

**CITY OF PHILADELPHIA**  
**REVIEW OF NEW WATER BILLING SYSTEM**  
**JUNE 2009**



# CITY OF PHILADELPHIA

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June 19, 2009

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The City Controller's Office has performed an assessment of the adequacy and application of controls over the city's new water billing system for the fiscal year ended June 30, 2008. This assessment was conducted pursuant to Section 6-400 (d) of the Home Rule Charter. A synopsis of the results of our work is provided in the executive summary to the report. The decision to move to a new water billing system occurred under the administration of the previous Revenue Commissioner.

We discussed our findings and recommendations with your staff at an exit conference. We have included your written response to our comments as part of the report. We believe that our recommendations, if implemented by management, would improve the controls over the new water billing system. Our recommendations have been numbered to facilitate tracking and follow-up in subsequent years.

We would like to express our thanks to you and your staff for the courtesy and cooperation displayed during the conduct of our work.

Very truly yours,

ALAN BUTKOVITZ  
City Controller

cc: Honorable Michael Nutter, Mayor  
Honorable Anna C. Verna, President  
and Honorable Members of City Council  
Members of the Mayor's Cabinet  
Michelle Bethel, Deputy Revenue Commissioner



# City of Philadelphia

## Review of New Water Billing System

### Executive Summary

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#### **Why the Controller's Office Conducted this Review**

Over the last eight fiscal years, the city has raised the rates that it charges for water and sewer service by 41 percent, and will be raising rates by another 18 percent over the next three years. In February of 2008, the Controller's Office issued a report on delinquent water and sewer accounts. That report set forth a list of serious problems, including weak enforcement effort, and failure to monitor accounts for reasonableness. Responding to that report, the city indicated that it had replaced the old water billing system with a new system that would provide automated case management and other enforcement processes such as the automated referral of customer accounts for shutoff.

We conducted this current review to determine whether the new system has improved the enforcement process and to determine whether there were adequate safeguards and controls over the billing, adjustment, and financial reporting processes.

#### **What the Controller's Office Found**

After spending \$40 million in four previous failed attempts to develop a new water billing system, the city spent another \$9.2 million to acquire and install an off-the-shelf water billing system known as "basis2" (new system). Our audit procedures indicated that the new system did not meet the financial and reporting needs of the city. We noted that, after one full year of operation, revenue collections have not improved because the new system's enforcement component is still a work in progress. We found the following:

- Revenue receipts collected under the new billing system were \$9 million less than the amounts collected under the old system. In calendar year 2007 the city collected \$437 million on customer accounts, while in 2008 it collected only \$428 million.
- Balances due on delinquent customer accounts continued to increase and grow older. For accounts with balances over ninety days old, amounts owed increased by \$11 million, from \$113 million owed at December 31, 2007 to \$124 million one year later.

Our review of the process for installing the new water billing system, and our testing of the new system's billing, adjustment, and financial reporting functions indicated there was a rush to complete the new system, and disclosed significant control weaknesses as well as financial reporting errors. Some of our findings include:

- The implementation process did not follow standard information systems practices and controls.
- The new system did not always calculate customer bills accurately.
- Weaknesses in the new system's adjustment procedures increased the risk for errors and irregularities.
- Failure to develop the financial reporting component resulted in delays and year-end financial reporting errors.

#### **What Controller's Office Recommends**

The City Controller's Office has developed a number of recommendations to address these findings. The recommendations are discussed in the body of the report.

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## **INTRODUCTION**

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### **BACKGROUND**

For a number of years, the city has invested a significant amount of time and effort to replace the 30 year old customer billing system used by the Water Revenue Bureau (WRB) to process water and sewer bills for customers of the Philadelphia Water Department (PWD). With approximately 515,000 customers that annually generate over \$400 million in water and sewer charges, a reliable billing system is critical to meeting the accounting and financial reporting needs of the city's Water and Sewer Fund. The old system had various limitations, and city management felt that a new system would enhance the billing process.

Over the last eight fiscal years, the city has raised the rates that it charges for water and sewer service by 41 percent and will be raising rates by another 18 percent over the next three years (Exhibit I). While increases in the rates charged for water and sewer service have been fairly constant, collection efforts have not. In February of 2008, the Controller's Office issued a report on delinquent water and sewer accounts. That report set forth a list of serious problems, including weak enforcement effort, and failure to monitor accounts for reasonableness. Responding to that report, the city indicated that it had replaced the old water billing system with a new system that would provide automated case management and other enforcement processes such as the automated referral of customer accounts for shutoff.

### **OBJECTIVE, SCOPE, AND METHODOLOGY**

The objectives of our review were to determine whether the new system has improved the enforcement process and to determine whether there were adequate safeguards and controls over the billing, adjustment, and financial reporting processes.

Our work consisted of interviewing WRB and PWD personnel as well as analyzing account activity, and testing the new system's billing, adjustment, financial reporting, and enforcement functions.

We performed our work from June 2008 through February 2009 in accordance with *Government Auditing Standards* issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

## ***FINDINGS AND RECOMMENDATIONS***

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### Overview

After spending approximately \$40 million on four previous failed attempts to replace the customer billing system, the city purchased a commercial off-the-shelf utility billing system known as “basis2”. The conversion to the new system began in January 2007 with an estimated cost of \$6.7 million and an expected completion timeframe of thirteen months. The new water billing system became operational at the beginning of calendar year 2008. As of February 2009, the city has spent \$9.2 million on implementing basis2, which brings the city’s total spending to date on the new water billing system to \$49 million.

Our review of the system implementation process, and our audit testing of the new system’s billing, adjustment, financial reporting, and enforcement functions uncovered significant control weaknesses, and financial reporting errors. As discussed below, key system components were not fully developed, tested, or working correctly. We believe that the initial time frame to complete the conversion in thirteen months was overly optimistic, and that rushed and inadequate planning during the system implementation process contributed to this situation.

### Basis2 Implementation Did Not Follow Standard Information Systems Practices and Controls

Our audit found that the city’s introduction of the basis2 system did not follow standard information system implementation practices and controls. This significantly increased the risk that undetected errors and irregularities could materially affect the billing, collection, and reporting of accounts receivable and revenues.

A standard practice when introducing a new system, especially for large and complex systems such as the city’s water billing system, is parallel running whereby the new computer system is introduced along side of the existing system. The advantage of operating both systems simultaneously is that results from the new system can be compared with results from the old computer system, and any problems can be identified and corrected before the new system is independently operated. The city, however, did not parallel run the new and old water billing systems. Instead, the city ceased operation of the old system on December 31, 2007, and basis2 was placed into operation on January 2, 2008. The new system immediately encountered billing and financial reporting problems, which would have been identified by parallel running both systems.

Another key step during a system conversion process is the reconciliation of ending data in the old system to the beginning data in the new system. This serves to verify the completeness and accuracy of the data transferred. We requested documentation of the conversion reconciliation in July 2008. Although it was seven months after implementation, it took the WRB another month to provide a reconciliation. The WRB’s first response indicated that \$297,911 of accounts receivable from the old water billing system were not transferred over to basis2. When we inquired about this difference, the WRB reran their conversion reconciliation and provided a second version which now showed that 52 accounts with \$32,087 of accounts receivable from the old system did not migrate over to basis2. The WRB indicated they were working to move these 52 accounts and their balances to basis2.

Further compounding the risk for undetected errors and irregularities was the city's failure to adequately segregate the duties of the basis2 system programmers who were responsible for developing and making changes to the system software. Our audit testing disclosed that the basis2 project team consultants responsible for system programming routinely ran the daily computer batch jobs that updated basis2 records. Procedures should have been in place to prevent programmers from having access to current production data or the ability to update data. This situation occurred from January 2, 2008, when basis2 went live, until May 2008 when the function of running the batch jobs was turned over to PWD computer operations staff. Also, our audit testing disclosed that generic user IDs such as "anonymous" existed within the basis2 system. Our review found nearly 21,000 adjustment transactions created under these generic user IDs which reduced customer receivable balances by \$7.4 million. User IDs should identify the names of the actual users to hold individuals accountable for activities performed in the system.

A general information technology controls review of the Division of Technology (DOT), previously issued under a separate report, noted the following additional deficiencies in security access controls over basis2 programs and data, which could compromise the integrity of the financial data in the system:

- Terminated employees and contractors were not communicated to the appropriate individuals responsible for removing access to computer resources in a timely manner. For example, several terminated employees and contractors had active user IDs within the basis2 system.
- The approval of new user access was not documented. Computer Access Request Forms did not exist for four out of five new basis2 users selected for testing.
- Administrative/power user access had been granted to five basis2 users who did not appear to require such access given their job responsibilities.
- There were users who maintained multiple IDs in the basis2 system; therefore, a potential segregation of duties issue could exist across user IDs.
- Password parameters were not consistent with generally accepted security standards. Basis2 users were not prompted to periodically change their passwords because passwords did not expire in basis2.
- User accounts were not consistently locked out (disabled) after multiple invalid login attempts.

In addition, the DOT general controls review also noted that DOT change management policy was not always followed. For a sample of basis2 program changes tested, the following instances of noncompliance were noted: (1) approval was not obtained by the business unit in which the change was intended; (2) evidence of testing or an explanation as to why testing was not complete was not evidenced on the change management ticket; and (3) approval by the designated approval authority was not evidenced prior to the implementation into the production environment.

**Basis2 Did Not Calculate Customer Bills Accurately**

Given that the most important function of the water billing system is to generate accurate customer bills, it was essential that this function be fully developed and tested to ensure that it was working properly. However, during its first six months of operation, there were numerous problems with customer bills generated by basis2. Our audit testing disclosed that out of \$269 million in customer billing transactions created by basis2 from January through June 2008, \$44 million (sixteen percent) were over-billings.<sup>1</sup> Although these over-billings were eventually cancelled, controls in the new system were not operating as planned.

Some of the billing errors we reviewed were caused by flaws in the basis2 bill calculation program. Our review noted instances when the program (1) miscalculated the water usage when a customer’s meter was replaced because the program was not designed to handle this situation, and (2) improperly included sewer usage charges on industrial waste surcharge only bills. Billing problems also occurred because the prior system’s meter reading data for accounts with estimated bills were not migrated correctly to basis2.

Basis2 does have a control feature called outsort which is intended to prevent erroneous bills from being mailed to customers. It is designed to capture any bill which exceeds certain thresholds. However, our audit testing disclosed that this control feature did not meet the WRB’s expectations for identifying erroneous bills. For example, we found instances where large erroneous bills were not captured by the outsort feature and the bills were mailed to the customers, as shown in the following table:

| <b>Example</b> | <b>Bill Date</b> | <b>Bill Amount</b> | <b>Previous Bill Amount</b> | <b>Type of Customer/Property</b> |
|----------------|------------------|--------------------|-----------------------------|----------------------------------|
| 1              | 2/25/08          | \$331,163.90       | \$97.34                     | Residential, Single Family       |
| 2              | 4/18/08          | \$109,578.96       | \$56.22                     | Residential, Single Family       |
| 3              | 1/24/08          | \$56,654.86        | \$2,606.68                  | Commercial                       |

In all three instances, the customers contacted the WRB to question the accuracy of their bills. WRB personnel reviewed, then cancelled the erroneous bills, and sent corrected bills to each customer.

Our review also noted significant problems with the basis2 system’s calculation of penalty charges on delinquent accounts. In the old customer billing system penalty charges averaged \$1 million per month; however, in the first two months of operation, basis2 generated \$25 million in erroneous penalty billings. These penalty over-billings resulted from the basis2 program charging penalty from the original transaction date of the delinquent receivable rather than from the date that the penalty was last charged. These penalty over-billings were eventually cancelled.

Once the penalty over-billing problem was corrected, there remained flaws in the basis2 penalty calculation program which caused under-billings. Our review of penalty calculations for selected accounts found that, when the initial penalty over-billings were cancelled in January and February 2008, no new penalty was charged in its place during those months. In addition, the

<sup>1</sup> The \$269 million in customer billing transactions and \$44 million of over-billings includes both (a) billings for water and sewer service and usage and (b) penalty billings on delinquent accounts.



basis2 program underbilled penalty because it did not include all past due receivables in its penalty calculations. These under-billings resulted in lost revenue for the city's Water and Sewer Fund. Our estimate of penalty under-billings for January through June 2008 was \$3 million.

Weaknesses in Basis2 Adjustment Procedures Increase Risk for Errors and Irregularities

Because of the billing and penalty calculation problems described above, there was an extremely large number of adjustments made to customer accounts in basis2. From January through June 2008, there were 285,938 adjustment transactions made resulting in \$43 million of corrections to accounts receivable.<sup>2</sup> In contrast, for the entire fiscal year 2007, operating under the old billing system, adjustments totaled \$16 million.

Our testing of basis2 adjustment transactions noted significant control weaknesses which increased the risk for undetected errors and irregularities. For several adjustment transactions tested by us, WRB personnel could not readily provide documentation to support the adjustment amount and reason. The lack of documentation, which increased the risk of fraud and irregularities, resulted from the following:

- During the early months of system implementation, basis2 system personnel ran various computer batch jobs to correct customer accounts, however, documentation for these jobs was not available. A standard practice when introducing a new computer system is the maintenance of an incident log, which records problems encountered and how they are resolved. In fact, WRB only began keeping an incident log on October 31, 2008 – ten months after basis2 became operational – in response to our requests for documentation to explain selected adjustment transactions.
- The basis2 system's design did not require that WRB employees enter an explanation when making an adjustment to a customer's account. Furthermore, for two major types of adjustments – bill reversals (i.e. cancelled bills) and rebills (i.e. replacement bills) – the basis2 system design did not permit WRB employees to enter an explanation when posting an adjustment, and WRB procedures did not require any written supporting documentation.
- Employees failed to follow WRB policy. For example, WRB call center personnel are not permitted to perform credit adjustments. Instead, a service/complaint record must be prepared and submitted to the WRB's accounting unit for review and posting to basis2. However, we noted an instance where basis2 allowed a call center supervisor to create a \$5,869 credit balance in a customer's account. The supervisor who posted the adjustment could neither provide the required service/complaint record nor recall the reason for the adjustment. This represents a serious breakdown in controls which increases the risk of fraud and irregularities.

Besides a lack of documentation for adjustments posted in basis2, our review also disclosed weaknesses in the system's controls for authorization of adjustments. We found that basis2 did not have an electronic authorization path for supervisory approval of adjustments. Currently,

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<sup>2</sup> The \$43 million figure is the net value of all adjustment transactions from January through June 2008 and includes the \$44 million of cancelled billings discussed earlier in the report.

WRB employees, depending on job title, have the ability to perform certain adjustments up to an authorized dollar limit. If an adjustment amount exceeds the employee's limit, the adjustment is forwarded to the employee's supervisor, who will approve and post the adjustment to basis2. While these dollar limits have been set up in basis2, our review noted deficiencies in the design and operation of this control, as follows:

- Employees had no dollar limits imposed for certain adjustment types, such as debit adjustments (e.g. rebill), bill reversals, and transfers of balances between customer accounts. This increases the risk for misappropriation. For example, in connection with the \$5,869 undocumented adjustment described above, the resulting credit balance was transferred to a different customer account and subsequently refunded. During the time of our review, WRB personnel were unable to explain or document the reason for the balance transfer and subsequent refund. At the exit conference, management informed us that it has investigated this transaction and is satisfied that the balance transfer and subsequent refund are proper.
- In addition, we noted instances where the dollar limits set up in basis2 did not match WRB policies and job responsibilities. For example, WRB policy only allows call center supervisors to waive penalty charges up to \$1,000 and does not permit them to perform any other credit adjustments. However, in the instance noted above, the call center supervisor should not have been able to process the \$5,869 adjustment. We also found a situation where a call center supervisor waived penalty charges of \$5,609. When we asked about these apparent violations of WRB policy, we were informed that penalty waiver limits are policy only and have not yet been incorporated into the basis2 adjustment function.
- Employee dollar limits were not always set up correctly in basis2. Our testing noted a \$1.8 million credit adjustment posted by a clerical supervisor, whose dollar limit should have been \$25,000. This employee's dollar limit was subsequently corrected.
- Basis2 did not have a feature to prevent or detect the splitting of adjustment transactions to circumvent employee limits. We did find apparent instances of adjustment splitting. For example, an employee with a \$10,000 limit posted fifteen credit adjustments of \$10,000 each and one \$6,874 adjustment to transfer a \$156,874 credit balance between accounts. We were informed that basis2 system personnel are in the process of developing a report which the WRB accounting unit would use to detect patterns of splitting, but this report has not yet been finalized.

#### Failure to Develop Financial Reporting Component Resulted in Delays and Errors

Similar to the problems with the billing function, the basis2 financial reporting component was not adequately planned and developed, resulting in reporting delays and errors. We met with the WRB as early as February 2008 to request the financial information needed for our audit. However, the June 30, 2008 accounts receivable and revenue data was not finalized until late September 2008 which delayed our efforts to test accounts receivable.

Basis2 system personnel informed us that the new system was capable of producing year end accounts receivable information at any point in time. As a precaution, we requested that system personnel make a backup copy of the basis2 database as of June 30, 2008. It was

fortunate that this backup copy was made as system personnel later discovered that basis2 did not have that capability. Therefore, the June 30, 2008 accounts receivable report – the source for the Water and Sewer Fund accounts receivable amount reported in the city’s financial statements – was generated from the backup copy.

In addition, when the city converted to its new water billing system, we expected but could not find evidence that management did a reassessment of the process for determining the year-end accruals for accounts receivable and revenues. This lack of a reassessment of the year-end accrual methodologies significantly increased the risk of undetected financial reporting errors.

Analytical review procedures that we performed as part of our audit indicated that higher revenues were not realized as a result of a 4.18% rate increase at the beginning of the fiscal year. Further testing revealed a \$5.7 million error in the amounts reported as accounts receivable and revenues in the Water and Sewer Fund. This error occurred because PWD accounting personnel, who calculated the year-end accruals, based their computation on basis2 billing information provided by the WRB without taking into consideration that under basis2 there was a higher number of fiscal 2008 service dates billed after the fiscal year-end than in the prior year.

This error resulted in a \$5.7 million understatement of accounts receivable and revenues reported on the Water and Sewer Fund financial statements in the city’s CAFR. We proposed a \$5.7 million adjustment to correct the error. The adjustment was eventually recorded, and corrections were made to the Water and Sewer Fund financial statements.

#### Enforcement is a Work in Progress

One of the WRB’s primary reasons for implementing a new water billing system was to enhance its revenue collection efforts through the use of an automated case management system. While basis2 has such a feature, the enforcement process for collecting on delinquent accounts in the new water billing system has not been fully developed.

We found one component of the billing system - the Utility Service Tenants Rights Act (USTRA) process - worked under the old billing system, but has not been operational since basis2 was introduced in January 2008. The USTRA process, which allows tenants to continue to receive water service, enables the WRB to collect payments directly from the tenants when their landlords fail to pay water and sewer bills. We were informed by WRB personnel that the city has identified 73,000 potential USTRA accounts (approximately fourteen percent of total water and sewer accounts), which have been suspended from any enforcement action until the USTRA process is developed and working in basis2.

Another problem, which adversely affects the collection of water revenues, is the new system’s inability to refer certain delinquent accounts to outside collection agencies for assertive collection efforts. Under the old billing system, delinquent receivables from commercial, vacant, and landlord accounts were routinely referred to collection agencies, hired under contract with the WRB, to collect the amounts due to the city. During the period of our review, the new billing system only identified and referred delinquent commercial accounts to collection agencies. The referral process did not include delinquent vacant and landlord accounts.

With enforcement of delinquent accounts still a work in progress in basis2, this situation has had an adverse effect on revenue collection efforts. One of the city's most effective enforcement tools for collecting on delinquent accounts is the shut-off of water service. However, as shown in Exhibit II, we compared the number of accounts shut-off in calendar 2007 to 2008 and found a 21 percent decrease. In conjunction with this decrease in shut-offs, water and sewer revenues collected declined. In calendar year 2007 the city collected \$437 million, while in 2008 it collected only \$428 million, a decline of \$9 million.

Also, we noted that over the same time frame the amount of delinquent water and sewer accounts receivable grew. As depicted in Exhibit III, total accounts receivable delinquent for more than 90 days increased from \$113 million at December 31, 2007 (the last date of operation under the old system) to \$124 million at December 31, 2008, an \$11 million or nine percent increase during basis2's first year of operation.

In addition to the incomplete basis2 enforcement function, WRB officials informed us that its contracts with collection agencies expired on December 31, 2008. Revenue officials informed us that new contracts with collection agencies under the control of the Law Department have been awarded but have not been finalized. Consequently, there have been no referrals of delinquent accounts to the collection agencies since the end of calendar year 2008.

Management has cited the recently revised terms for delinquent account shut-offs, which further restricted the number of days when delinquent accounts' water service can be shut-off, as a factor contributing to the increase in delinquent amounts due. We have not, however, viewed any evidence which supports this contention.

## **RECOMMENDATIONS**

Based on our observations and our testing of transactions, basis2 has not been operating effectively and accurately. This situation increased the risk that billing mistakes, errors and irregularities will not be detected. At this time, the city still does not have a complete and fully reliable system that produces accurate bills and financial information. City management needs to bring the new customer billing system under control by diligently resolving all open issues concerning the basis2 system. We recommend that management do the following:

- Identify all basis2 processes that are incomplete or not working correctly, develop firm benchmarks for their completion and resolution, and establish cost limits for this work. [403608.01]
- Ensure that system programmers, working with WRB accounting staff, correct the deficiencies in the calculation of customer bills and penalties. [403608.02]
- Enforce the requirement that WRB employees provide written explanations for certain adjustment transactions. Furthermore, investigate fully all credit adjustments and penalty waivers which were not supported by required documentation, and take appropriate disciplinary action, if necessary. [403608.03]
- Revise the basis2 system so that an employee is required to enter an explanation before the system accepts an adjustment transaction. [403608.04]
- Revise WRB policy to require written supporting documentation for all bill reversals and rebills. [403608.05]
- Revise the basis2 system to include an electronic authorization path for supervisory approval of adjustments. [403608.06]

- Review the adjustment dollar limits set up in basis2 for all employees to ensure that these dollar limits accurately reflect employee responsibilities and WRB adjustment policies. [403608.07]
- Impose dollar limits for significant adjustment types such as rebills, bill reversals, and balance transfers. [403608.08]
- Develop procedures to identify instances of adjustment splitting done to circumvent dollar limits. [403608.09]
- Revise the basis2 system to include an edit check which would prevent employees from entering multiple adjustments to the same account at one time. [403608.10]
- Require that PWD and WRB accounting personnel work together to develop a methodology for calculating the year-end revenue accrual that correctly reflects fiscal year billings rendered after June 30th. [403608.11]
- Ensure that system programmers work with WRB personnel to finish the incomplete processes in the basis2 enforcement function. [403608.12]
- Ensure that all old accounts and their balances, which were not yet transferred to the new billing system, are moved from the old system to basis2. [403608.13]
- Require proper segregation of duties by not allowing system programmers to have access to current production data, or the ability to update data. [403608.14]
- Remove all generic user IDs from the system. [403608.15]
- Ensure that each system user is assigned a unique user ID which identifies the individual's name, and sets their security level that is in accordance with their job responsibilities. [403608.16]
- Develop, with the assistance of DOT and human resources personnel, a formal policy and procedure that removes user access for terminated employees. [403608.17]
- Ensure that all new user access and change of user access is documented and approved. [403608.18]
- Restrict and monitor "power user" access to those individuals who need this access based on their job responsibilities. [403608.19]
- Revise the basis2 system to incorporate a password expiration feature that prompts users to change their passwords after regular intervals. [403608.20]
- Revise the basis2 system to ensure that account lockout settings are properly configured to disable user accounts after multiple invalid login attempts. [403608.21]
- Require that all program changes be approved by the submitter's immediate manager. [403608.22]
- Test all changes in a test environment prior to being released into production. If a change is not tested, an explanation as to why testing is not necessary should be present. [403608.23]
- Require that all program changes be approved by the designated approval authority prior to being released into the production environment. [403608.24]

**EXHIBIT I**

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**WATER AND SEWER RATE INCREASES OVER THE LAST EIGHT FISCAL YEARS**

| <u>Increase</u> | <u>Effective Date</u> | <u>Rate of Increase</u> |
|-----------------|-----------------------|-------------------------|
| 1               | September 4, 2001     | 2.8%                    |
| 2               | July 1, 2002          | 4.0%                    |
| 3               | July 1, 2003          | 1.6%                    |
| 4               | February 1, 2005      | 12.7%                   |
| 5               | August 1, 2005        | 1.9%                    |
| 6               | July 1, 2006          | 6.7%                    |
| 7               | July 1, 2007          | 4.2%                    |
| 8               | November 1, 2008      | 7.1%                    |

**UPCOMING WATER AND SEWER RATE CHANGES**

| <u>Increase</u> | <u>Effective Date</u> | <u>Rate of Increase</u> |
|-----------------|-----------------------|-------------------------|
| 1               | July 1, 2009          | 6.4%                    |
| 2               | July 1, 2010          | 5.7%                    |
| 3               | July 1, 2011          | 5.9%                    |

*EXHIBIT II*

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**ACTUAL SHUT-OFFS OF WATER SERVICE  
PERFORMED BY THE PHILADELPHIA WATER DEPARTMENT**

| <u>Month</u> | <u>Calendar Year<br/>2007</u> | <u>Calendar Year<br/>2008</u> | <u>Difference</u> | <u>Percentage<br/>Difference</u> |
|--------------|-------------------------------|-------------------------------|-------------------|----------------------------------|
| * January    | 169                           | 35                            | -134              | -79.29%                          |
| * February   | 114                           | 14                            | -100              | -87.72%                          |
| * March      | 172                           | 341                           | 169               | 98.26%                           |
| April        | 5,756                         | 5,602                         | -154              | -2.68%                           |
| May          | 5,019                         | 4,268                         | -751              | -14.96%                          |
| June         | 3,015                         | 2,931                         | -84               | -2.79%                           |
| July         | 3,520                         | 3,072                         | -448              | -12.73%                          |
| August       | 3,257                         | 2,296                         | -961              | -29.51%                          |
| September    | 1,993                         | 2,503                         | 510               | 25.59%                           |
| October      | 3,499                         | 2,098                         | -1,401            | -40.04%                          |
| November     | 5,244                         | 2,276                         | -2,968            | -56.60%                          |
| * December   | 354                           | 41                            | -313              | -88.42%                          |
| TOTAL        | <u>32,112</u>                 | <u>25,477</u>                 | <u>-6,635</u>     | <u>-20.66%</u>                   |

\* NOTE: From December 1st through March 31st, the Philadelphia Water Department (PWD) suspends the termination of water service to residential occupied properties for nonpayment of a delinquent bill (Per PWD Regulation 100.4).

SOURCE: Delinquency and Restoration Services Report provided by the Philadelphia Water Department

**EXHIBIT III**

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**WATER AND SEWER ACCOUNTS RECEIVABLE**  
**12/31/07 VS 12/31/08**

| <b><u>Age of Receivable</u></b> | <b><u>At 12/31/07<br/>Last Date of<br/>Operation Under<br/>Old Water<br/>Billing System</u></b> | <b><u>At 12/31/08<br/>After 1st Year of<br/>Operation Under<br/>New Water<br/>Billing System</u></b> | <b><u>Dollar<br/>Difference</u></b> | <b><u>Percentage<br/>Difference</u></b> |
|---------------------------------|---|--|-------------------------------------|---|
| 2 Years +                       | \$76,230,165  | \$75,308,856   | \$(921,309)                         | -1.21%                                  |
| 1 to 2 Years                    | 15,845,578  | 20,898,749   | 5,053,171                           | 31.89%                                  |
| 121 to 365 Days                 | 17,062,394  | 22,390,452   | 5,328,058                           | 31.23%                                  |
| 91 to 120 Days                  | 4,044,905   | 5,202,331  | 1,157,426                           | 28.61%                                  |
| 61 to 90 Days                   | 4,802,027   | 5,914,809  | 1,112,782                           | 23.17%                                  |
| 31 to 60 Days                   | 7,841,841   | 9,351,745  | 1,509,904                           | 19.25%                                  |
| 1 to 30 Days                    | <u>33,118,595</u>   | <u>28,319,562</u>  | <u>(4,799,033)</u>                  | <u>-14.49%</u>                          |
| Total                           | <u>\$158,945,505</u>  | <u>\$167,386,504</u>   | <u>\$8,440,999</u>                  | <u>5.31%</u>                            |
| Over 90 Days                    | \$113,183,042   | \$123,800,388  | \$10,617,346                        | 9.38%                                   |
| 1 to 90 Days                    | <u>45,762,463</u>   | <u>43,586,116</u>  | <u>(2,176,347)</u>                  | <u>-4.76%</u>                           |
| Total                           | <u>\$158,945,505</u>  | <u>\$167,386,504</u>   | <u>\$8,440,999</u>                  |   |

NOTE: The above analysis excludes city owned properties.

Source: Accounts Receivable Aging Reports provided by the Water Revenue Bureau



## RESPONSE TO AUDITOR'S REPORT

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### CITY OF PHILADELPHIA

KEITH J. RICHARDSON, M.B.A.  
REVENUE COMMISSIONER

June 17, 2009

The Honorable Alan Butkovitz  
City Controller  
1230 Municipal Services Building  
1401 John F. Kennedy Boulevard  
Philadelphia, PA 19102

**Re: Responses to Recommendations of the New Water Billing System – May 2009**

Dear Mr. Butkovitz:

On Monday June 8, 2009, your department held an exit conference with the Water Revenue Bureau to discuss our New Water Billing System. We are committed to analyzing your recommendations provided in this report and making the necessary improvements to our water billing system. We thank you also for the opportunity to respond to the recommendations you have provided us.

**Recommendation:**

*Identify all Basis2 processes that are incomplete or not working correctly, develop firm benchmarks for their completion and resolutions, and establish cost limits for this work. [403608.01]*

**Response:**

Incomplete processes, unresolved issues/problems, and enhancements are being logged through an issue tracking application called Bug Tracker. The goal is to have all processes completed, all issues resolved, and complete as many enhancements within the scope of spending for FY10.

**Recommendation:**

*Ensure that system programmers, working with WRB account staff, correct the deficiencies in the calculation of customer bills and penalties. [403608.02]*

**Response:**

The collaboration between system programmers and WRB accounting staffing is already taking place and will continue until all issues are resolved.

**Recommendation:**

*Enforce the requirement that WRB employees provide written explanations for certain adjustment transactions. Furthermore, investigate fully all credit adjustments and penalty waivers which are not supported by required documentation, and take appropriate disciplinary action, if necessary. [403608.03]*

**Response:**

The requirement for written explanations for certain adjustment transactions will be firmly enforced. This requirement will include credit adjustments and penalty waivers.

**Recommendation:**

*Revise the Basis2 system so that an employee is required to enter an explanation before the system accepts and adjustment transaction. [403608.04]*

**Response:**

This request has already been made to Basis2 and is in progress of being implemented.

**Recommendation:**

*Revise WRB policy to require written supporting documentation for all bill reversals and rebills. [403608.05]*

**Response:**

WRB policy will be revised to include a requirement for written supporting documentation for bill reversals and re-bills.

**Recommendation:**

*Revise the Basis2 system to include an electronic authorization path for supervisory approval of adjustments. [403608.06]*

**Response:**

A request from WRB has been made for an electronic authorization path; however, this is considered an enhancement and may not be delivered immediately.

**Recommendation:**

*Review the adjustment dollar limits set up in Basis2 for all employees to ensure that these dollar limits accurately reflect employee responsibilities and WRB adjustment policies. [403608.07]*

**Response:**

A review of the adjustment dollar limits have been reviewed and determined. We are in the process of implementing the changes into Basis2 so that the system mirrors WRB policy.

**Recommendation:**

*Impose dollar limits for significant adjustment types such as rebills, bill reversals, and balance transfers. [403608.08]*

**Response:**

WRB will review these areas with the recommendation in mind; however, due to the structure of the Basis2 system imposing such limits would delay account processing.

**Recommendation:**

*Develop procedures to identify instances of adjustment splitting done to circumvent dollar limits. [403608.09]*

**Response:**

This adjustment to the system is on the enhancement list; however, we have further requested the system restrict a user to adjust an account up to their limit daily. We are already receiving a report that reflects adjustment transactions which is reviewed by a supervisor of the Accounting Unit for discrepancies.

**Recommendation:**

*Revise the Basis2 system to include an edit check which would prevent employees from entering multiple adjustments to the same account at one time. [403608.10]*

**Response:**

Basis2 is currently working on this recommendation.

**Recommendation:**

*Require that PWD and WRB accounting personnel work together to develop a methodology for calculating the year-end revenue accrual that correctly reflects fiscal year billings rendered after June 30<sup>th</sup>. [403608.11]*

**Response:**

PWD and WRB accounting personnel will work together to develop a new methodology for calculating the year-end revenue accrual for fiscal year billings rendered after June 30<sup>th</sup>.

**Recommendation:**

*Ensure that system programmers work with WRB personnel to finish the incomplete processes in the basis2 enforcement function. [403608.12]*

**Response:**

This collaboration between system programmers, WRB personnel, and PWD programmers is currently taking place and will continue until the project is complete.

**Recommendation:**

*Ensure that all old accounts and their balances, which were not yet transferred to the new billing system, are moved from the old system to basis2. [403608.13]*

**Response:**

This recommendation is completed. Old accounts were transferred 1-1-09.

**Recommendation:**

*Require proper segregation of duties by not allowing system programmers to have access to current production data, or the ability to update data. [403608.14]*

**Response:**

This recommendation is completed. The segregation of duties took place 5-1-09.

**Recommendation:**

*Remove all generic user IDs from the system. [403608.15]*

**Response:**

Removing all generic user IDs from the system is in progress and should be complete by the end of July 2009.

**Recommendation:**

*Ensure that each system user is assigned a unique user ID which identifies the individual's name, and sets their security level that is in accordance with the job responsibilities. [403608.16]*

**Response:**

This recommendation was completed 5-1-09.

**Recommendation:**

*Develop, with the assistance of DOT and human resources personnel, a formal policy and procedure that removes user access for terminated employees. [403608.17]*

**Response:**

The collaboration is currently taking place between all parties.

**Recommendation:**

*Ensure that all new user access and change of user access is documented and approved. [403608.18]*

**Response:**

This recommendation was completed 5-1-09.

**Recommendation:**

*Restrict and monitor "power user" access to those individuals who need this access based on their job responsibilities. [403608.19]*

**Response:**

This recommendation was completed 5-1-09.

**Recommendation:**

*Revise the Basis2 system to incorporate a password expiration feature that prompts users to change their passwords after regular intervals. [403608.20]*

**Response:**

This recommendation was completed 5-1-09.

**Recommendation:**

*Revise the basis2 system to ensure that account lockout settings are property configured to disable user accounts after multiple invalid login attempts. [403608.21]*

**Response:**

This recommendation was completed 5-1-09.

**Recommendation:**

*Require that all program changes be approved by the submitter's immediate manager. [403608.22]*

**Response:**

This recommendation was completed 5-1-09.

**Recommendation:**

*Test all changes in a test environment prior to being released into production. If a change is not tested, an explanation as to why testing is not necessary should be present. [403608.23]*

**Response:**

This recommendation was completed 5-1-09.

**Recommendation:**

*Require that all program changes be approved by the designated approval authority prior to being released into the production environment. [403608.24]*

**Response:**

This recommendation was completed 5-1-09.

**Overall response:**

The Water Revenue Bureau (WRB) agrees that the system was not operating effectively and accurately from the start. At the same time, much has been fixed or improved since those early months and the period upon which the findings were based. It is true that during the first six months there were problems with the bill calculation; however, the majority of the errors were caught prior to sending the bills out and cancelled in the system. Since that time, all known billing issues have been logged and are fixed or being addressed.

We concur with the importance of having the proper controls over the documentation and authorization of adjustments made to customer accounts. The Basis2 system requires an adjustment transaction and does not allow original transaction to be modified. An adjustment explanation can be entered but is not required at this time in Basis2; however, this enhancement is currently being developed. Ensuring the accuracy of reporting and collecting accounts receivables is a priority for WRB. Enforcement processes in Basis2 continue to be developed and improved; however, we cannot attribute the possible decline of \$9 million in prior year collections, solely, to the enforcement processes in Basis2.

As we continue to work to improve controls and increase the functionality of Basis2, we appreciate your recommendations. We will use them to help craft our requests to the Basis2 project team for changes in the new billing system.

Sincerely,



Keith J. Richardson

cc: Rob Dubow, Finance Director  
Michelle Bethel, Deputy Revenue Commissioner, Water Revenue Bureau  
Stephen Agostini, Budget Director, Finance Department  
Maia Jachimowicz, Assistant to the Director of Finance  
John Zoltowski, Audit Administrator