

# SUMMARY OF TECHNICAL MEMORANDUMS

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This section presents the Summary of the Technical Memorandums of the Primary Scope of Services for the "Comprehensive Independent Audit / Review Services of Policies, Practices, and Procedures of the City of Brockton's Water and Sewer Department (Agreed Upon Procedures)".

This document presents summaries of Technical Memorandums 1-2 and 2-1 through 2-9, containing in total about 80 findings and 70 recommendations. The findings and recommendations of these Technical Memorandums form the basis of this Summary. Each Technical Memorandum has been submitted in draft and final form to the City. These Technical Memorandums with their respective appendices may be obtained from the City's website. This document and the Executive Summary constitute the final report.

## FINDINGS AND RECOMMENDATIONS BY TASK

### TASK 1-2 - REVIEW BACKGROUND INFORMATION

The goal of this task is to review background information to evaluate any existing assessments / reports that have been prepared in the past five years and are made available from the City of Brockton.

#### Findings

1. The City of Brockton currently has between 22,000 and 23,000 meters installed on water services throughout the City. While there are approximately 3,700 meters that are six years old or newer, the majority of the meters are approximately 15 years old or older. Additionally, the vast majority of meters in the City are 5/8" meter, a standard size for residential applications.
2. The Brockton DPW has established accuracy standards for its meters which are nominally different from the standards prescribed by the American Water Works Association. In total, the differences in acceptable accuracy favor the customer over the City as meters in Brockton are considered accurate if they meter between 95% and 101.5% of actual flow, where the AWWA prescribes accuracy to be within the range of 98.5% to 101.5%.
3. The DPW currently uses four different meter-reading technologies to read meters, all of which are considered obsolete within the water supply professional community. These reading technologies will be replaced under an ongoing meter and meter-reading system replacement project.
4. Over the five-year period FY2006 through FY2010, approximately 20% to 25% of the water bills issued were estimated bills and, as of January 2011, there were slightly more than 700 accounts which had not received an actual meter read within the preceding six billing cycles.
5. The DPW owns a standard meter test-bed for assessing the accuracy of meters. The DPW's meter tester is properly certificated and the test-bed has been calibrated within the last year.

#### Recommendations

1. Our recommendation would have been to replace the meter-reading systems, but this is currently ongoing.

## TASK 2-1 - REVIEW MASTER WATER METERS FOR ACCURACY AND REPORTING

The goal of this task is to evaluate the master meters' impacts on management, financial performance, and regulatory reporting.

### Findings

1. Water entering the distribution system from the Silver Lake treatment plant and Aquaria facility is being properly metered. In both locations, highly reliable meter types are in use and monitored (either in person or remotely) continuously. Calibration records exist, which indicate that the meters are being properly maintained and their performance monitored.
2. The bulk water meters measuring the volume of water sold to surrounding communities and their residents vary in size and type. The sizes and types of meters used at these locations appear appropriate based on generally accepted industry standards. Meter test/calibration records are available for the Whitman meter but unavailable for Hanson. All other non-Brockton residential connections are metered and billed in a manner similar to all other customers.

### Recommendations

1. Complete meter tests on the Hanson inter-municipal meters to ensure that Brockton is properly billing for the water sold to surrounding communities. In the event that the meter is registering water with accuracy outside of the AWWA specified range, require the Town of Hanson to replace its meter.
2. Install automated meter-reading technologies on all master meters as part of the meter replacement and automated meter-reading system installation project.

## TASK 2-2 – AUDIT OF METER-READING SYSTEMS AND PROCESSES

The goal of this task is to assess the systems and processes currently in use to collect meter reads.

### Findings

1. The City currently uses four discrete meter-reading systems. Each is a standalone system requiring use of proprietary equipment and two of the systems require one or more instances of manual data entry. Systems which require such a high level of manual entry are prone to the inclusion of errors in the billing database.
2. None of the meter-reading systems in use in the City are actively supported by their manufacturers.
3. Considering the meter-reading technologies currently in use, we are aware of no efficient way of identifying abnormal reads/consumption values prior to uploading the data into MUNIS.
4. The number of meters from which readings must be collected as visual/manual reads is likely responsible for the number of estimated reads/bills. Meter-reading in systems which require a high percentage of manual reads are inherently labor-intensive.
5. Within MUNIS, there is no way to differentiate between locations with broken metering equipment and locations where access to the reading device was unavailable.
6. The City's meters data file has not been fully documented in the MUNIS tracking system. Based upon a review of meter purchase records, this problem potentially dates to the meter file migration into MUNIS from the prior billing software. This has no bearing on the accuracy of metering or billing.
7. The completion of the construction contract to install new meters and an automated meter-reading system will largely resolve most of the meter-reading challenges the DPW faces.

## Recommendations

1. Complete projects currently out to bid
  - a. Installation of new meters in locations with meters >20 years old and maybe newer
  - b. Adoption of new meter-reading technologies; whole City.
2. Adopt estimated bill procedures which incentivizes owners to provide real reads.
3. Institute broad-based meter-testing program in support of meter-changeout program.
4. Adopt new provisions of state law on meter tampering/interference.

## TASK 2-3 - REVIEW DATA UPLOAD AND MANUAL ENTRY

The goal of this task is to evaluate the data-upload process from reading devices, both automatic and manual entry, into the City's utility billing database, MUNIS U/B Model 7.4.

## Findings

1. The Water billing office staff is responsible for many tasks within the DPW, one of which is the upload of water meter read data into the MUNIS billing system.
2. Meter read data from the four meter-reading systems are entered into MUNIS using three independent processes, not including reads which are manually keyed in by billing office staff.
3. The billing office staff is self-taught and has not received training on the use of the MUNIS utility billing and other technologies used to compile meter read data and generate bills. After an initial training event following the adoption of the MUNIS system, in the early 1990s, the billing office staff has learned to use MUNIS on their own and has handled training of new staff internally on an as-needed basis. The processes for uploading data and completing QA/QC on the database have mostly been handled without the assistance of outside help by developing shortcuts in MUNIS.
4. In cases where no actual read has been collected for an extended period, the MUNIS bill estimation tool is unlikely to be generating accurate estimates.
5. The billing office compiles and issues bills on a quarterly basis for the entire City. The volume at work during the bill issuance cycle is at a level which makes effective QA/QC procedures more difficult.

## Recommendations

1. The City is in the process of bidding a new meter reading technology and replacing all new meters. This will improve time management greatly for both the billing staff and meter readers. The City should carefully consider qualifications of all contractors and make sure that adequate training time is built into the contract for all employees, including billing office staff.
2. The City should develop and implement a training program for billing office staff on the full use of the MUNIS system. The MUNIS Utility Billing module has many tools and capabilities which are not fully used and completion of this training should greatly increase the billing clerk's efficiency and ability to respond to customer information requests.
3. Prior to starting the meter replacement project, the billing office staff should receive comprehensive training on the use of the new meter reading system, it's software, and its interface with the MUNIS utility billing module.
4. The billing office should develop an automated tool to allow for the quick and accurate pro-ration of bills for accounts which have had an extended series of estimated reads.
5. The City should consider developing a policy to incentivize customers to allow access for the efficient replacement of meters.
6. The City and/or DPW should consider re-tasking some of the current billing office functions to other City offices where similar work is performed. This would allow the billing office to remain focused on its primary function.
7. The City and/or DPW should consider returning to a cascading billing cycle where consumption and bills to approximately 1/3 of the customers are run monthly. This would even out the work level associated with

issuing bills and servicing clients, giving the billing office more time to complete QA/QC on each bill issuance cycle.

8. The City should develop a more advanced series of QA/QC reports using the Crystal Report module attached to its MUNIS software. These reports would be more effective and efficient management tools for efficiently identifying and dealing with unusual reads and consumption values which enter the MUNIS database.

## **TASK 2-4 - AUDIT THE BILLING ENGINE AND DATABASE**

The goal of this task is to gain confidence in the billing system from spooling through the mailing process. This task assumes that all QA/QC has been performed at the meter reader level (Task 2-2) and the billing staff level (Task 2-3) and that the DPW Commissioner and Water Commission have approved the bill issuance.

### **Findings**

1. There is no formal commitment document to commit bills to the Tax Collector/Treasurer for collection, such as there is for the commitment of property taxes. Nothing but the bills (electronically) are sent to the Tax Collector/Treasurer and nothing but the total of the bills being committed are sent to the City Auditor.
2. The Billing Office does not have a copy of the MUNIS Utility Billing Database and Operations Manual for reference by billing personnel.
3. There is no documentation of actual water meter locations at properties receiving water/sewer/trash services.
4. Except for the time when MUNIS was first installed in the Billing Office, there has been no formal training on the software by MUNIS personnel for billing clerks or supervisory personnel.
5. There is no Policies and Procedures Manual in the Billing Office for quick and easy reference by Department Personnel.
6. There is no current defined purpose for the Water Commission with its original purpose having been completed.
7. The number of estimated reads of meters each quarter is excessive;
8. Familiarity with MUNIS reporting capabilities on Water/Sewer issues is very limited as is familiarity with Crystal Reports.

### **Recommendations**

1. A formal commitment document should be prepared for each commitment. The City should consider implementing the MUNIS U/B Charge Proof Register (Detail - Final) Report as the formal commitment form. For example, if the City bills District 3, then it has the billed amount for each person/customer. The last page of the Charge Proof Register Report would provide the totals for all accounts in that section of the City being billed. That would be the commitment, generated by the MUNIS Utility Billing System. The final page of the Charge Proof Register is the final report in the process and is the commitment -- it shows total for Water and total for Sewer.
  - a. The DPW should forward one copy of the Charge Proof Register (last page) showing total for water and total for sewer to the City Auditor and to the Treasurer/Collector. This report should be forwarded at the time of billing.
  - b. The City Auditor should review the commitment and is responsible to post the commitment to the City's general ledger. Then the specific MUNIS report is the Utility Billing A/R Journal Entries report.
  - c. The Collector would have a copy of the Charge Proof Register as the basis to reconcile the detailed water and sewer receivable ledger to the general ledger. A copy of this report may be found in Appendix 2-4.16.

2. Mandatory training sessions for the Billing Office should be scheduled for all billing clerks using the MUNIS software by MUNIS personnel. Training should also be given to supervisory personnel on what the MUNIS software can do for them.
3. The City should develop a policies and procedures manual for the Billing Office.
4. The City may want to consider running the MUNIS Revenue YTD report (GLYTDBUD) – Year to date budget report. This report can include the original estimated revenue, estimated revenue adjustments, revised estimated revenue, actual year to date revenue, remaining revenue and percent collected for each revenue object code such as interest, user charges, liens, lien interest, service charges, meter charges, and other line items. A sample copy of this report appears in Appendix 2-4.5.
5. The City should divide the approximate 22,300 accounts into three groups that would be billed on staggered cycles. This recommendation would reduce the number of problem accounts each cycle to a more manageable number and would provide for a more uniform workload within the Billing Office.
6. The City should reassess the role of the Water Commission. Its original mission to develop City water source of supply has been accomplished.
7. The City should hire an independent MUNIS expert to review the department's use of MUNIS and identify new programs or practices that could improve efficiency.
8. The City should utilize crystal reports to provide data in a usable format during and after the billing cycle. The following reports are suggested.
  - a. High/Low Usage report - This can be run during or outside the billing cycle to identify accounts that received readings or billed usage that falls outside a range defined by the user. This report will isolate the accounts most in need of research, attention or action, in contrast to MUNIS where the high/low flag is available only in the Charge Proof Register. CRS has produced a report that displays a list of all accounts followed by one page for each account with information that can be used by field technicians on site visits.
  - b. Estimated reads – This report would show a list of account that have received a user defined number of consecutive estimated reads. It can be run for a specific route, address or account type.
  - c. Zero/Credit Bills – Shows a list of accounts that received zero dollar amount or credit bills.
  - d. Delinquent & Other Customer Notices – Letters can be generated with Crystal Reports, set up to fit in an envelope with address window. The user can define the criteria for selecting accounts and data to include.
  - e. Historical Consumption analysis – A report that compares usage by year, month or cycle and shows accounts that have wide variations on usage.
  - f. Top N water and sewer customers - This report shows the City's biggest consumers. The user can define the time period to select.
  - g. Adjustments report – Shows all adjustments made in a user defined time period.
  - h. Reports contained within this Report – As part of our analysis, we have developed several crystal reports such as Lien Charges on Tax Title, Consumption and Consumption Charges Comparison by Year, Consumption Comparison by Year and Charge Code, Estimated Reads by District and Account Type, Mismatched Meters, and others.
9. The City should develop a plan with specific goals to reduce the number of estimated reads and problem accounts each quarter.

## **TASK 2-5 - AUDIT THE BILL ISSUANCE CYCLE**

The goal of this task is to gain confidence in the billing system from spooling through the mailing process. This task assumes that all QA/QC has been performed at the meter reader level (Task 2) and the billing staff level (Task 3) and that the DPW Commissioner and Water Commission have approved the bill issuance.

## Findings

1. The Communication between the Billing Office and the Tax Collector's Office needs improvement. The Tax Collector learned of the potential lateness of the February 2011 bill mailing in a meeting with other City personnel and the Abrahams Group.
2. There is no Revenue Budget entered in the City's General Ledger.
3. There is no follow-up billing done once original quarterly bills have been sent, except for a prior balance showing in subsequent quarterly bills.
4. Authorizations for various tasks in the MUNIS software are not kept current and need to be reviewed regularly and given on an 'as needed' basis. As an example, the City Auditor has authority to process utility bill runs when a person in that position has no need to process bills.
5. There is no clear definition of what constitutes abatements or adjustments and the terms are used interchangeably.
6. Personnel in the Billing Office accept and handle cash receipts from the public for services provided by the Water Division.
7. All Billing Office personnel enter abatements/adjustments and have access to, and play a role in the commitment process. There is no segregation of duties within the office.

## Recommendations

1. Improve communication between the Billing Office and the Tax Collector's office.
2. Clarify what constitutes an abatement and what constitutes an adjustment.
3. Develop written policies and procedures governing the processing of and posting of billings, abatements, adjustments, and payments.
4. To improve segregation of duties and to assure that only DPW has control and management of the Utility Billing module, we recommend that all staff in the Treasurer/Collector Office only have view and query access to the Utility Billing module and that other authorities be removed.
5. To assure that only the DPW processes bills and commits billings, we recommend that these authorities be removed from the City Auditing department staff.
6. For improved control, we recommend that all water and sewer payments be made at the Treasurer/Collector Office and that the accounts receivable and cash receipt posting functions be removed from DPW staff.
7. For improved control, we recommended that the City Auditor review whether the actual posting of the bill run/commitment to the general ledger, can be a separate action. If so, the posting should be a responsibility of the Auditing Department after a final review of the billing/commitment.
8. Prepare a report to show negative balances due and develop a procedure to review these accounts on a periodic basis.

We note that the City has responded to several of our MUNIS users and permissions findings and recommendations on internal control. The City's response is presented in Appendix 2-5.5. We have not reviewed the extent to which the City has implemented these changes.

## TASK 2-6 - AUDIT THE PAYMENT AND COLLECTIONS PROCESS

The goal of this task is to gain confidence in the collection and posting process. This task falls solely in the Collector's office, as bill inquiries, abatement requests, and other non-payment activities are in Task 2-7.

## Findings

1. As noted earlier, under Technical Memorandum 2-4, there is no formal training provided on the MUNIS software by MUNIS personnel in the Billing Office or the Tax Collector's Office.

2. Abatements/adjustments are processed and posted at the counter in the Billing Office, sometimes in the presence of the customer prior to being approved by the Commissioner.
3. The City has not accepted the provisions of Chapter 40, Section 42J or the provisions of Chapter 83, Section 16G of the Mass. General Laws, which relate to deferral of Water and Sewer charges with deferral of Real Estate Taxes.
4. Abatements/adjustments are processed by the same personnel who process bill runs.
5. As stated previously, no follow-up bills are sent prior to the next bill run.
6. There is no segregation of duties within the Billing Office (i.e. the same clerks process abatements/adjustments that process commitments.)
7. Cash and checks are accepted in the Billing Office for any non-use purpose.

## Recommendations

1. The City should hire an independent MUNIS expert to review the department's use of MUNIS and identify new programs or practices that could improve efficiency (same recommendation as in Technical Memorandum 2-4).
2. The City should provide mandatory training sessions for the Billing Office which should be scheduled for all billing clerks using the MUNIS software by MUNIS personnel. Training should also be given to supervisory personnel on what the MUNIS software can do for them (same recommendation as in Technical Memorandum 2-4).
3. The City should provide refresher MUNIS training for the Collector's staff.
4. A copy of the Commitment document should be forwarded to the City Auditor without the list of delinquent payers when adding water and or sewer liens to taxes.
5. The City should address the large number of unpaid user charges that are liened. While Massachusetts General Laws allows unpaid user charges to be added to taxes as a lien, the large number of liens added to taxes creates a burden in the City's revenue budgeting that relies on large revenue dollars to be collected by June 30.
6. The City should create a file of municipal lien certificates so the number of MCLs is readily available.
7. The City should accept two sections of Massachusetts General Laws dealing with deferrals, Chapter 83, Section 16G for sewer and Chapter 40 Section 42J for water.
  - a. 83:16G allows the City to defer sewer charges if a property owner is receiving an exemption from property taxes under clause 41A of section five of chapter fifty-nine.
  - b. 40:42J allows the City to defer water charges if a property owner is receiving an exemption from property taxes under clause 41A of section five of chapter fifty-nine.
8. The City should send follow-up bills to utility users within a week after they become delinquent. This reminder should enhance collections.
9. Abatements should be processed by the same people all the time and these people should not have access to the bills in commitments. There needs to be a separation of duties.
10. Abatements should be given to the Commissioner for his approval prior to being entered into MUNIS. They should be processed no more frequently than weekly and should be processed in numbered batches for look-back purposes as well as for leaving an audit trail. Numbering should be by fiscal year and consecutive commitments done that fiscal year (i.e. 2011-1, 2011-2 and so forth.)
11. Any Commitment document produced should also be provided to the Tax Collector separate from the individual bills which are posted to his records electronically as he is legally responsible for collections. Commitments should be numbered consecutively for each fiscal year by commitment type.
12. Commitment and Abatement Schedule numbers should appear in the records of each bill committed and abated for audit trail purposes.
13. Checks and cash should only be accepted in the Office of the Tax Collector. The Collector is able to give receipts as proof of payment for any service provided or to be provided by the DPW so it will be clear to personnel who schedule work that any fees have been paid.

## TASK 2-7 - AUDIT THE NON-PAYMENT PROCESSES

The goal of this task is to gain confidence regarding the practices and procedures used when a Water and Sewer Bill is not completely paid or on time (Task 6) such as bill inquiries, abatement / refund requests, meter and reader inspections, re-reads and/or meter replacement activities.

### Findings

1. The DPW developed its adjustment policy and procedures in the middle of 2010, prior to which similar practices were reportedly followed but undocumented. The policies are generally implemented and adjustments are made by the billing clerks. The adjustment policies are located in Appendix 2-3.6. Adjustments are not approved by the Commissioner until after they have been entered into the MUNIS system. The only adjustments reviewed by the Commissioner are the cases that are disputed beyond the meter-testing part of the process.
2. Once the adjustment is made in MUNIS, the billing staff does not have a good way of tracking the adjustments in the utility billing software. Therefore, the billing staff started a separate Excel spreadsheet to track adjustments in FY 2011. Abatements/adjustments are entered individually and are sometimes done in the presence of the customer at the counter. While sometimes abatements/adjustments are entered one after another (in groups) they are not done in numbered batches and presented to the Commissioner as a batch (group) for his approval prior to posting.
3. The work order system used to schedule and track re-reads is effective and provides an electronic record and paper trail of the process.
4. Having witnessed a meter test performed by the Water Foreman at the DPW, it is clear that the meter-testing equipment is effective and the operator proficient in meter-testing.
5. The following reports were compiled to quantify the number of adjustments and abatements over the past six years and to continue the tracing process. The tracing of accounts is discussed in Technical Memorandum 2-5.
  - a. 149a Adjustments Account Summary – This report goes back to 2005 and counts the number of bills that were adjusted for each account and the total amounts.
  - b. 150a Abatements Account Summary - This report goes back to 2005 and counts the number of bills that were abated.
  - c. 147a Adjustments February 2011 Bill Run – This report shows all the bills from the 2-11-2011 bill run that were adjusted.
  - d. 148a Abatements February 2011 Bill Run – This report shows all the bills from the 2-11-2011 bill run that were abated.
  - e. Abatements February 2011 Bill Run – Nine bills were abated for sewer for a total of \$7,487.63 on the February 2011 bill run. The nine accounts appear in Appendix 2-7.2.
6. Abatement Account Summary - Fourteen bills were abated since 2005, one water for \$8,797 and 14 sewer for \$114,384.24. (One bill had a water and a sewer abatement). The fourteen bills appear in Appendix 2-7.3.
7. Adjustment Account Summary - In total, 5,740 accounts received 16,488 water and/or sewer adjustments and may have received other adjustments (i. e., trash, which is beyond the scope of this study). Substantially all the adjustments were to reduce bills, with two water adjustment increases (\$1.76 and \$220.41) and three sewer adjustment increases (\$6.23, \$6.81 and \$933.60). A total of \$8.2 million were water adjustments, and \$14.7 million were sewer adjustments. This report is 75 pages long and is available by request. Of these, 42 City employee/customer interviewee accounts received 133 adjustments over the past six years; \$93,843 in water and \$178,773 in sewer. A listing of these adjustments for the 42 City employee/customer interviewee accounts appears as Appendix 2-7.4.
8. Adjustment February 2011 Bill Run – 278 accounts received an adjustment on the February 2011 bill run as follows:

Adjustment	Number	Water	Sewer
Block Adjustment	25	-\$6,242.45	-\$34,856.55
Billing Error	30	-\$15,100.98	-\$79,343.31
Law Office	1	-\$85.52	-\$86.02
Over Averaged	222	-\$67,447.38	-\$103,062.07
<b>Totals</b>	<b>278</b>	<b>-\$88,876.33</b>	<b>-\$217,347.95</b>

The effective date of most of the above adjustments indicates that they were adjusted after the bills were generated, as opposed to adjustments that would be done during the bill run. Since the resolution for many of them indicate that they were an "Over average," it would have been better to adjust most of these during the bill run. Of these, one city employee account received a February 2011 adjustment.

## Recommendations

1. Clarify what constitutes an abatement and what constitutes an adjustment. The city has processed only 14 abatements in the past six years with the rest processed as adjustments. Typically abatements occur after the commitment process.
2. Develop written policies and procedures governing the processing of and posting of billings, abatements, adjustments, and payments to provide a better audit trail.
3. Automate the work order form describing the work and fees thereby eliminating the carbon copy form.
4. Develop a procedure to adjust bills during a bill run rather than adjusting bills after the fact.
5. Process abatements/adjustments in numbered batches and present to the Commissioner as a batch (group) for his approval prior to posting. Doing this will provide a better audit trail and allow the Commissioner to sit down with a group of abatements/adjustments at the same time.
6. Use the MUNIS averaging function to calculate average billings.
7. Work with MUNIS to develop a program to allow the consumption to be adjusted for accounts that are included in tax liens recorded at the Registry of Deeds, and meet the criteria for a block adjustment. Currently, an adjustment would have to be made in the dollar amount of the lien only.
8. Work Orders should be handled and filed in the Billing Office in addition to the Utility Office on Montauk Road. These need to be consecutively numbered and used first to create a bill and then a commitment to the Tax Collector for collections. Numbering should also be distinguishable from commitments of user charges. For instance, Utility Work bill number 1, and so forth.
9. Develop a policy for balloon payments that are the result of an actual read after a chronic series of estimates due to City owned equipment or process failure.
  - a. The City should consider a policy that shares the burden between the customer and the City.
10. Develop a policy for adjustments and/or balloon payments that are a result of access to premises being denied to City meter-reading or meter repair staff. The City should (assuming the City can document that access was denied):
  - a. Enforce the collection of all amounts due and payable to the City.
  - b. Impose the maximum fines and penalties to the extent City ordinances and State law allow.
11. Develop a policy for adjustments and/or balloon payments that are a result of malicious or intentional destruction of City owned equipment. The City should (assuming the City can document malicious or intentional destruction of City owned equipment occurred):
  - a. Enforce the collection of all amounts due and payable to the City.
  - b. Impose the maximum fines and penalties to the extent City ordinances and State law allow.
  - c. Consider criminal actions for cases of malicious or intentional destruction of City owned equipment.

## TASK 2-8 - AUDIT FEE STRUCTURE AND PROCESS

The goal of this task is to gain confidence in the City's approach to new connections, the creation of new accounts, and the tracking and processing of fee-based work orders.

## Findings

1. The meter-tampering fee should be adjusted to be consistent with Chapter 374 or the Acts of 2010.
2. Some fees charged by the Water/Sewer Division are not consistent with City Ordinances.
3. There are no controls in place to insure that all applications for service and/or repair are billed.
4. The City has no cost analysis procedure to insure that all costs are recovered from users when work is done and it is appropriate to do so.
5. There is no apparent review and/or approval by senior management for Work Orders and/or bills for work performed.

## Recommendations

1. Adjust the tampering fee to be consistent with Chapter 374 of the Acts of 2010.
2. Update the City Ordinances to be consistent with the fees and charges imposed.
3. The applications for a water and sewer and domestic services are not pre-numbered. A pre-printed, pre-numbering system can enhance internal controls by providing a method to see that all applications processed are billed.
4. The City should conduct a cost analysis of the services provided and set a corresponding fee to recover the costs of various services.

## TASK 2-9 – INTERVIEWS WITH CITIZENS

The goals of this task are to interview City Councilors and address problem accounts with the public. The scope of this task is to interview up to eleven (11) City Councilors in up to five (5) one-hour meetings.

The scope of this task also includes meeting with up to eight (8) problem accounts, one from each of the seven (7) wards and one to be selected by the Councilor At Large. This task will include meeting with problem account customers, reviewing their documentation and issues, researching problem account history including whether the City conducted a meter test, the results of that meter test, and to review the City's action regarding these accounts. This task will also re calculate the amount of the original bills, the recalculated bills as calculated by the City, and the resulting adjustments. We will prepare a Technical Memorandum on our findings for this task.

### Ward 6 Nominee: Account 3-5888 (8 Corala Road)

We note the following items of interest within the consumption database:

- The account has a long history of estimated reads yielding an average quarterly consumption of around 300 cf and an average quarterly bill of approximately \$100 in the past several years.
- A time stamped MUNIS work order documents attempted access in 2006. The work order notes are unclear on whether access was not available due to no one being home or whether access was not allowed by the resident. Notably, the work order also shows a prior read of 49108, which is not in the MUNIS database. Source of the prior read data is unknown, as there are no "actual" or manual estimate reads in the MUNIS database which correlate to this value.
- There were indications (8/2006 prior read on work order, visual read 10x what is present in MUNIS in 8/2009) that suggest the estimates used to generate bills were incorrect. There may have been thought to be a data entry error on the VT5000 (unknown) or they may simply have been missed due to the volume of work associated with getting bills out. As a note, until the 2010 "actual" was used in the consumption calculation, it is unlikely that the account would have shown up in any of the billing office QA/QC reports in use at that time.
- "Actual" bill from 1/2010 read issued, based on past practices, without proper adjustment to pro-rate for usage over the preceding 12 years.

- "Estimated" bill from 4/2010 was improperly calculated, apparently based upon a calculation which likely included the large consumption value from the 1/2010 bill.
- The old meter was removed and tested at an independent testing firm. The meter serial number noted on the meter change-out work order matches that of the meter tested by the independent testing firm. The meter tested within both Brockton standards and accuracy requirements of AWWA Standard 700-02, the in-force guidance document for residential water meters.
- The average quarterly usage since the old meter was changed out indicates an average quarterly consumption on the account of approximately 3,400 cf, which equates to 280 gallons per day.
- Applied over the preceding 12 years (48 quarters) prior to meter removal, a new meter for an account which used 3,400 cf/quarter would have accumulated a takeout meter read of approximately 165,000 cf. Assuming even consumption over the 12 year period without reading, a takeout read of 506,995 implies actual quarterly consumption of approximately 10,550 cf/quarter, equal to 875 gallons per day.

### **Discussion of the Billing/Adjustment Calculations applied to the Account**

We reviewed the calculation of bills and adjustment associated with the account for Corola Road (Acct. 3-5888). Ms. Cato had taken the property over from her parents in 1999 or earlier. Her parents had been given estimated reads for some time and there was no final read prior to the recording of the deed to her. The meter was changed on January 30, 1999 and the register reading for the new meter was 0000000. Since access to the meter was not gained, estimated bills were sent and it is believed the estimated reads were based on the prior usage of her parents. The City was denied a request to place a touch pad on the outside of the house to enable the meter to be read. Thus estimated bills continued until July 16, 2009 when the City received access to replace the water meter.

The customer received a series of large bills, the initial due to the collection of the first actual read and the second due to the inclusion of the first bills consumption in the MUNIS bill estimation process. Ultimately, the bills for which abatement applications were submitted totaled \$98,145.60 for both water and sewer.

Ms. Cato was given block adjustments for the period of July 16, 1999 – 7/16/2009 based on a calculated quarterly consumption of 10,346 cf. The bills she had been receiving had usage based on estimated use ranging from 50 cf to a high of 1,000 cf/quarter, with most being in a range of 309 to 312 cf per quarter since October 2004. Ownership of the property changed to Ms. Cato on July 20, 2005 and no final read was obtained.

In 2010 a radio read meter was installed and usage was averaged over two quarters at 1,650 cf per month. Estimated usage for billing was at 311 cf per quarter (3 months). The account was block adjusted according to the DPW policy for multiple estimated reads, which had been developed by the DPW Staff and the Mayor's Office, in amounts of \$21,162.59 for water and \$50,893.22 for sewer. The Collector's records show the abatements on the account for 8 Corola Road and the unpaid balance due. The account balances of June 30, 2010 were liened to the Real Estate Tax bill in December 2010, as per City policy.

A review of the block adjustment spreadsheet for this address shows that for the five billing periods from April 2005 through April 2006, the adjustment calculated by the City was \$285.78 as shown on page 205 of the Appendix. Our calculation follows.

WATER			
Block Adjustment for 4/30/2006			
CF	Rate	Amount	
1,250	\$ 1.70	\$ 21.25	
1,250	\$ 2.16	\$ 27.00	
2,500	\$ 2.94	\$ 73.50	
5,000	\$ 3.06	\$ 153.00	
346	\$ 3.19	\$ 11.04	
10,346		\$ 285.79	
Recalculated Adjustment		\$ 285.79	
City Adjustment		\$ 235.07	
Difference		\$ 50.72	per quarter

We compute a \$50.72 difference between what the City calculated and the proper amount. The City's adjustments were too high for five quarters (1/31/2006, 10/31/2005, 7/31/2005, 4/30/2005 and 4/30/2006), a total of \$253.60 (\$50.72 x 5).

Then from July 15, 1999 through January 31, 2005, the City used a block rate of \$1.80 instead of a block rate of \$1.70, thus creating an overbilling. This is a second calculation where the City's calculated number is different than our calculation. This overbilling resulted on the City's worksheet in a total amount of \$186.55, leaving a net due to the City of \$67.05. Other calculations in the determination of the block rate adjustment appear to be correct.

#### Account Findings

1. The information (reads and associated documentation) used to generate the original bill is consistent with the information currently in the MUNIS system.
2. A new meter was installed on 1/30/1998 and no touchpad (reading device) was installed preventing the collection of external reads.
3. The new meter indicates that the account received bills which were likely 10% of what they would have been had proper meter reading been collected on a regular basis.
4. Extended over the 10 year period of estimated bills, the average "billed" quarterly use over that period was a little less than 300 units per quarter, which equates to 25 gallons per day.
5. The correct visual read of "419080" collected as part of the re-read in July 2009 was not properly entered into the MUNIS reading database, which delayed this account being addressed.
6. It is not known where the read of "41909" indicated on the 2006 work order originated but it is possible that the actual read at the time should have been "419090."
7. The meter was sent to a third-party firm by the City for independent testing. The results of the testing indicated that the meter was working within both AWWA and City accuracy standards, suggesting that although no readings were collected over the 12 years, the meter was correctly tracking consumption in the household over that period. The meter serial number shown on the 1998 meter installation log matches the serial number of the meter tested by the independent testing firm.
8. The policy developed by the DPW and the City is to use the block rate in effect at the time for the first five years of look back and the lowest block rate in effect going back further (adding).
9. There were several errors made in the calculation of the account's block rate adjustments, resulting in a miscalculated adjustment of approximately \$253.60 in Ms. Cato's favor and a second miscalculation adjustment of approximately \$186.55 in the City's favor, resulting in a net due to the City of \$67.05.

#### Recommended Action

1. The City should readjust the account to reflect the errors made in the block rate adjustment calculations.
2. The City should adopt standardized provisions on the allowable "look-back" period if they wish the DPW to recalculate bills in this manner.

3. The Water Billing Office should develop an automated block-rate adjustment tool to prevent future calculation errors and reduce the amount of time required to make these adjustments.

### **Ward 2 Nominee: Account 3-1499 (220 N. Main Street)**

We note the following items of interest within the consumption database:

- A review of the "Actual" consumption values indicates a high degree of fluctuation in the quarterly usage at this property.
- Although there is significant fluctuation in the quarterly values, the visual reads during meter tests and meter change-outs are consistent with the reading contained in the consumption database. Additionally, comparison of the eight months of daily hand-written meter-readings collected by the owner are, with a single exception, consistent with the quarterly read data in the consumption database.
- The owner has reported instances where the reading collected from the external reading device has not matched the concurrent visual read from the meter register. It is unknown whether technical problems with the reading devices could be responsible for some of the variability in quarterly reads.
- The meters associated with this account have been tested at the request of the property owner numerous times, as documented within the MUNIS system and work order files. Although documentation of the tests completed in 2008 and 2010 are included in the DPW's files, documentation of the earlier tests was unavailable. The meter test in 2008 indicated the meter was performing within both City and AWWA Standards. The 2010 meter test indicated that the meter was reading between 7% and 10% slow (under-registering).
- Since the meter change-out which occurred in 2008, this account has exhibited an average quarterly consumption of approximately 10,900 cf. This is based upon a total metered consumption of 120,026 cf over 11 quarters, which equates 900 gallons per day, or 40 gallons per resident per day, indicative of limited per resident water use and significantly below the Massachusetts DEP goal of limiting consumption to 65 gallons per resident per day.

### **Discussion of the Billing/Adjustment Calculations applied to the Account**

The next account to be reviewed was that of Mr. Herbert P. Matta for property at 220 North Main Street. The location is a licensed rooming house with a total occupancy of 23 in 18 rooms. Mr. Matta claimed that his tenants use minimal amounts of water. His meter is actually read each quarter.

He was granted abatements based on the number of days between reads if they exceeded 90 (a full quarter), in the amounts of \$49.20 for water and \$247.38 for sewer. Calculations were reviewed and found to be correct. These abatements are recaptured in the following quarter and were granted in accordance with current DPW Policy. The Collector's records were examined to see that said abatements were recorded correctly, which they were.

### **Account Findings**

1. The meters associated with this account have been tested multiple times over the past ten years. With a single exception (when the meter was tracking slowly), the meters have been found to read accurately.
2. Although there have been reported instances where the read on the meter is inconsistent with the read taken from the exterior of the building, the meter test and take-out readings taken from the meter registers have been accurate to the read values contained in the MUNIS database.
3. Consumption calculated from "actual" reads on the account has exhibited a fairly high degree of fluctuation in the past which may be due to problems with the reading device. The information available is insufficient to make a definitive statement on why.
4. The high degree of variability in consumption has likely pushed a portion of the consumption into higher rate tiers than if it had been accurately read during all billing cycles.

5. The most recent quarter indicated a usage of 9,400 cf (about half of which was measured by a meter tracking 7 to 10% slow). This suggests that, in aggregate, while individual bills may be based upon questionable meter reads, overall metering since at least 2008 has been accurate.

### **Recommended Action**

1. Although we believe no consumption based adjustments are warranted on the account, the City should consider assessing the impact of consumption swings on his bills due to the City's rate block structures.

### **At-large Nominee: Account 3-7697 (61 Bonney Street)**

We note the following items of interest within the consumption database:

- The account had an extended period of estimated reads yielding an average quarterly consumption of around 2,100 cf and an average quarterly bill of approximately \$200 in the past several years.
- Following inclusion of an "actual" read in the consumption database in January 2010, an owner visual read was called in. The call-in read was followed by the DPW completing a visual read of the meter, after which the original meter was replaced.
- The meter was tested by the DPW and found to comply with the City standards for accuracy.
- During the period between January 2002 and November 2003 (the last period when "actual" reads were collected on a regular basis), the account registered an average quarterly consumption of approximately 2,300 cf.
- Assuming the take-out read is correct yields an average quarterly consumption of approximately 7,400 cf since November 2003.
- Assuming the last two "actual" reads are correct implies that the average quarterly consumption between November 2003 and January 2010 was approximately 4,800 cf, equal to approximately 400 gallons per day.
- Further, assuming the last two "actual" reads are correct implies that the average daily consumption between the January 2010 read and meter change-out was approximately 17,500 gallons per day.
- Since the new meter was installed in February 2010, average quarterly consumption has been approximately 1,600 cf.

### **Discussion of the Billing/Adjustment Calculations applied to the Account**

The third account to be reviewed was that of Mr. Robert Ford at 61 Bonney Street. Mr. Ford had been sent all estimated bills from an actual read on October 17, 2003 until another actual read was obtained on January 19, 2010. Estimated readings during this period ranged from 1,788 cf to 2,094 cf. The average actual use over the period was 7,408 cf each quarter. The final read was verified with a change of meter.

Due to the large amount of consumption, his account was block adjusted based on the actual read to actual read on the above dates. The block adjustment of usage was based on the readings on October 17, 2003 and January 19, 2010 and averaged over that period of time and was based on the multiple estimated bills policy. The Tax Collector's records were examined to see that the adjustments were correctly recorded, which they were.

A review of the block rate adjustment spreadsheet revealed a difference between the City's calculation and ours. The City's calculation was \$272.07, as documented on page 239 of this Appendix. Our calculation follows.

WATER			
Block Adjustment for 1/31/2008			
Block Adjustment for 4/30/2008			
CF	Rate	Amount	
1,250	\$ 1.87	\$ 23.38	
1,250	\$ 2.38	\$ 29.75	
2,500	\$ 3.23	\$ 80.75	
2,408	\$ 3.51	\$ 84.52	
-	\$ -	\$ -	
<b>7,408</b>		<b>\$ 218.40</b>	
City Adjustment		\$ 272.07	
Recalculated Adjustment		\$ 218.40	
Difference		\$ 53.67	per quarter
Difference for two quarters		\$ 107.35	

The billings on 1/31/2008 and 4/30/2008 were both calculated at \$218.39 while the City's calculation was \$272.07, which means there was overbilling as a result in a total of \$107.35 over the two quarters, which would be due to Mr. Ford. Other calculations on the block rate adjustment sheet appear to be correct.

#### Account Findings

1. The meter reads which resulted in the large, disputed bills indicate a level of consumption which is unusually large (especially the take-out read) and which conflict starkly with metered consumption seen on this account both before and after the period of estimated reads.
2. There were several errors made in the calculation of the account's block rate adjustments, resulting in a miscalculated adjustment of approximately \$107.35 in Mr. Ford's favor.

#### Recommended Action

1. Given our strong suspicion that the large bill reading and the meter takeout reading were in error and do not reflect actual water usage in the residence, the City should consider revising the large bills based upon their established policy of revising bills based upon several quarters of consumption (as measured by the new meter).
2. Finally, the City should readjust the unpaid balance on the account to reflect the errors made in the block rate adjustment calculations.

#### Ward 5 Nominee: Account 1-9156 (106 Quincy Avenue)

We note the following items of interest within the consumption database:

- This account experienced an extended period of "estimated" read bills between 2002 and 2010, when the owner responded to a door hanger and called in an "actual" read.
- Based upon the pattern of "estimated" reads it is likely that the MUNIS Utility Billing Module estimated consumption calculator was used in generating the bills.
- The meter was tested upon removal and was found to register water flow accurately.
- From the date of installation to removal, the average quarterly metered consumption for this account was approximately 2,480 cf.
- DPW monitored the first two quarters of consumption following the installation of a new meter and reportedly adjusted/abated the bill (resulting lien) based upon the average consumption from this period.

## Discussion of the Billing/Adjustment Calculations applied to the Account

The fourth account to be reviewed was that of William Costa of 106 Quincy Avenue. This account's last actual read by the Water Department was July 1, 2002. The read on March 4, 2010 was an owner called-in read, meaning that the reading was taken by the owner of the property and called into the Water Billing Office. The meter was changed in May 2010. Usage was monitored over a two month period and turned out to be substantially less than the estimated bills sent. Whereas her mortgage holder had paid the amounts liened, a refund was due the Costas. The refund was processed as expeditiously as possible and the two quarterly bills of the current fiscal year were still unpaid, pending the outcome of their dispute.

Once the abatement/adjustment had been recorded, the account was down to an amount that the Costas paid when the situation was settled. The abatement was calculated in accordance with the City policy on block adjustments for accounts with multiple estimated reads. The Tax Collector's records were examined and showed the abatements granted in the amounts of \$1,951.51 for water and \$1,937.60 for sewer. All calculations on the block adjustment spreadsheet were found to be correct.

## Account Findings

1. After an extended period of estimated reads, the owner call-in a visual read in response to a door hanger, which resulted in a very large water/sewer bill.
2. After several phone discussions, the customer came in and discussed the situation and history on the account with the DPW.
3. Substantial adjustments (block-rate) and abatements (based upon new meter readings) appear to have been made to the account, in accordance with the DPW's current, written policies.

## Recommended Action

1. It appears that the City followed its stated policies in the revision of this customer's bills. As such, we recommend no changes be made to this account beyond those already completed.

## Ward 3 Nominee: Account 2-2247 (104 Menlo Street)

We note the following items of interest within the consumption database:

- The account is equipped with a Tel-data reading device, which, when operating normally, transmits reads into the database once every two weeks. The equipment at this installation is no longer regularly transmitting complete reads into the MUNIS system.
- Within the past 2-1/2 years, this account has had a final read collected as part of a property ownership transfer. The final read was conducted in accordance with standard DPW procedures.
- Based upon a review of the Tel-data call-in data, it appears that the "estimated" consumption used to calculate the July 2010 bill was under-estimated. The under-estimation is most likely related to the fact that the last call-in read data from Tel-data was an incomplete read, causing MUNIS UB to generate an estimated bill. Review of the data prior to the faulty read indicates the proper consumption value for the July bill should have been in the range of 7,000 to 7,500 cf, rather than the 3,942 used in generating the bill.
- A complete read was collected as part of the October meter-reading cycle. This read includes the additional consumption which was unaccounted for in the prior bill.

## Discussion of the Billing/Adjustment Calculations applied to the Account

The fifth account to be reviewed was that of Mr. Eliot Miller of 104 Menlo Street. Mr. Miller owns a 3 family home at that address. He has been billed as a single family home. He was billed lower than he actually should have been, based on usage. The property had received only one estimated bill and based on the City policy, he was not entitled to a block adjustment.

### **Account Findings**

1. The Tel-data equipment installed in Mr. Miller residence is failing to reliably provide meter reads.
2. The MUNIS system, rather than looking back to the last good read, generated an estimated bill based upon an estimated consumption which was substantially less than was actually used.
3. The following bill was large, accounting for the earlier bill which didn't fully capture usage.
4. This may have pushed more of the consumption into a higher tier than if it had been more evenly distributed, as it actually occurred.

### **Recommended Action**

1. Although the period between actual reads from the Tel-data system was limited, the high quarter consumption was likely accrued over multiple quarters. As such, we recommend the City review this account to ensure the high reading didn't adversely impact the customer by pushing consumption into a higher bracket than would be the case in the event that actual reading had been collected every quarter.

### **Ward 7 Nominee: Account 3-6873 (Fieldside Gardens Condominiums)**

We note the following items of interest within the consumption database:

- The account is equipped with a touchpad resulting in quarterly reads.
- With several exceptions in 2004, this account has exhibited a high percentage of "actual" reads
- In the period from the read confirmation in 2004 to the present, the average quarterly consumption on this meter has been approximately 20,000 cf. Corrected for the number of units reportedly served by the meter, this equates to about 2,500 cf/quarter/unit or 210 gallons per day for each unit.

### **Discussion of the Billing/Adjustment Calculations applied to the Account**

The sixth and final account to be reviewed was for the Fieldside Garden Condo Association at 26 Trudy Terrace, Ms. Kathy Jewett, President. A written request, dated March 10, 2011, was made for consumption reports for all 35 condo units for the current year. The letter requested that it be completed by March 14, 2011. A second item was included in the same letter for all consumption reports for all 35 units back to the year 2000 to be provided by April 1, 2011. Contact was made with the requester explaining that the public records law in Massachusetts provides for charging for the time and materials it takes to retrieve such data and asked if she would agree to pay the charges. Apparently, she misunderstood the law on this subject and was not willing to pay. There was no dispute here and accordingly, no block adjustment. The request was filed and no further action taken.

### **Account Findings**

1. Based upon the documentation available, the touchpad at this location is reportedly collecting an accurate read from the meter register.
2. The meter is a 1-1/2" meter and was installed 16 years ago. It has never been tested for accuracy. In the event that it was tested, it would likely need to be tested by an independent firm as the City's test unit accommodates meter of 1" or smaller.
3. The quarterly consumption is not outside the typical range which would be seen for a 1-1/2" meter or a single meter serving eight residences.
4. It appears that the City followed its standard meter reading policies on this account.
5. Although the customer is adamant that there are billing problems associated with this meter, there is no evidence of this in the records.

### **Recommended Action**

1. To ensure the meter reading device is correctly transmitting the reading on the register to the touchpad, we recommend the DPW coordinate with the owner to collect concurrent touchpad and visual reads from this meter for the next two to three billing periods.
2. Additionally, we recommend the owner have this meter tested for accuracy through the City DPW/independent third party tester (must be observed by DPW personnel). In the event that the meter is faulty, we recommend the City consider making adjustments to the account based upon its established procedures.