

**MWRA ADVISORY BOARD MEETING**  
**APRIL 21, 2011**  
**NEWTON NORTH HIGH SCHOOL (LECTURE HALL)**  
**457 WALNUT STREET, NEWTON, MA – 11:30 A.M.**  
**MINUTES APPROVED AT THE JUNE 16, 2011 MEETING**

Forty people were in attendance, including eighteen voting members: Mike Rademacher, ARLINGTON; Peter Castanino, BELMONT; Jay Hersey, BROOKLINE; John Sanchez, BURLINGTON; David Field, DEDHAM; J. R. Greene and Barbara Wyatt, GUBERNATORIAL APPOINTEES; Bill Hadley, LEXINGTON; Jay Fink, LYNN; Katherine Haynes Dunphy, MILTON; Wiff Peterson, NATICK; Peter Smyrnios, PEABODY; John DeAmicis, STONEHAM; Walter Woods, WELLESLEY; Earl Forman, WESTON; Zig Peret, WILBRAHAM; Joe Lobao, WILMINGTON; Guy Brandenstein, WINTHROP.

Also present: Andrew Pappastergion and Joseph Foti, MWRA BOARD OF DIRECTORS; George Burnell and Erik Gitschier, LEXINGTON; The Honorable Setti Warren, MAYOR OF NEWTON; Dave Turocy, Phil Jasset and Ryan Ferrara, NEWTON; Joe Welch, NORWOOD; Stephen Shea, BWSC; Ed Bretschneider, WAC; Lexi Dewey, WSCAC; Fred Laskey, Kathy Soni, David Whelan, Rob Belkin and Mike Morris, MWRA STAFF; Joe Favaloro, Matthew Romero, Maggie Atanasov and Mary Ann McClellan, MWRA ADVISORY BOARD STAFF; Cornelia Potter, MWRA ADVISORY BOARD CONSULTANT.

**A. WELCOME**

Chairman Katherine Haynes Dunphy called the meeting to order at 11:42 a.m. and introduced the Honorable Setti Warren, Mayor of Newton, who welcomed everyone to Newton.

**B. APPROVAL OF THE FEBRUARY 17, 2011 MINUTES OF THE ADVISORY BOARD**

A Motion was made **TO APPROVE THE MINUTES FROM THE FEBRUARY 17, 2011 ADVISORY BOARD MEETING.** It was seconded and passed by unanimous vote.

**C. PRESENTATION: CASE STUDY – BWSC: UTILIZING HYDRAULICS AND PIPE ASSESSMENTS TO CREATE A 20-YEAR PIPE REPLACEMENT PROGRAM –** Steve Shea, BWSC Director of Engineering and Design

Steve Shea, Director of Engineering and Design for the Boston Water and Sewer Commission (BWSC), gave a presentation on BWSC's recently completed distribution study. This is the third study that BWSC has done in the last forty years (1966, 1986 and present). Each study focused on a different part of the system.

In 1966, the system was in horrible shape and was leaking a tremendous amount of water. The focus from that study was to ensure that the large mains were cleaned and cement-lined and that there was fire-flow capacity. The 1986 study found the system in better shape. A recommendation from the 1986 study was to replace or clean and cement line water mains at the rate of at least 17 miles per year; BWSC has done that for nearly 25 years, coupled with

some improvements made to the Central Artery and other large projects, BWSC has been able to replace or repair nearly 600 miles of pipe out of 1,000 miles. Water consumption has been cut by about half.

This study focused on all of the pipes in BWSC's system to develop another 20-year program in which staff could use the latest technologies to ensure that no money was being wasted and that the right pipes are being repaired and replaced. There has been certain criteria on which pipes would be replaced out of the 1,000 miles of pipe but it was often difficult to make those decisions. Staff wanted to get something more up-to-date and choose programs and software that would help staff understand the system even better to be able to put something in a report so that for the next 20 years, no matter who is in charge, there would always be a direction in which to go with a program that makes sense.

This \$2 million study funded by BWSC was begun about two and one-half years ago by Camp Dresser & McKee. One task was the review of the water mains to develop the 20-year plan. To look at the water mains, staff started with pipe samples from the BWSC system, taking 93 samples from around the city. All different types of pipes were taken out from construction sites that had excavations. During the 1986 study, pipe had been taken out and staff still had all of those reports so there was about 170 samples of pipe from throughout the City of Boston. Types of pipes included cement-lined in place pipes from the 1960s, old tuberculated cast-iron pipe and ductile lining pipe; all of BWSC's system is iron pipe. In addition, soil samples were taken from each location as well.

Each of the pipes was put through a series of tests – strength tests, ductility tests, measured the pitting and the weight of the pipe. The strength of the pipe was compared to what it might have been when it was installed. Staff also compared how corrosive the soils might have been to get a good general idea of where the corrosive soils were and also to find out where there was no corrosive soil. Staff wanted to see if there was a correlation between the soils and the pipe.

Analysis was done on each pipe and an approximation on how long each pipe should last was provided, given the environment and conditions they were in and what each pipe had been through in the past years since it had been installed. It was determined that some of the cast-iron pipe installed 100 years ago, in the right land conditions, had a predicted lifespan of 200 to 300 years; in some cases, maybe longer.

Some of the pipe laid in 1972, which was ductile lining, laid under certain conditions, has a lifespan of about 40 to 50 years. A lot of that is due to the wall-thickness of the pipe. In the right conditions, the ductile-lined pipes could have a long life; it is a very strong pipe. The only thing that can take it down is corrosion because it is in a wall; whereas the old cast-iron pipe had wall thicknesses up to three-quarters of an inch. For instance, some of the pipe found in Brighton, which has sandy, gravelly soils, was in excellent condition. It has been cleaned and lined and has a life expectancy of perhaps 300 years.

Pipe in areas of South Boston, along the waterfront, are like "Swiss cheese" after 25 years because of salt water intrusion and poor soils. These are the kinds of things that staff knew from years of working with the pipes but it was something that needed to be documented. The initial installation of ductile-lined pipe, which BWSC started using in 1970, had a different physical makeup than the duct-lined pipe that is installed now.

BWSC wanted to find out which pipes had the most risk of failing, where they were located and what the probability of failure was. The intent was to lower the amount of pipe replaced each year. Additionally, water main breaks have been documented going back to 1975. Most of the breaks were in the downtown Boston area, which weren't always due to corrosion. A lot of it is due to excavation near the pipe. There is a lot of construction done around pipe depending on its depth and there are a lot of other factors that influence the lifespan of a pipe.

A soil map of Boston was also created. A lot of information was obtained from the soils that were pulled out of the ground, both from this study and the 1986 study. A lot of soils and boring information, USGS Survey information and other sources of information were pulled together to create this map. There is a lot of good analysis from this information.

The study also looked at old trolley lines. The MBTA runs its system on a direct current. If direct current leaks off a system and gets onto iron pipe, it can be corrosive. Pipes that may be subjected to a lot of vibration from rails or tunnels and heavy truckloads may also be affected. The study looked at more than just the physical properties of the pipe. The cost of the water lost and the repair costs were taken into account, the proximity of pipes to entrances of subways, schools and hospitals were noted; elevations of pipe at higher levels as opposed to lower levels of elevation, where a water main break would cause a lot more destruction. The study looked at how many people would be out of service should this break occur and all of these factors were weighted and given mathematical designations to determine what was more important in one aspect to another.

The goal of the modeling was to determine the right level of rehabilitation, how many miles of pipe should be done – not only how many miles of pipe that should be done each year but which pipes should be removed first and under what circumstances.

The GIS maps show the size and age of every pipe and what type of material it is. Rehabilitation and lining costs for today, as well as future costs, were factored in and then additional outside factors were added to create a suite of modeling software, including the KANEW model, which is the long-term model that tells you how much of your system should be replaced each year; the LEYP model, which is a failure forecasting model; and an ARP model, which is an Annual Replacement Program.

The KANEW analysis is a cost analysis of how much pipe should be replaced per year to sustain the system as it is. Different information can be input to develop different scenarios if staff determines that the system needs to perform in a different way. BWSC's goal was a 20-year program that is essentially flat-lined and predictable; staff would know that it will be doing so many miles per year for twenty years, instead of having a system where too few miles were done and then there would be a spike ten years from now. It is very difficult to do a financial analysis on something like that and predict where you are going to be.

The LEYP failure model is a program that all of the information that BWSC has from all of the different pipe characteristics and pipe locations and breaks can all be entered to provide a failure forecast. It gives 11 pieces of information on each pipe, including the probability of break ratio. It also forecasts the consequences of failure.

The result of this study determined that 11 miles of pipe per year would be best for BWSC. Instead of 17 miles of cleaning, lining and replacement, BWSC will go to 11 miles of

replacement only. BWSC will not be cleaning and lining pipes anymore because all of the pipes in the system that were eligible for cleaning and lining are basically gone from the system.

The final ARP model is the now on the desktops of BWSC's engineers. It is the tool to be used to choose pipes. The pipes that are most critical are displayed in red and you can click on the pipe and it will provide all the criteria. It may not be that the pipe has a high predicted rate ratio but the consequences of failure or its location makes it a critical pipe. In a lot of instances the larger pipes of 30 inches or 48 inches are all critical pipes because if they break, it is catastrophic, but their probability of break ratio is very low because they are so thick walled. They are such heavy duty pipes that replacing them would be an enormous cost so the recommendation may be to monitor those pipes.

A leak detection survey has begun on the large pipes of 20 inches or above and will be completed in 2011. A survey will be done every five years to make sure that the large water mains are in good shape and that leaks are caught before they become breaks.

This is a program to utilize so that if you have a turnover in personnel there is a plan for someone new to take over and they'll be able to step into this to be able to sustain the infrastructure and rehabilitation.

BWSC is still collecting samples and will do that for five years. The information will be input into the models and re-run again in 2015 to see how the analysis stacks up to what BWSC has today. It might change some of the aspect ratios and it will keep the information current at a very low cost.

A member asked if BWSC ever uses plastic pipe. Mr. Shea said it costs so much to excavate Boston streets that it is best to put in the strongest pipe possible; BWSC does not use plastic pipe. Ultimately, the goal to have a plan that can be understood moving forward with new personnel has been achieved.

#### D. COMMITTEE REPORTS

**Finance Committee** – Bernard Cooper

##### ❖ ADVISORY BOARD'S PROPOSED FY12 OPERATING BUDGET

MWRA Executive Director Joseph Favaloro stated that the Advisory Board's emerging budget for FY12 has been reviewed to find ways to reduce the overall budget and the downward trend continues. Staff will be asking next month for the Advisory Board's final endorsement of the FY12 Operating Budget.

Currently, staff is planning a reduction of a little over 3% from last year's budget, mainly due to a move from the downtown offices to Charlestown; a change of status for some employees; and buying out the copier lease to reduce the numbers. The Advisory Board always tries to practice what it preaches. This item will be brought to the Advisory Board for a vote in May.

##### ❖ EMERGING ADVISORY BOARD COMMENTS AND RECOMMENDATIONS ON MWRA'S PROPOSED FY12 CIP/CEB – Matthew Romero and Cornelia Potter

Matthew Romero, Manager for Finance and Policy Review, provided an update on the Advisory Board's emerging Comments and Recommendations as they are being developed.

The Executive Committee expressed interest in taking a look over the long term at the challenges facing the MWRA, communities and the ratepayers. To put this in perspective, in

FY11 the rate revenue requirement is \$570 million and in the FY12 planning projections the budget for FY21 is at \$934 million. Over the next six years, an average of \$40 million per year in increases will be added to the rate revenue requirement through FY17. This period is also characterized by long-term obligations, most notably the pension and, as always, debt service.

Staff charted out the Proposed FY12 Planning Projections according to the MWRA's Proposed Current Expense Budget (CEB) and as an exercise ran several scenarios using static rate increases over a range of years. As an example, if no reduction were made to the Authority's proposed rate increase of 3.95% for FY12 and FY13 and a flat line increase of 5% (rather than the 7% and up increases projected by the Authority) were utilized from FY14 forward to FY21, the challenge to make up the difference would be \$308.4 million.

Staff ran the next exercise using 3.95% as the rate increase all the way through and the challenge grew to \$595 million to maintain that level over time.

The final exercise utilized a 3.95% rate increase for FY12 and a steady 3% increase for FY13 moving forward to FY21, which left a difference of \$899.7 million.

The second round of scenarios that staff presented, again using the rate increases as they exist in the Authority's planning projections, if FY12's rate increase of 3.95% were reduced to 3%, 3.95% projected for FY13, and 5% for FY14 all the way out to FY21, the challenge would be \$375.9 million. Utilizing 3.95% all the way through would leave a challenge of \$659.8 million. If 3% were utilized from FY12 through FY21, the challenge would be \$961.7 million.

Staff put together various tools that are available and tried to quantify some of the savings that could be realized and also noted that there are other tools that could be utilized but specific dollars could not be quantified as yet but those tools also remain a viable option moving forward.

In descending order, the released reserves relate to changes in the bond covenants. Previously, staff believed these reserves would be released in the FY14 timeframe; however, more recently, it was learned that the reserves will more likely be released closer to FY16. There are limitations on how these funds can be used; the reserves must be matched up to specific maturities when they come due.

Reduced capital spending of \$79.8 million was a figure that Advisory Board staff arrived at by using information provided by the Authority a few years ago when they ran an exercise on what would happen if it reduced its capital program by \$25 million per year. Over the course of time it adds up to \$79.8 million. The benefit of this reduction would be greater in the later years.

Future debt service surplus or increased investment income could result in \$70 million; averaged over the life of these planning projections, it would be \$7 million per year through FY21. This is surplus for the entire Authority that includes both direct and debt service. The last four years averaged a surplus of \$23.3 million, most made up of variable rate debt.

Interest rates will not continue their current low trend for the entire ten-year period; however, it is reasonable to assume that there could be some surplus from this line item because the Authority's assumptions are relatively conservative.

There are additional available tools, which include two pieces. The first is historical trends on direct expenses that have been noticed over time and the second are surpluses from each year. The average difference is \$36.2 million.

In the early years the MWRA's budgets lined up with their planning projections. By FY10, budgets were being set lower than staff had previously projected due to the Authority's aggressive management of its direct expenses. MWRA finishes within 1 to 2% under spending on its direct expenses. To put that into perspective, a 2% under-spending would be \$4 million per year if there were \$200 million in direct expenses. The Advisory Board's \$20 million assumption is based on \$2 million per year in that line item.

Other Post-Employment Benefits (OPEB) - \$35.8 million. Staff arrived at this figure because the Authority has included in its proposed budget what they are calling a nominal contribution (\$1.9 million in FY12) to the OPEB line item. Moving forward, in FY13 to FY21, staff has incorporated half of the annual required contribution; so when staff did its actuarial study to meet the OPEB obligation, there was a schedule for required contributions moving forward over time to fund that obligation. Half of the annual required contribution was put in as a placeholder in the planning projections.

The Authority recently benefited from an amendment to a swap agreement that changed which index it was tied to; over the course of time, about \$500,000 per year will be the benefit of that change up to a total of about \$5 million.

Indirect expenses of \$30 million also deal with historical trends. In comparing the FY08 planning projections to the FY12 planning projections, within three years where staff thought FY11 would be is different. The average difference between those two lines is \$10 million per year and a \$30 million assumption has been made based on what historical trends have shown. MWRA will likely be far below that.

To put this in perspective, MWRA has a challenge based on these various scenarios of \$308.4 million to \$961.7 million just to get down to a 3% or 5% average rate increase over time. The tools that staff was able to enumerate were \$439.6 million. This number could be higher because staff chose to go on the low side on the dollar amounts of historical trend benefits and under spending benefits that could show up. The difference between what the challenge would be and what the tools that are available are only underscores the importance of the other available tools that still have to be looked at over time.

The Operating Reserve is hard to quantify because as operating expenses are reduced, a one-sixth reserve does not have to be accrued correspondingly.

The Local Pipeline Assistance Program was discussed at a recent Operations Committee meeting and the Authority has also flagged that the actual distributions of that program are very difficult to predict. The difference between what actually gets distributed and what is budgeted for can actually generate some savings in that line item.

The current planning projections have no plans for the issuance of new variable rate debt while the marketplace is very volatile. The planning projections moving forward do not include new variable rate debt. Even just based on their assumptions, the fixed-rate interest rate is much higher for long-term debt than is variable rate debt so as the market conditions change and if

they begin to issue variable rate debt, we can anticipate some sort of a benefit but again it is difficult to quantify based on how much ends up being issued.

Reduced coverage requirement, again as the budget is tweaked, it is possible that there could be less of a need for the current revenue for the capital program.

Over the course of the next ten years, it is possible that communities that have expressed an interest in joining the MWRA water system may join and pay an entrance fee.

The Authority has indicated that there are not many opportunities for restructuring in the near years but over the course of those ten years, there could be greater opportunities for that moving forward so it would be important to look at those opportunities because it could yield some significant rate relief.

Despite the times being what they are, staff is happy that the Debt Service Assistance line item has remained alive with \$500,000 being included in the House version of the budget. It is a good indication that there is interest in keeping this line item alive. Hopefully over the course of time, MWRA and Advisory Board staff can work to get this funding increased.

The “three-headed monster” is a phrase that staff has used regarding the three largest challenges that are facing the Authority, not only in this ten-year period but even beyond. The first is debt service. To put this in perspective, capital financing peaks in FY22 – this is the mountain of debt that we continually talk about – and over ten years according to these planning projections, that is a \$380 million increase. Not only do we have to get up the mountain, we have to come back down again. The magnitude of this challenge in reality is that it is FY30 before debt service expense returns to the levels that the MWRA is seeing in this fiscal year.

The second “monster” is pension expense. The Authority currently has an FY24 funding schedule so this goes even beyond the ten-year capture. The third “monster” is OPEB. The biggest thing that the Advisory Board and cities and towns are grappling with is the fact that OPEB is a moving target. It is a number that everyone is going to have to deal with in the public sector and that everyone acknowledges is nearly impossible to wrap your hands around. As time goes on, staff anticipates that there will be tweaks to contribution levels so that way the employees help offset and thereby lower this liability. The question is what is that liability even going to be as you move forward in time?

The first recommendation that Advisory Board staff has is to treat the pension and OPEB as one liability. The MWRA Board of Directors had actually voted to do this in recent years. The Board asked the financial advisors the best way to handle the pension and OPEB liabilities. The advisors said the rating agencies are going to look at this as one huge liability. If MWRA pays down the pension liability faster, it is going to have the same benefit as putting money into an irrevocable trust for OPEB. The Advisory Board’s argument is to maintain the current aggressive pension schedule that the Authority has, currently scheduled to be at full funding by FY2024. The Commonwealth and many cities and towns are on a 2030 schedule and the Governor is even proposing that the schedule be extended to 2040. The Advisory Board would argue that paying down the pension first is a good strategy and then address OPEB after the pension is fully funded. This would give enough time for people to fully understand what the OPEB liability is going to be once the moving pieces have been addressed on how to calculate that liability moving forward.

The most important thing to the rating agencies is to have a plan and stick to it. The reason the Authority has gotten “whacked” by the rating agencies in recent years was because they were trying to pay the pension and then pay an additional amount on top of that pension payment to drive the pension liability down faster. When the economic downturn happened, the Authority pulled back on the additional payment and just made its required contribution; so, by doing the right thing and giving cities and towns the relief they needed and not paying over and above their required contribution, their reward was to be placed on a negative watch.

The Board asked Authority staff if it is not about putting more money in than is being put in now, it is about having a plan and sticking to it. The answer was yes. Advisory Board staff’s argument is that this is an aggressive plan and is one that the Authority can stick to and maintain. Keep the pension schedule at FY2024 and then look at OPEB moving forward.

Moving forward, the “name of the game” is debt; it is the largest category of expense and is the one that is going to be driving the budget. It is important to get the Long-Term Rates Management Committee that the Advisory Board recommended last year up and running.

On the CIP side, staff recommends reducing capital spending by \$25 million a year. Now that the CSO Program is beginning to drop off and mandated spending becomes a lesser part of the budget, the Authority is able to turn its attention to asset protection projects. While this is important, the Authority should not just replace mandated dollar for asset protection dollar; the Authority can have a very effective asset protection program at a reduced amount of spending.

The last recommendation is to aggressively utilize the other available tools.

**Executive Committee** – Katherine Haynes Dunphy

❖ **RECOGNIZING MWRA/MWRA ADVISORY BOARD’S 25 YEARS**

Mr. Favaloro said much has been accomplished over the past 25 years of the MWRA and MWRA Advisory Board’s existence. In a respectful, low-cost way, without any major fanfare, the Advisory Board will recognize this milestone at next month’s meeting by featuring speakers from the federal, state, community and advocacy perspectives. Speakers may include: Congressman Capuano, schedule permitting; Secretary Sullivan of EOEEA; Mayor McGlynn of Medford; MWRA Caucus Chair and House Majority Leader Ron Mariano; Dick Fox, former Project Manager for the Boston Harbor Project and current CEO of Camp Dresser & McKee; and Vivien Li, President of The Boston Harbor Association. Additionally, members of the Advisory Board and MWRA employees that have served for 25 years or more will be recognized.

❖ **LEGISLATIVE UPDATE**

As Mr. Romero mentioned, \$500,000 was included in the House Budget for Debt Service Assistance. It may not seem like much but in the big picture, even in the worst of economic times, there is still a commitment to provide resources. When the economy gets better, staff hopes to get that number increased.

A corrective amendment was filed to ensure that the MWRA receives \$500,000 for the Clinton Wastewater Treatment Plant.

MWRA and Advisory Board staff have met with legislators to rally their support for the future. This afternoon there will be a conference call with the Senate Ways & Means Budget Director to



get some clarification on the fringe rate cost charges and how to best utilize them moving forward.

❖ **PROCESS TO ELECT AN ADVISORY BOARD REPRESENTATIVE TO THE MWRA BOARD OF DIRECTORS**

Each year there is an election for an Advisory Board representative to the MWRA Board of Directors. This year, Mr. Carroll's seat is up for election and he is interested in running for an additional term. Anyone interested can provide a letter of intent and resume. The Executive Committee will serve as the Nominating Committee and they will meet Thursday, May 12, to determine their recommendation and then it will go before the full Advisory Board.

**Operations Committee** – Jay Fink

❖ **UPDATE**

The state, under the leadership of Senator Eldridge, has put together a Water Infrastructure Funding Committee that has met diligently over the fall and winter; the Committee put together some ideas on how to fund infrastructure. There is a huge need statewide with little resources to address it. In September, staff will try to have someone from that Committee come in to talk about some of their ideas.

**E. ADJOURNMENT**

**A MOTION WAS MADE TO ADJOURN THE MEETING AT 12:54 P.M.** It was seconded and passed by unanimous vote.

Respectfully submitted,

Lou Taverna, Secretary