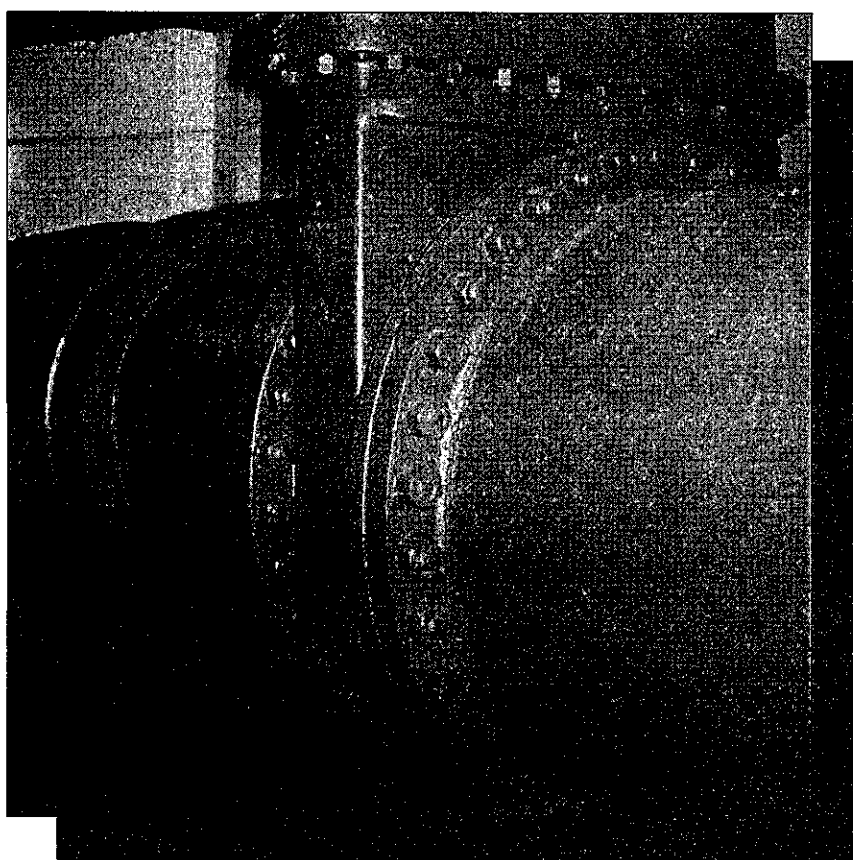




# In The Main.

The Technical Assistance Newsletter for Public Drinking Water Professionals

DEP Division of Water Supply  
In The Main  
One Winter Street  
Boston, MA 02108



Division of Water Supply

Department of Environmental Protection

Executive Office of Environmental Affairs

Commonwealth of Massachusetts

Volume 3, Number 2  
Spring 1990

## 1989 VOC Testing Summary: Medium-Sized Systems

Tara Gallagher

In 1989, the second year of testing under the Volatile Organic Compound (VOC) Program, 91 medium-sized public water systems serving between 3,300 and 10,000 persons tested for 59 VOCs. No sources detected VOCs in exceedance of existing maximum contaminant levels and no sources had to be taken off line as a result of testing.

This program is required by the federal Safe Drinking Water Act Amendments of 1986 and follows a phased-in approach by system size.

The results showed that medium-sized systems had a much lower rate of VOC detection than the systems serving over 10,000 persons that began testing in 1988. The medium-sized systems detected VOCs in 26 percent of all sources while 47 percent of the larger sources had detected VOCs previously.

Medium-sized systems detected VOCs in 58 groundwater sources (28 percent) while only four (13 percent) of surface water sources showed VOCs. These percentages do not include trihalomethanes when detected as disinfection by-products.

*Continued on page 4*

## New Director Appointed to DWS

Tony Abruzese

On February 5, 1990, Dave Terry was appointed to the position of Director of the Division of Water Supply at DEP. He has been with the Division for the past eight years and has served as both Deputy and Acting Director. In response to many dramatic changes, with more yet to come, in both the water supply profession and DEP, Mr. Terry has a number of priorities for the Division.

In the following interview Mr. Terry describes some of these priorities with Tony Abruzese, Editor of "In The Main":

**Q** What do you consider to be the most pressing issues currently facing the Division of Water Supply?

"The Safe Drinking Water Act and its effects on the water supply business. The 1986 amendments changed the water supply profession drastically. New rules, parameters and monitoring requirements are being phased in and applied to systems all over the country. From a public health standpoint this is beneficial. However, to the suppliers who have to fulfill these requirements, it will be difficult. Implementation of these amendments will take time, money and technical expertise."

**Q** Are there specific problems in Massachusetts that are of major concern?

"My immediate concern is for the small public water systems. I think it is very important for us to analyze specific problems these systems will be facing and develop ways to deal with them."

**Q** Why do smaller systems need special attention?

"There are 294 small systems in Massachusetts. These systems serve less than 3,300 people. While I am convinced that the larger community water systems have the capacity to wade through the rules process, the small systems may not have the time, money, or technical support needed to get through all the new requirements imposed upon them."

**Q** What can DEP do to help?

"The first thing we must do is improve our outreach to these systems. After meeting with many suppliers throughout the Commonwealth over the past year, I've realized that we need to emphasize communication—in both directions—between DEP and the suppliers. I am committed to improving our outreach program. In order to make these efforts more responsive to their needs, we will continue to reach out and get feedback."

**Q** How will this help the small systems?

"We can specifically target small systems when we do our outreach. For example, we can have a regular column in this newsletter with specific information just for small systems. We are also dedicating staff solely for these systems."

**Q** Will DEP be able to give these systems all the assistance they need?

"Well, that brings us to one of my long-term goals for the division. We need to develop a closer working relationship with the Mass. Water Works Association. They have the ability and expertise to assist DEP in aiding the smaller suppliers. I think Mass. Water Works could potentially play a leading role in representing water suppliers in many areas like water supply programs, budgeting and funding, and legislation."

**Q** How do you feel about DEP's image with suppliers?

"In the eight years I've worked here, I've been struck by the schizophrenic relationship we have with them. On the one hand we are offering technical assistance to help them meet the EPA's regulations but on the other hand we have to enforce these regulations. I think it's important that the DEP staff understand the delicate balance between service and enforcement. We must work with suppliers to be more

*Continued on page*

### LES News

Tara Gallagher

The Division is preparing information to assist public water suppliers in switching to commercially certified labs when the state ends free testing on July 1, 1990.

Water suppliers should receive their information packets, including individualized sampling charts for their systems, before the end of April.

The Lawrence Experiment Station (LES), due to budget constraints, will cut back its analyses starting July 1, 1990. It will continue to perform QA/QC (coliform check samples), confirmation and emergency samples, the annual regular chemistry for source waters, and fluoride samples for systems in the state's fluoridation program. □

# Water Supply Additives

Julie Smith

Beginning in April 1990, Massachusetts will kick off its program for drinking water additives. In the past, the Environmental Protection Agency provided technical assistance in this program but as of April 7, 1990 their involvement is terminated.

The Department plans to pick up this program by setting up a review process in accordance with our New Technology Policy. This policy defines drinking water additives as products that treat water and for this review process, the Department will recognize the National Sanitation Foundation (NSF) or other

third party certification agencies to be designated by the Department. Our drinking water regulations will also be rewritten to reflect this change with a section on the certification of drinking water additives which will be similar to the present certification program for cross connection control devices.

It should be noted if you would like to have a water supply additive approved, applications should be sent to the Boston office of the Division of Water Supply at the Department of Environmental Protection at One Winter Street.

If you have any questions, feel free to call me at (617) 292-5875. □

# UST Regulations Update

Mary Wheeler

The last issue of "In The Main" (Winter 1990) reported that the Department is drafting a regulation governing underground storage tank systems (USTs) in water supply protection areas. This article is an update on the status of that regulation.

The USTs affected by the proposed regulation are those located in the designated protection areas of water supply systems which withdraw 100,000 gallons per day or more from groundwater sources or from surface water reservoirs, lakes or ponds. The protection areas designated by the Department are Zones S1 and S2 for surface waters: S1 is the area within one hundred (100) feet of the maximum high water level; S2 is the area within one half mile of the maximum high water level and within the watershed.

For groundwater sources the designated protection areas are Zone I, and Interim Zone II or delineated Zone II as approved by the Department. Water supply protection areas and the proposed schedule for compliance were described in the previous issue of this newsletter. The only change to either is that the compliance dates are now proposed to be July 1, 1992, 1994 and 1995 instead of April 1 of the same years. The regulation will apply to tank systems located in protection areas for current water supply sources, backup sources (as identified by the water supplier) and new sources as they are brought on line.

As previously reported, the regulation would require the closure and removal of substandard tanks and piping (i.e. those constructed of porous material or unprotected steel, and greater than fifteen years old) which store hazardous product and are located in designated water supply protection areas.

As proposed, tank replacements will be allowed in Interim Zone IIs, Zone IIs, and Zone S2. Replacements are governed by Department of Public Safety Regulations (527 CMR 9.00). Tank replacements will not be allowed in Zone I and Zone S1. Water suppliers needing to close a substandard UST system in their Zone I should consult *Guidelines and Policies for Public Water Systems* (Section 6.6.6. p. 85) for recommendations on alternate fuels and full storage methods as replacements for USTs.

The closures will be phased in between July 1992 and July 1995 based on the proximity of the UST to the water supply and the contents of the tank. Hazardous product includes gasoline, fuel oils, and other materials as defined in 310 CMR 40.00 or deemed a hazardous product by the Department. Waste oil may be included by definition as a hazardous product. Hazardous waste storage will not be governed by the proposed regulation as it is already governed by other Departmental regulations.

The regulation was drafted by a workgroup convened last September. The group included nine DEP staff and ten members representing business, industrial, municipal, regulatory and environmental interests.

The draft regulation is now under review within the Department and is currently expected to go to public hearing in late May. The comment period on the regulation will extend for 21 days after the first hearing. All public water suppliers whose systems withdraw 100,000 gallons per day or more will receive notice of the hearings along with a copy of the proposed regulation. □

# Don't Forget: National Drinking Water Week May 6 - 12

Tony Abruzese

It's that time again—National Drinking Water Week starting May 6, 1990. This is an opportunity for water suppliers to reach out to their customers and promote their facilities and services.

Water Week was established several years ago by the American Water Works Association (AWWA) to address drinking water issues. Efforts during water week on the federal, state and local level are made to increase public awareness on where our water comes from and how to conserve and protect our supplies.

Massachusetts water suppliers should take this opportunity to show off their facilities and the quality of their product—safe drinking water! It can be said that most people today don't know about the fine quality of drinking water provided by local public water departments. People turn to bottled water and home filtration devices because they believe these practices are more healthful. Those of us in the water supply business know that this is not true and this is your chance to educate your community. Simply explaining resource protection efforts, the numerous monitoring activities and parameters tested for, and investments made on your utility can go a long way to improving your image. Also, if there is a need for greater resource protection and/or revenues for monitoring and maintenance, now is the time to get the word out.

These efforts will help residents understand what steps are taken to ensure the quality of their water which will be a better reflection on you!

There are several ideas for activities to promote your systems during Water Week, including explaining the results of water testing to the community in simple terms; holding open houses and tours of your facility; promoting conservation through demonstration projects; involving school-age children in activities such as poster contests, fire hydrant painting, educational programs, etc.; and encouraging community involvement and support of local bylaws to protect water supplies.

If you are a member of AWWA you should have already received an official Drinking Water Week workbook and planning kit. Included in the kit is a sample of a news release and scripts for radio public service announcements, an offer for a video public service announcement and a booklet of ideas. If you are not a member but would like to get a copy of the water week workbook, it is available for a nominal cost from the New England Water Works Association. Included in the book is a hotline number for Water Week advice up until the event. To receive a copy contact: New England Water Works Association at 42A Dilla Street, Milford, MA 01757, phone 508/478-6996. □

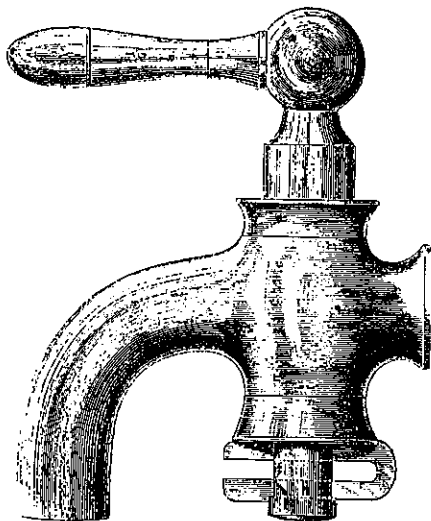
## ■ New Director, continued from page 1

sensitive to this dual nature.

"My philosophy is that the more time we can invest in helping them with technical assistance, the less time we will have to devote to enforcement. First and foremost, we should help them understand and comply with the rules. No one likes to have to do enforcement work. It is much more gratifying to help suppliers stay in compliance." □

## Editor's note:

One way to improve communication with DEP is to write letters to the editor to this newsletter. I will see to it that they are printed and responded to in a timely manner. If you have something to say, please write. You will be doing yourself and your fellow water supply professionals a service.



## In The Main

One Winter Street  
Boston, MA 02108

The Commonwealth of Massachusetts  
Michael S. Dukakis, Governor

Executive Office of Environmental Affairs  
John P. DeVillars, Secretary

Department of Environmental Protection  
Daniel Greenbaum, Commissioner

Division of Water Supply  
David Y. Terry, Director  
Tony Abruzese, Editor

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# Water Management Update

## Preparing for Water Emergencies

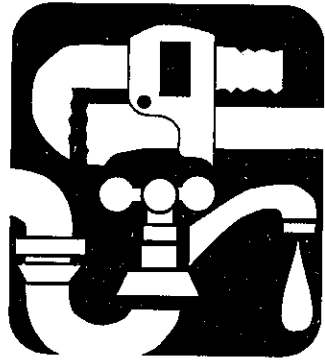
Beth McCann

Although it seems early to be thinking of the hot, dry summer months, now is the time for public water suppliers to begin thinking about summer water emergencies. This is particularly true if your system has a history of running low during the summer months, or if your community has recently experienced a spurt of growth, or has lost a source of water.

There are several things public water suppliers should know about declaring a water supply emergency:

- Public water suppliers can petition the Department of Environmental Protection to declare a state of water emergency under MGL 21G ss 15 (The Water Management Act). Water suppliers should contact the water supply staff in the regional DEP office if they anticipate a water supply emergency in their community. DEP staff will then work with the local water supplier to design a plan to end the emergency. The plan might include such steps as a leak detection program, system rehabilitation, restricting certain water uses, a temporary moratorium on the issuance of building permits, or any other measures necessary to end the emergency.

- Public water suppliers cannot declare a state of water emergency without the prior approval of the Department. What you can do is ask customers to voluntarily cut back on their water use. However, such restrictions cannot be mandatory unless the supplier has first petitioned the Department for a declaration of water emergency and developed an approved plan to end the emergency.



- A state of water emergency approved by the Department does not automatically give water suppliers the power to fine those who violate water emergency restrictions, such as bans on outdoor watering. The community must enact a by-law enabling the municipal public supplier to fine those who violate emergency restrictions.\* Municipal public water suppliers received a copy of a sample by-law from the Department last winter. If your community has not enacted such a by-law, now might be the time to put one in place if you anticipate a summer water emergency. Water supply districts should check with their district council to see if they have the authority to fine those who violate water supply restrictions during an emergency.

A water supply emergency truly cannot be declared overnight. It takes time and coordination to develop a plan and to put emergency by-laws into place. So now is the time to begin thinking about water emergencies for suppliers who suspect they might have a problem this coming summer. □

\* In response to numerous requests for stronger local enforcement powers from water suppliers, House Bill 3776 has been filed for the current legislative session. The bill would amend Chapter 40 of the General Laws to enable cities and towns to promulgate emergency regulations and assess fines of up to \$500 in order to enforce DEP-declared water supply emergencies without first going to the city council or town meeting to pass a local by-law.

## Water Management Act Permitting Moves to the South Coastal Basin

Trish Garrigan

The next river basin to come up for permitting under the Water Management Act is the South Coastal Basin. This basin includes land area in all or part of the following towns: Abington, Bourne, Cohasset, Duxbury, Halifax, Hanover, Hanson, Kingston, Marshfield, Norwell, Pembroke, Plymouth, Plympton, Rockland, and Scituate.

New or existing water withdrawals in the South Coastal Basin which exceed 100,000 gallons per day and are not registered must be permitted. Permit applications must be submitted to DEP between August 1 and August 31, 1990.

There are 89 registered water withdrawals in the South Coastal basin. An analysis of annual report data shows that approximately 20 registrants will have to apply for a permit because they have exceeded their registered volume by the threshold volume (100,000 gallons per day). Application forms and guidelines are now available from the Water Management Program.

If you would like additional information please call the Water Management Program at (617) 556-1077. □



## Elm Bank: Largest Pumping Test in Massachusetts

Bruce Bouck

In August 1989, a pumping test was run on the Elm Bank property in the Town of Dover. A total of four pumping wells at a combined pumping rate of 3.3 million gallons per day (mgd) makes this the largest public water supply pumping test ever run in the State of Massachusetts. What makes this particular test stick out amongst the others were the many complications that arose prior to, during, and after the pumping test was run.

To start things off, the Towns of Natick, Needham, Dover, and Wellesley all have rights to this water supply due to a special legislative order. If this new source is not approved by July 1, 1990, however, then the water rights will be transferred to the MWRA.

The Town of Natick took the lead on this project solely because they have the greatest need for the water. Anderson-Nichols Company was hired at this time to undertake the pumping test and Zone II delineation. During the initial site exam, an area of dumping was discovered near the proposed pumping well sites. During further site reconnaissance, a total of five dumps were observed. It was required by DEP to clean these sites up before any pumping test was run.

Due to the fact that two earlier reports contradicted one another concerning the amount of induced infiltration that was being derived from

the Charles River due to pumping (Elm Bank is surrounded on three sides by the Charles River), DWS required the test to be run during the river's historical low flow time of the year in order to approximate drought conditions. Unfortunately, these conditions did not exist at the beginning of the pumping test. In fact, the opposite occurred. Torrential downpours took place during the week before the startup of the test causing unusually high seasonal flow conditions in the Charles River. At the beginning of the test, although the groundwater levels were still rising, the test commenced due to the unusual time commitment already incurred by all involved parties.

The test was originally designed to run for 10 days because of potential contamination that may be emanating from the main dump site. On the eleventh day the pumps were shut down. Stabilization of the groundwater level was reached only when the change in groundwater level in ambient wells (wells in which groundwater levels are affected by ambient conditions only and not by the pumping wells) was subtracted from the water levels in the wells influenced by the pumping, causing a change of less than 0.1 feet over the last 24 hours of the test. Additional 24 hour pumping tests were run on each individual well after the 11 day pumping test in order to obtain aquifer parameters with no interference from combined pumping wells.

Other problems that arose were the noise of the test, land acquisition, discharge line, influence on private wells, and site access. During the test, there were complaints concerning the noise generated by the diesel engines turning the pumps. To eliminate this problem, a noise consultant was hired and hay bails and plywood were used to surround the loudest diesel pump in order to muffle the sound.

Land had to be controlled across the river from the pumping wells in order to secure the 400 foot radius, Zone I, around each individual pumping well. This is in the process of being controlled through conservation restriction with the Town of Wellesley and Wellesley College.

The discharge line totalled over 7,000 feet in length with four individual lines running from each pumping well to a location beyond the most downstream pumping well. Trenches had to be dug to run sections of the lines underneath the roadways.

Wells were monitored near residential dwellings on private well systems due to concerns that the pumping of this aquifer would affect the water levels and quality of private wells. And last, but not least, problems existed with positioning vehicles and drilling rigs on the site due to enormous ruts created in the dirt roads from the heavy rainstorms encountered.

Continued on page 4

# U.S. Environmental Protection Agency

## Rule Making Schedule

### National Primary Drinking Water Regulations

#### Safe Drinking Water Act of 1986

**Promulgated Rules**  
Phase I: VOCs  
Final: July 1, 1988  
53 FR 25108  
Effective: December 1989

**Fluoride**  
Final: April 2, 1986  
51 FR 11396  
Effective: September 1987

**Surface Water Treatment Rule and Total Coliforms**  
Final: June 29, 1989  
54 FR 27488,27547  
Effective: December 1990

**Proposed Rules**  
Lead and Copper  
Proposed: August 18, 1988  
53 FR 31516  
Final: Fall 1990  
Effective: Mid-1992

**Phase II: 38 SOCs/IOCs**  
Proposed: May 22, 1989  
54 FR 22062  
Final: December 1990  
Effective: Mid-1992

**Future Rules**  
Phase III: Radionuclides  
Proposed: Early 1991  
Final: June 1992  
Effective: early 1994

**Phase V: IOCs - 25 Contaminants**  
Proposed: June 1990  
Final: March 1992  
Effective: September 1993

**Phase VI(a): Disinfection Disinfectants, and Disinfection By-Products**  
Proposed: September 1991  
Final: Fall 1992 - Mid-1993  
Effective: Early - Mid-1995

**Phase VI(b): Nondisinfection By-Products**  
Schedule not available

**Groundwater Disinfection Treatment Requirement**  
Schedule not available

#### ■ VOC Testing Summary, continued from page 1

All medium-sized system's groundwater sources were tested at least twice in 1989 and surface water sources were tested in all four quarters. All analyses were performed by one of the 52 commercial laboratories certified by DEP for VOC analysis. New detection methods enabled the detection of compounds that are present in minute quantities (generally 0.5 parts per billion) that may not have been detectable previously.

After the initial year of monitoring, all large and medium-sized systems must continue to test for VOCs at least once each year. All testing data is reviewed by the Division of Water Supply (DWS) as well as by public health specialists in DEP's Office of Research and Standards (ORS). ORS determines the health effects of any detected compound(s) and advises DWS on situations where a health risk is present.

The volatile organic compounds detected by medium-sized systems testing in 1989 are listed in order from those detected most frequently to those detected least frequently. In all, 26 of the 59 listed VOCs were detected. Eight of the 59 VOCs that must be tested have maximum contaminant levels and an asterisk appears next to each of these on the accompanying chart. The VOCs detected vary somewhat from those detected by larger systems in 1988. Seven of the 10 most frequently detected chemicals were the same in 1988 and 1989. Notably, large systems detected Tetrachloroethylene in 51 (10 percent) of all sources while medium-sized systems only detected it in four (two percent) of sources testing.

The results of the 1989 testing for medium sized systems are summarized here. All remaining small systems will begin VOC testing in 1991.

#### Results by System

- ◆ 34 (37%) of 91 systems detected VOCs in one or more of their sources (excluding trihalomethanes (THMs))

#### Results by Source

- ◆ 62 (26%) of 240 sources tested detected VOCs
- ◆ 58 (28%) of 210 groundwater sources tested detected VOCs
- ◆ 4 (13%) of 30 surface water sources tested detected VOCs

#### Results by Region

##### Western Region:

- ◆ 3 (17%) of 18 systems detected VOCs
- ◆ 3 (13%) of 27 groundwater sources detected VOCs
- ◆ 1 (7%) of 15 surface water sources detected VOCs

##### Central Region:

- ◆ 11 (32%) of 34 systems detected VOCs
- ◆ 15 (20%) of 76 groundwater sources detected VOCs
- ◆ 2 (20%) of 10 surface water sources detected VOCs

##### Northeast Region:

- ◆ 5 (33%) of 15 systems detected VOCs
- ◆ 4 (13%) of 31 groundwater sources detected VOCs
- ◆ 1 (20%) of 5 surface water sources detected VOCs

##### Southeast Region:

- ◆ 15 (63%) of 24 systems detected VOCs
- ◆ 36 (47%) of 76 groundwater sources detected VOCs
- ◆ 19 (25%) of groundwater sources detected chloroform only
- ◆ 17 (22%) of groundwater sources detected other VOCs

For more information, contact Tara Gallagher at (617) 292-5930. □

Company, for their unlimited time and effort in operating the most complicated, costly, and largest public water supply pumping test ever run in the State. □

| Contaminant                        | Total Number of Sources Detecting | Number of Groundwater Sources Detecting | Number of Surface Water Sources Detecting |
|------------------------------------|-----------------------------------|---|---|
| 1,1,1-Trichloroethane*             | 23                                | 22                                      | 1   |
| Chloroform (1)                     | 23                                | 23                                      | 0   |
| 1,1 Dichloroethane                 | 9                                 | 7                                       | 2   |
| cis-1,2, Dichloroethylene          | 7                                 | 7                                       | 0   |
| Trichloroethylene*                 | 6                                 | 6                                       | 0   |
| Dichlorodifluoromethane            | 4                                 | 4                                       | 0   |
| Tetrachloroethylene                | 4                                 | 4                                       | 0   |
| p-Xylene                           | 3                                 | 3                                       | 0   |
| o-Xylene                           | 3                                 | 3                                       | 0   |
| Fluorotrichloromethane             | 3                                 | 3                                       | 0   |
| 1,1-Dichloroethylene*              | 2                                 | 2                                       | 0   |
| Benzene*                           | 2                                 | 2                                       | 0   |
| 1,1,2,2 Tetrachloroethane          | 2                                 | 1                                       | 1   |
| Toluene                            | 2                                 | 2                                       | 0   |
| Ethylbenzene                       | 2                                 | 2                                       | 0   |
| trans-1,2 Dichloroethylene         | 2                                 | 2                                       | 0   |
| 1,2-Dichloroethane*                | 1                                 | 1                                       | 0   |
| Ethylene Dibromide (EDB)           | 1                                 | 1                                       | 0   |
| Chloromethane                      | 1                                 | 0                                       | 1   |
| Sec-butylbenzene                   | 1                                 | 1                                       | 0   |
| 1,2,3 Trichloropropane             | 1                                 | 1                                       | 0   |
| Chloroethane                       | 1                                 | 1                                       | 0   |
| 1,2-Dichloroethane                 | 1                                 | 1                                       | 0   |
| 1,3,5 Trimethylbenzene             | 1                                 | 1                                       | 0   |
| 1,2 Dibromo-3-chloropropane (DBCP) | 1                                 | 1                                       | 0   |
| Bromodichloromethane               | 1                                 | 1                                       | 0   |

(1) This number only includes detections of chloroform when it was not a disinfection byproduct.

#### ■ Elm Bank, continued from page 3

Water quality testing was unusually rigorous because of the potential contamination threat from the surrounding area. Traces of volatile organics were found in some monitoring wells and several rounds of subsequent sampling have been completed since the pumping test was run. Additional sampling and cleanup will be done by the owner of the property, the Massachusetts Division of Capital Planning and Operations, and their consultant, Briggs Associates.

This pumping test was run in conjunction with the Charles River Street pumping test located downgradient in the Town of Needham. Needham has two existing public supply wells pumping at a combined rate of four mgd at this site. The proposed well was pumped at 0.5 mgd. Due to the large volumes of water being pumped at both sites

combined (8 mgd) and the potential of significantly lowering the water level in the Charles River under drought conditions, the Needham test started three days prior to the Elm Bank test in hopes that stabilization would occur before the Elm Bank test started. Because of the fluctuating water table, it is hard to say whether or not this actually occurred. However, there did exist the condition that both pumping tests were operating simultaneously, creating a worse case pumping scenario.

Currently, DWS is awaiting the submittal of both pumping test reports. DWS would like to thank the Town of Needham and their consultant, CH2M Hill, for their cooperation, and the Town of Natick and their consultant, Anderson-Nichols

Continued at right