 02762	Bob Hopkins	
www.bauhopkins.com		
DENIS L. MAHER, CO.		
19 Westford Road	Ted Morine	978-615-4606
P.O. Box 130		
Ayer, MA 01432-0130		
www.denislmaher.com		
EMERY & GARRETT GROUNDWATER INVESTIGATIONS, LLC		
56 Main St., PO Box 1578	James M. Emery	603-279-4425
Meredith, NH 03253		(F) 603-279-8717
224 Eames Rd.	Peter Garrett	207-872-0613
Winslow, ME 04901		
www.eggi.com		
EPPING WELL & PUMP CO., INC.		
337 Calef Highway (Rte. 125)	Henry DeBoer	603-679-5299
Epping, NH 03042	Abby Fopiano, PG	
www.eppingwell.com	Bill Arnold	
EVERETT J. PRESCOTT, INC.		
210 Sheep Davis Road	Don Proulx	603-224-9545
Concord, NH 03302-0337		
www.ejprescott.com		
HD SUPPLY WATERWORKS		
232 Frontage Road	Richard Bushnell	603-263-7350
Manchester, NH 03103	Andrew Dube	
www.hdswaterworks.com		

COMPANY & ADDRESS	REPRESENTATIVE(S)	PHONE NUMBER
MAHER SERVICES		
71 Concord St.	Peter Maher	978-664-9355
North Reading, MA 01864		(F) 978-664-9356
www.maherserv.com		
R.H. WHITE CONSTRUCTION		
41 Central St.	Dan Horgan	800-339-2506
Auburn, MA 01501	David H. White	
www.rhwhite.com		
SMITH PUMP COMPANY		
RFD #7, Rte. 28 Bypass	Jack Porter	603-669-9919
Manchester, NH 03103	Steve Smith	
www.smithpump.com		
STATEWIDE AQUASTORE, INC.		
6010 Drott Drive	Annie Wheeler	800-426-8265
East Syracuse, NY 13057		
www.besttank.com		
STILES CO INC.		
922 Pleasant St.	Ian Kasowitz	781-769-2400
Norwood, MA 02062	Scott Fitzgerald	
www.stilesco.com	Sandy Stiles	
STONKUS HYDRAULICS		
166 Lakeshore Drive	Brian Stonkus	508-833-3105
Blackstone, MA 01504		
www.stonkus.com		
TECHNOLOGY SALES		
44 Central St.	Robert Trzepasz, PE	508-878-6689
Berlin, MA 01503		603-848-3950
www.techsalesne.com		
TI-SALES, INC.		
36 Hudson Road	Dave Harris	800-225-4616
Sudbury, MA 01776	Steve Clements	(F) 978-443-7600
www.tisales.com		

DIRECTORY OF MANUFACTURERS

AIR COMPRESSORS
HD Supply Waterworks

AIR TOOLS
HD Supply Waterworks

AIR VALVES
HD Supply Waterworks Stonkus Hydraulics

ALTITUDE VALVES
E.J. Prescott, Inc. Stonkus Hydraulics Technology Sales

BACKFLOW PREVENTORS
E.J. Prescott, Inc. HD Supply Waterworks Stiles Co Inc.
Ti-SALES, Inc.

BUTTERLY VALVES
E.J. Prescott, Inc. HD Supply Waterworks Technology Sales

CHECK VALVES
E.J. Prescott, Inc. HD Supply Waterworks Smith Pumps Co.
Stiles Co Inc. Stonkus Hydraulics Technology Sales
Ti-SALES, Inc.

CHECK VALVES - DOUBLE
E.J. Prescott, Inc. HD Supply Waterworks Stiles Co Inc.

CHEMICAL FEEDERS
BAU-HOPKINS Stiles Co Inc.

CHLORINATORS
BAU-HOPKINS HD Supply Waterworks

COMPRESSION PIPE COUPLINGS
HD Supply Waterworks Stiles Co Inc. Ti-SALES, Inc.

COOPERHORNS
E.J. Prescott, Inc. HD Supply Waterworks Stiles Co Inc.
Ti-SALES, Inc.

CURB BOXES
E.J. Prescott, Inc.	HD Supply Waterworks	Stiles Co Inc.
Ti-SALES, Inc.

CURB & CORPORATION BOXES
E.J. Prescott, Inc.	HD Supply Waterworks	Stiles Co Inc.
Ti-SALES, Inc.

DIAPHRAGMS - PUMPS
Epping Well & Pump	E.J. Prescott, Inc.	HD Supply Waterworks
Smith Pump Co.	Stiles Co Inc.	Ti-SALES, Inc.

DRILL STEEL & BITS
HD Supply Waterworks	Stiles Co Inc.

FITTINGS - BRASS & COPPER
E.J. Prescott, Inc.	HD Supply Waterworks	Stiles Co Inc.
Ti-SALES, Inc.

FITTINGS - CAST IRON
E.J. Prescott, Inc.	HD Supply Waterworks	Ti-SALES, Inc.

FITTINGS - GALV. & BLACK IRON & STEEL
E.J. Prescott, Inc.	HD Supply Waterworks

FLOW REDUCTION DEVICES
Epping Well & Pump	E.J. Prescott, Inc.	HD Supply Waterworks

FLUORIDATION EQUIPMENT
BAU-HOPKINS	Ti-SALES, Inc.

GASKETS & PACKING
Stiles Co Inc.	Ti-SALES, Inc.

GAUGES
HD Supply Waterworks	Stonkus Hydraulics

GENERATORS
HD Supply Waterworks

HYDRANTS & VALVES
E.J. Prescott, Inc.	HD Supply Waterworks	Ti-SALES, Inc.

HYDRANT MARKERS
E.J. Prescott, Inc.   HD Supply Waterworks   Stiles Co Inc.
Ti-SALES, Inc.

HYDRANT PUMPS
E.J. Prescott, Inc.   Ti-SALES, Inc.

INSTRUMENTS
BAU-HOPKINS   HD Supply Waterworks   Technology Sales

JOINT COMPOUNDS
HD Supply Waterworks

JOINT SEALING
HD Supply Waterworks

JUTE (SQUARE BRAIDED, BRAIDED & TWISTED)
HD Supply Waterworks

LAB. SUPPLIES & INSTRUMENTATION
HD Supply Waterworks

LEAD SUBSTITUTES
Stiles Co Inc.

LOCATING INSTRUMENTS
E.J. Prescott, Inc.   HD Supply Waterworks   Stiles Co Inc.
Ti-SALES, Inc.

MANHOLE FRAMES & COVERS
E.J. Prescott, Inc.   HD Supply Waterworks   Ti-SALES, Inc.

MECHANICAL JOINT MATERIALS
E.J. Prescott, Inc.   HD Supply Waterworks   Ti-SALES, Inc.

METER - SETTINGS
E.J. Prescott, Inc.   Ferguson Waterworks   Stiles Co Inc.
Ti-SALES, Inc.

METERS - WATER
Epping Well & Pump   E.J. Prescott, Inc.   HD Supply Waterworks
Stiles Co Inc.   Ti-SALES, Inc.

PAINT

HD Supply Waterworks	Stiles Co Inc.	Ti-SALES, Inc.

PIPE - BRASS & COPPER

E.J. Prescott, Inc.	HD Supply Waterworks	Stiles Co Inc.
Ti-SALES, Inc.		

PIPE - DUCTILE IRON

E.J. Prescott, Inc.	HD Supply Waterworks

PIPE - GALVANIZED & BLACK

HD Supply Waterworks

PIPE LINING

E.J. Prescott, Inc.	HD Supply Waterworks

PIPE CUTTERS

HD Supply Waterworks	Stiles Co Inc.	Ti-SALES, Inc.

PRESSURE REGULATING VALVES

E.J. Prescott, Inc.	HD Supply Waterworks	Stiles Co Inc.
Stonkus Hydraulics	Technology Sales	Ti-SALES, Inc.

PUMP CONTROL EQUIPMENT

Epping Well & Pump	HD Supply Waterworks	Smith Pump Co.
Stonkus Hydraulics		

PUMPS - CHEMICAL FEED

BAU-HOPKINS	Epping Well & Pump	E.J. Prescott, Inc.
HD Supply Waterworks	Stiles Co Inc.	Ti-SALES, Inc.

PUMPS - DITCH

Epping Well & Pump	E.J. Prescott, Inc.	HD Supply Waterworks

PUMPS - PORTABLE

HD Supply Waterworks	R.H. White Construction	Smith Pump Co.

PUMPS - TURBINE

HD Supply Waterworks	Maher Services

PURIFICATION EQUIPMENT

BAU-HOPKINS	Epping Well & Pump	Technology Sales

REPAIR COUPLINGS

E.J. Prescott, Inc. HD Supply Waterworks Stiles Co Inc.
Ti-SALES, Inc.

RESERVOIRS: NEW & OLD

Statewide Aquastore, Inc.

SAFETY SIGNALS & SIGNS

E.J. Prescott, Inc. HD Supply Waterworks

STRAINERS & FOOT VALVES

HD Supply Waterworks Stiles Co Inc.

TANKS & STANDPIPES

Epping Well & Pump HD Supply Waterworks Statewide Aquastore, Inc.

TAPPING MACHINES

E.J. Prescott, Inc. HD Supply Waterworks Smith Pump Co.
Stiles Co Inc. Ti-SALES, Inc.

TAPPING SLEEVES & VALVES

E.J. Prescott, Inc. HD Supply Waterworks Stiles Co Inc.
Ti-SALES, Inc.

TELEMETERING EQUIPMENT

Technology Sales BAU-HOPKINS

TEST PLUGS

E.J. Prescott, Inc. HD Supply Waterworks Ti-SALES, Inc.

THAWING MACHINES

E.J. Prescott, Inc.

TOOLS

E.J. Prescott, Inc. HD Supply Waterworks Ti-SALES, Inc.
Stiles Co Inc.

TORCH BURNERS

E.J. Prescott, Inc.

VALVE BOXES

E.J. Prescott, Inc. HD Supply Waterworks Stonkus Hydraulics
Ti-SALES, Inc. Stiles Co Inc.

WATER CONSERVATION DEVICES

Epping Well & Pump
E.J. Prescott, Inc.

WATER METERS

Epping Well & Pump
E.J. Prescott, Inc.
HD Supply Waterworks
Stiles Co Inc.
Ti-SALES, Inc.

WATER SYSTEM OPERATORS

Epping Well & Pump

WATER TESTING/ANALYTICAL LABORATORY

Epping Well & Pump

WATER TREATMENT EQUIPMENT

BAU-HOPKINS
D.L. Maher Co.
Epping Well & Pump
HD Supply Waterworks
Technology Sales

WELLS

Epping Well & Pump
Maher Services
Smith Pump Co.

WATERPROOFING

HD Supply Waterworks

VALVE REPAIR SERVICE

E.J. Prescott, Inc.

Everybody's point of view matters

Positive thinking
Quality solutions
Exceeding expectations

Full service engineering solutions
to Northern New England

UNDERWOOD
engineers

Visit us at www.underwoodengineers.com

Portsmouth, NH 603.436.6192 Concord, NH 603.230.9898

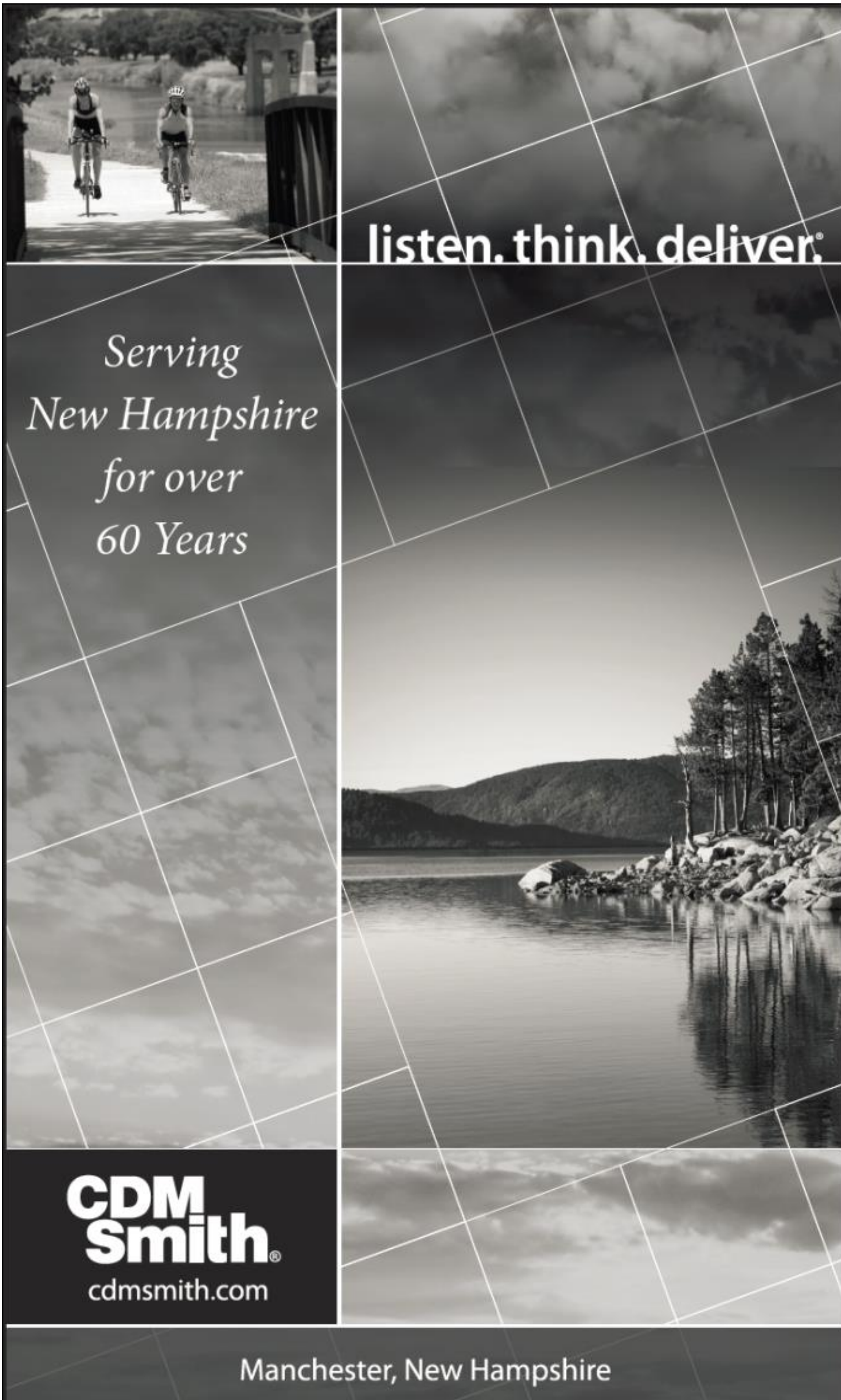
Do you have aging infrastructure that is vulnerable to failure? Don't wait for that failure to happen; begin a replacement now. With over 60 years of experience in the waterworks industry, your local Team EJP representative can help you and your team decide which options will work best for your unique situation. Let's get started now before Old Faithful starts erupting under your streets.

TEAM EJP

Pipeline Specialists

1-800-EJP-24HR
EJPRESCOTT.COM

WHATEVER YOU NEED, WHENEVER YOU NEED IT, NO MATTER WHAT.


listen. think. deliver.
Serving New Hampshire for over 60 Years
CDM Smith
cdmsmith.com
Manchester, New Hampshire

Water Resources Engineering

ASSET MANAGEMENT
ENERGY & SUSTAINABILITY
SUPPLY
TREATMENT
PUMPING & DISTRIBUTION
STORAGE
FUNDING & RATES

Tighe&Bond
Consulting Engineers
Environmental Specialists

177 CORPORATE DRIVE, PORTSMOUTH, NH 03801 | 603.433.8818 | www.tighebond.com

F. G. Sullivan Drilling Co., Inc.

Municipal • Industrial • Irrigation

GRAVEL WELLS • TEST BORINGS
WELL RECONDITIONING

Frank Sullivan
408 Parker Road
Lancaster, MA 01523

Tel. (978) 365-2932
Fax. (978) 368-8716
Mobile #(978) 423-1939

"New England's Choice for Quality Utility Construction Since 1923"

- PUMP STATIONS
- DESIGN / BUILD PROJECTS
- CONSTRUCTION MANAGEMENT
- UNDERGROUND UTILITIES
- WATER AND WASTEWATER TREATMENT PLANTS

RHWhite
CONSTRUCTION & SERVICE SOLUTIONS

3 JOHNSON ROAD - BOW, NH 03301
Call us at (800) 339-2506
www.rhwhite.com

Who is digging in your town?

Dig Safe members know.

Demonstrate your commitment to the safety of your community by protecting your underground utilities from excavation accidents. Dig Safe is a streamlined communication process that notifies you of projects that could potentially damage sewer, water, drainage, fire alarm and traffic control facilities.

- Municipalities with under 100 miles of underground facilities (or street miles) pay only $1.00 per notification. Contact Dig Safe for an estimate.
- No expensive equipment needed - only an email address is required to receive Dig Safe tickets.
- Reduce notices with Dig Safe's digital mapping system.
- 24/7 notification process.
- Electronic and voice-recorded data stored for your legal protection.
- Dig Safe meets or exceeds all of Common Ground Alliance's Best Practice recommendations for the nation's one-call centers.
- Dig Safe's extensive advertising campaign raises awareness to call 811 before digging.
- Dig Safe's detailed education program includes on-site safety seminars for excavators to learn damage prevention strategies and the requirements of the "Dig Safe" law.

Call 811 or visit digsafe.com to learn more about membership.


Ti SALES
36 Hudson Rd
Sudbury MA 01776
800-225-4616
www.tisales.com
Proud of our 52 Years of Serving All of New England
NEPTUNE Technology Group
AMR & AMI Meter Reading Technology
FORD
Test Benches
Meter Setters
Meter Pits
Brass Goods
Clamps & Couplings
Uni-Flange
AVK
Valves & Hydrants
with SS Stems
Check Valves
LMI Chemical Feed Pumps
Carus Corrosion Control Chemicals
Scaletron Drum, Tank & Platform Scales
MJ Fittings - Copper Tubing - Plastic Tubing - DI Pipe - PVC Pipe
Marking Paint & Flags
Hydrant Anti-Freeze
LaMotte Chemical Test Kits & Reagents
Octoplug Fast Set Concrete
Tracer Dye Tablets
Reed Water Service Tools
Hydrant Parts for ALL Makes
Streamlight Super Flashlights
Cob Quik-Freezer Freeze Kits
Fernco Couplings
Gate, Curb, & Manhole Adapters
Cla-Val Control Valves
Schonstedt Magnetic Locators
Concut Diamond Pipe Cutting Blades
Zurn Wilkins Backflow Preventers
Red-B-Gone
Sewer Saddles
Cretex ProRing MH Risers
The Supply House That Knows How To Help!

GeoInsight

Your Ad Here!

Wright Pierce


TATA & HOWARD
Providing innovative engineering solutions to New England water utilities for over 23 years
OFFICES IN MA | CT | ME | NH | VT | AZ | TX
800-366-5760 | www.tataandhoward.com


GEOSPHERE
ENVIRONMENTAL MANAGEMENT INC.
NEW HAMPSHIRE
MASSACHUSETTS
(603)-773-0075
(888)-838-6571
WWW.GEOSPHERENH.COM
GROUNDWATER SUPPLY
ASSET MANAGEMENT
SITE ASSESSMENTS
LSP SERVICES
GIS MAPPING
PROFESSIONAL CONSULTANTS PROVIDING
GROUNDWATER & ENVIRONMENTAL SOLUTIONS


CAI Technologies
Precision Mapping. Geospatial Solutions.
Leveraging Technology for Powerful GIS Solutions.
11 Pleasant Street
Littleton NH 03561
P (603) 444-6768 / (800) 322-4540
cai-tech.com
Core Services:
▪ Geographic Information Systems
▪ Municipal Mapping
▪ Utility Infrastructure Mapping
▪ Customized GIS Solutions
▪ Web Solutions


MAHER services
Third generation of Maher's servicing New England's water needs since 1941.
• Pump Sales & Services
• Well Drilling, Rehabilitation & Maintenance
• Pantonite for Cleaning & Disinfecting Wells/Water Storage
• SiLibeads Engineered Filtration Media
978-664-9355 • www.maherserv.com

A World of Thanks for your Patronage

Bruce W. Lewis, PE

Pepperrell Cove Marine

Marine Contractors & Commercial Divers

Off: 603-373-6812
Fax: 603-373-6832

105 Bartlett St.
Portsmouth, NH 03801

www.pepcovemarine.com

TTG

Barrie

AD Instruments

Field Service for Water and Wastewater Instruments

23B S. Main Street Newton, NH 03858
Ph: 603-382-4667 Fax: 603-382-4608

AD Instruments can put you on our semi-annual inspection schedule to assure that your system is being monitored accurately and all sensors are operating properly.

GOT SCADA?

Let Us Make It Work For You!

Our technicians can help you improve the performance of your SCADA system.

Service Contracts ~ Flow, Level, Telemetering ~ Pump & pH Control ~ VFD's ~ SCADA ~ Programmable Controllers ~ Experienced Staff ~ Personal Service ~ Competitive Prices ~ Large Parts Inventory ~ Fully Insured and Bondable
email: adinstruments@comcast.net

The "Original" Water Professionals

www.eppingwell.com

EPPING WELL & PUMP CO. INC.

337 CALEF HWY, EPPING, NH 03042
26A MAIN STREET, PITTSFIELD, NH 03263

Water Pumps, Sales & Service
Accredited Water Analyses
Water Treatment Design and Installation
Public Water System (PWS) Operators
New PWS Source Permitting
PWS Aquifer Optimization/Source Capacity
Irrigation System Design and Installation

24/7 EMERGENCY SERVICE

800-287-5299


Water & Pump Services
Water & Septic Pumps • Pump Control Systems
Water Filtration • Treatment • Conditioning • Chlorination
Iron, Manganese, Radon, Uranium, Arsenic Removal
Operating Community Water Systems • Certified NH & ME
FXLyons
Inc. www.fxlyons.com
LICENSED PUMP INSTALLER
Route 16/302
Intervale, NH
24-Hour Service 603-356-6767


YOUR TRUSTED PARTNER
Count on our lab to deliver exceptional quality data and unsurpassed customer service.
Soil • Groundwater • Wastewater • Drinking Water
Eastern Analytical, Inc.
Professional laboratory and drilling services
35 years
800.287.0525 • www.easternanalytical.com

Stiles

FERGUSON®
Waterworks
a **WOLSELEY** company

1 Chester Road
Raymond, NH 03077
Phone: (603) 895-2282
Fax: (603) 895-4254
Mobile: (603) 553-0175
david.dembkoski@ferguson.com

Dave Dembkoski
OUTSIDE SALES

Sustainable Distribution System Solutions

Utility Service Group

Solutions from Utility Service...

Water Quality
· Ice Pigging · THM Removal · Tank Mixing
· Chemical Cleaning: *tanks, filter media, clear wells*

Asset Management
· Storage Tanks
· GPS locating, mapping & GIS Services
· Valve & Hydrant locating, exercising, maint. & repairs

Water Conservation
· Water Loss Reduction
· Helium Leak Detection Services

AQUALOGY
Innovative, flexible and comprehensive solutions from a company you've trusted since 1963.

To learn more contact your local Utility Service Representative...

Scott Kelley . 855.526.4413 . Center Barnstead, NH
help@utilityservice.com
visit us at www.utilityservice.com

2016 ADVERTISING RATES

NHWWA

JOURNAL ADVERTISING - 2 Issues per year published in Spring and Fall.

	Cover Page	Full Page	½ Page	¼ Page	Business Card
Space Size	4.5" X 7.5"	4.5" X 7.5"	4.5" X 3.75"	4.5" X 1.7"	2" X 1"
Cost/Year	$345.00	$230.00	$145.00	$115.00	$70.00

Directory of Manufacturers Listing $85/year

Includes names of up to 3 representatives, contact information and product listing.
See back of page for directory categories.

NEWSLETTER ADVERTISING - 3 Issues per year, January, June and September

One ad - 2.5" X 1.75" $250/year

WEBSITE ADVERTISING

Medium Rectangle—appears on all pages, links to advertiser's site. $400/year

Footer Banner—3 ad animation loop, appears on all pages, links to advertiser's site. $300/year

---

SPONSORSHIP OPPORTUNITIES

Drinking Water Week Festival $50
-held the first week in May for NH school children

Construction Day/Field Trip $50
-held early August, includes an ad in an 8 1/2 X 11 color brochure

NH Drinking Water Expo & Trade Show $50, $100, $150
- held late October, General Support, Food & Beverage, Seminar Rooms

---

Please note that billing for advertising will be done once per year, in November for the fiscal year November 1 through October 31. Sponsorships are solicited prior to each event.

Advertisers and representatives receive copies of the Journals, Newsletters and meeting notices and are welcome to attend meetings at member rates, which are held in various locations throughout the state.

NHWWA
18 N. Main St., Suite 308, Concord, NH 03301
info@nhwwa.org/www.nhwwa.org
603-415-3959

TIMES ARE CHANGING...

...but the quality and preference of Ductile Iron Pipe used in New Hampshire for the last 100 years has not.

U.S. PIPE
STRONG...SINCE 1899

U.S. Pipe was one of the first manufacturers to embrace ductile iron pipe in the mid 1960s, and it is now the industry standard for water and wastewater systems in New Hampshire. Nearly five decades of research and development have led to significant improvements, including our exclusive line of TYTON JOINT®, TR FLEX® and USIFLEX® pipe products.

"With US Pipe's acquisition of Griffin Pipe in early 2014, the largest stocking distributor of U.S. Pipe in New Hampshire can now be found in Manchester."

NXT® Pipe • TYTON JOINT® Pipe • TR FLEX® Ductile Iron Pipe and Fittings • TR-XTREME™ Pipe HP LOK® Restrained Joint • Welded Outlets for Ductile Iron Pipe • USIFLEX® Ductile Iron Pipe Ductile Iron Flanged Pipe and Fittings • Mechanical Joint Pipe - Special Linings

NEW HAMPSHIRE BRANCH LOCATION

MANCHESTER
232 Frontage Road
603-263-7350

Local Knowledge
Local Experience
Local Service, Nationwide®

HD SUPPLY® WATERWORKS

CAP Online Services

hdswaterworks.com

New Hampshire Water Works Association
18 N. Main St., Suite 308
Concord, NH 03301

NONPROFIT ORG
US POSTAGE
PAID
CONCORD NH
PERMIT NO 990

Or Current Resident