

**Water Utility Billing System Follow-Up Audit
February 2009**

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City Auditor's Office

February 20, 2009

Honorable Mayor and Members of the City Council:

I am pleased to present the City Auditor's Office's follow-up on the Water Utility Billing System Audit released in June 2007. The purpose of the follow-up audit was to determine the implementation status of prior audit recommendations

Our follow-up audit results indicate that management fully implemented 19 of the 25 recommendations made in the initial audit and partially implemented one. Management did not implement the remaining five recommendations, one of which they did not concur with during the initial audit.

We would like to thank Water Utilities Department staff for their cooperation and assistance during the project.

A handwritten signature in cursive script, reading 'Patrice Randle'.

Patrice Randle, CPA
City Auditor

- c: Jim Holgersson, City Manager
Fiona Allen, Deputy City Manager
Bob Byrd, Deputy City Manager
Gilbert Perales, Deputy City Manager
Trey Yelverton, Deputy City Manager
Louis Carr, Chief Information Officer
Julie Hunt, Water Utilities Director
April Nixon, Director of Financial and Management Resources Department

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Water Utility Billing System Follow-Up Audit



Office of the City Auditor
Patrice Randle, CPA
City Auditor

Project #08-13

February 20, 2009

Executive Summary

Management has fully implemented 19 of 25 recommendations

Fully Implemented

- *Credit balance review*
- *Password format and change frequency*
- *Masking of credit card numbers*

Not Implemented

- *Business recovery plan*
- *Handheld device security*
- *Lawson interface*
- *Customer authentication*

The City Auditor's Office has completed a follow-up to the June 1, 2007 Water Utility Billing System Audit. The follow-up audit was conducted in accordance with generally accepted government auditing standards. 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. The objective of the follow-up was to determine the implementation status of prior audit recommendations.

The follow-up audit indicated that management fully implemented 19 audit recommendations, partially implemented one recommendation and did not implement the remaining five. Management fully implemented recommendations related to data security, including the establishment of a new security policy which includes new password format and change frequency requirements. Management has disabled the auto-fill function for the credit card number field and the system now masks the display of credit card numbers. Management reviews critical transactions on a routine basis, including accounts with credit balances. Management has partially implemented the recommendation to investigate the cause of back-up tape failures. Although the Water Utilities Department has implemented new policies and procedures, the City Auditor's Office observed failures in recent backup tape schedules, which would prevent reliable system restoration in the event of a disaster. The City Auditor's Office noted that the City's Information Technology staff did not communicate back-up tape failures to Water Utilities Information Services staff.

Water Utilities management is still in the process of implementing its business continuity and disaster recovery plan. The plan is in draft status, awaiting Water Utilities management approval. Management has contracted with a vendor to provide recovery services.

Audit Scope and Methodology

The City Auditor's Office reviewed water utility billing activity from November 2007 to September 2008. The following methodology was used in completing the audit.

- Reviewed departmental policies and procedures
- Interviewed Water Utilities management and Information Services staff
- Examined new methodology in place as a result of initial audit recommendations
- Reviewed applicable contracts
- Reviewed sequencing for selected meter reading routes

Status of Prior Audit Recommendations

Recommendation:

The Water Utilities Director should request that the hand-held manufacturer add security log-on features to its meter reading devices.

Management Response:

This recommendation will be implemented if it is found to be feasible. Water Utilities has asked the hand-held unit manufacturer, which has not previously received a request for this feature, to research possible solutions.

Target Date: June 30, 2007 (Assess feasibility and develop plan)
Responsibility: Meter Services Manager

Implementation Status:

Not Implemented. Water Utility management has decided that the introduction of security features is not feasible at this time, based on input received from the manufacturer. The manufacturer plans to upgrade handheld meter reader units with the desired security features during future upgrades.

Recommendation:

The Water Utilities Director should ensure that meter readers review meter reading routes, confirm non-existent properties during route visits and transfer non-existent properties to inactive route "99".

Management Response:

Meter Reading routes include locations for all service connections, including abandoned and/or inactive locations, so that unauthorized consumption can be detected. There have been no "out-of-sequence" events noted due to inactive locations being sent to meter readers.

Written guidelines will be developed to ensure that routes are reviewed monthly for accuracy, and that locations for which service connections have been physically removed will be assigned to an inactive route designated as route "99".

Target Date: June 30, 2007
Responsibility: Meter Services Manager

Implementation Status:

Fully Implemented. Water Utility management has implemented a methodology to remove inactive locations from meter reading routes.

Recommendation:

The Water Utilities Director should ensure that the Meter Reading Supervisors utilize the “Forced Reading” report to identify incorrect meter readings and schedule meters that should be re-read prior to uploading consumption data to enQuesta.

Management Response:

Water Utilities does not agree with this recommendation. Using the “Forced Reading” report to identify incorrect meter readings and schedule meter re-reads would not improve the error correction process currently in place. The “Edit” process is conducted by billing personnel and generates re-read activity prior to billing. The method used in the “Edit” process for selecting which meters should be re-read is more selective, and thus more efficient, than would be a method based on the presence of forced readings. Use of the “Forced Reading” report to generate re-read activity would cause a delay in sending the original read file through the “Edit” process, and it would create duplicate effort, resulting in reduced productivity.

Target Date: Not Applicable

Responsibility: Not Applicable

Implementation Status:

Not Implemented. As stated above, Water Utilities did not agree with the audit recommendation.

Recommendation:

The Water Utilities Director should ensure that Water Utilities Meter Reading supervisors review and verify meter reader routes on a routine basis to ensure proper sequencing.

Management Response:

New accounts are automatically placed at the beginning of a meter reading route the first month so that they are easily identifiable as new accounts. The Meter Reading Supervisor reviews the new accounts and determines where they should be inserted in the route so that they will be in the correct position by the second month. The Meter Reading Supervisor reviews and re-sequences routes monthly.

Target Date: Currently in place.

Responsibility: Meter Reading Supervisor

Implementation Status:

Fully Implemented. The Meter Reading Supervisor reviews routes to ensure accurate sequencing. The City Auditor’s Office did not note any exceptions during a review of two randomly-selected meter routes.

Recommendation:

The Water Utilities Director should ensure that a policy is established to routinely review accounts with credit balances, based on a pre-determined dollar value. The review process should include customer contact, in order to determine if credit balances need to be applied to secondary accounts.

Management Response:

A report for credit balances above \$2,000 will be created monthly, for review by the Water Utilities Customer Services Manager. The \$2,000 review minimum is set because some customers routinely choose to pay more than the current balance, resulting in a large number of credit balances each month that don't need to be reviewed. Customers will be contacted to determine if credit balances need to be applied to secondary accounts. The contact will be documented on the customer's account.

Target Date: July 31, 2007

Responsibility: Water Utilities Customer Services Manager

Implementation Status:

Fully Implemented. The Customer Service Manager has begun a monthly review of accounts with credit balances exceeding \$2,000.

Recommendation:

The Water Utilities Director should require the Water Customer Services Manager to review accounts where water and sewer usage is based on estimates and verify that estimates were made in accordance with policy.

Management Response:

The Water Utilities Customer Services Manager will review 10% of estimated readings on a monthly basis and review documentation of these estimates to ensure that they were made in accordance with policy.

Target Date: August 31, 2007

Responsibility: Water Utilities Customer Services Manager

Implementation Status:

Fully Implemented. The Customer Service Manager reviews accounts with consumption estimates. The City Auditor's Office noted that accounts with estimated consumption values included documentation of the estimation logic.

Recommendation:

The Water Utilities Director should establish written application security policies and procedures applicable to enQuesta access.

Management Response:

Water Utilities will establish written application security policies and procedures applicable to enQuesta system access. These policies will incorporate enterprise security policies recently adopted by Information Technology.

Target Date: July 31, 2007
Responsibility: WIS Manager

Implementation Status:

Fully Implemented. The Information Services Manager has established written security policy and procedures for enQuesta system access.

Recommendation:

The Water Utilities Director should continue to ensure that standard password formats, change frequencies and access lockout rules are utilized.

Management Response:

Standard password formats, change frequencies and access lockout rules are already in place. Currently, a password must be at least 8 characters in length, contain a minimum of four alpha characters, and a minimum of 2 non-alpha characters. A new password is required every 90 days. Five consecutive unsuccessful login attempts locks the user's account. These standards and rules will be documented in the enQuesta Security Policies and Procedures document.

Target Date: July 31, 2007
Responsibility: WIS Manager

Implementation Status:

Fully Implemented. The Information Services Manager has established new password formats for enQuesta access. The City Auditor's Office noted that the new password format and change frequency requirements are reflected in the updated security policy.

Recommendation:

The Workforce Services Director, in conjunction with the Information Technology Director, should explore methods of employee status change notification.

Management Response:

Information Technology began working with Workforce Services in February 2007 to modify the Lawson Process Flow set-ups to allow for automatic notification to specific departments when a transfer or termination takes place for an employee. Information Technology and Workforce Services will continue that effort to develop a notification process that lists applicable employee status changes. Water Utilities will document this process in the enQuesta Security Policies and Procedures document.

Target Date: October 31, 2007
Responsibility: WIS Manager

Implementation Status:

Fully Implemented. The City Auditor's Office noted that the current notification process is adequate. The City of Arlington's Information Technology Department has begun notifying Information Services staff within the Water Utilities Department of employee status changes.

Recommendation:

The Water Utilities Director should ensure that the System Administrator revises enQuesta system access after being notified by Information Technology and Workforce Services that employees have been terminated or transferred to other jobs within the City.

Management Response:

In order to ensure that the System Administrator revises enQuesta system access after being notified by Information Technology, the Water Information Services Manager will review system access revisions on a monthly basis. In order to accomplish this task, Water Utilities will pay the billing system vendor to develop a custom report. The review process will be documented in the enQuesta Security Policies and Procedures document.

Target Date: October 31, 2007
Responsibility: WIS Manager

Implementation Status:

Fully Implemented. The City Auditor's Office did not identify any exceptions during a review of employees with access to enQuesta. The enQuesta System Administrator revises system access after being notified by the Information Technology Department.

Recommendation:

The Water Utilities Director should ensure that a policy is established to save and retain the system log-on transaction history.

Management Response:

A procedure will be implemented that retains system logon history for an adequate period of time, and a policy reflecting this will be added to the enQuesta Security Policies and Procedures document.

Target Date: September 30, 2007
Responsibility: WIS Manager

Implementation Status:

Fully Implemented. The Information Services Division has begun to retain system log-on history. The log-on history can be retrieved for specific dates.

Recommendation:

The Water Utilities Director should establish a list of critical transactions (based on financial impact, and level of enQuesta access) and require the Water Utilities Customer Services Manager to periodically review the critical transactions for propriety.

Management Response:

The Water Utilities Customer Services Manager currently reviews and approves all payment authorizations issued to customers. Any adjustments to an account that generate a credit of \$2,000.00 or more will be reviewed through the credit balances review process identified in recommendation number five.

Target Date: July 31, 2007

Responsibility: Water Utilities Customer Services Manager

Implementation Status:

Fully Implemented. The Customer Service Manager reviews critical transactions, which include large credit balance accounts and changes to the master rate table.

Recommendation:

The Water Utilities Director should ensure that access rights in the enQuesta training environment are designed to safeguard customer information and transaction integrity. The new security permissions should be tested and documented after implementation in the training environment.

Management Response:

In order to safeguard customer information and transaction integrity, all generic train accounts will be removed and will be replaced with specific user train accounts that mimic their actual production permissions. This process will be documented in the enQuesta Security Policies and Procedures document.

Target Date: August 31, 2007

Responsibility: WIS Manager

Implementation Status:

Fully Implemented. The Information Services Manager has mirrored the test database access rights to the access rights of the production database.

Recommendation:

The Water Utilities Director should request that S&S [Systems and Software] enhance enQuesta by including user IDs for transactions that do not require a work order.

Management Response:

Water Utilities will discuss the feasibility of adding this functionality with the billing system vendor. It is likely that this will require core table structure changes and may be difficult and costly for the vendor to accomplish. In addition, there is a minimum number of individuals that can make critical system changes. Water Utilities will also discuss the possibility of having this functionality included in future upgrades.

Target Date: October 31, 2007

Responsibility: WIS Manager

Implementation Status:

Fully Implemented. The Information Services Manager has implemented a methodology to identify critical system changes that do not require a work order. The City Auditor's Office noted that a system-generated report, identifying users who perform system transactions that do not require a work order, is currently available.

Recommendation:

The Water Utilities Director should ensure that an effective disaster recovery and business continuity plan, based on prioritized utility tasks and objectives, is established. The plan should be tested and results documented on a routine basis.

Management Response:

Water Utilities has a current billing system disaster recovery/business continuity project, and is negotiating with an outside vendor to provide an offsite environment for restoring the Utilities Billing System to continue business operations in the event of a crisis. This project is being coordinated with the Information Technology Department. Water Utilities is seeking funding for this project in the Fiscal Year 2008 budget process. If approved, implementation, documentation, and testing of the disaster recovery service are scheduled for fiscal year 2008.

Target Date: June 30, 2008

Responsibility: WIS Manager

Implementation Status:

Not Implemented. Water Information Services has drafted a business recovery plan and is awaiting Water Utilities management approval. Water Information Services has selected a business recovery vendor. The contract with the vendor was signed in June 2008 with City Council approval. COA Information Technology staff is in the process of determining methodology to transfer back-up tapes to the vendor. Management expects the business recovery plan to be tested and operational by June 30, 2009.

Recommendation:

The Water Utilities Director and the Information Technology Director should investigate the cause of backup tape failures and coordinate with the system vendor to create incremental and full backups in a reliable manner.

Management Response:

Water Utilities will work with Information Technology to determine the cause of the backup tape failures and remedy the issues involved. Information Technology will develop a written policy and accompanying procedures detailing the backup process. That written documentation will include:

- I. Backup Requirements*
- II. Backup Schedules*
- III. Backup Failure Notifications*
- IV. Backup Failure Tasks*
- V. Backup Changes*
- VI. Backup Media Storage and Retention*
- VII. Restoration Procedures*

Both parties will also work on establishing reliable notification when a backup fails.

Target Date: July 31, 2007

Responsibility: WIS Manager, Network Services Supervisor (IT)

Implementation Status:

Partially Implemented. The Water Information Services Manager has implemented written policy detailing the backup process currently in use; however, backup tape failures exist. The COA Information Technology Department has selected a new vendor to produce backup tapes citywide.

The City Auditor's Office noted five backup tape failures between July 1 and September 30, 2008. COA Information Technology staff did not communicate enQuesta tape backup errors to Water Information Services staff.

Recommendation:

The Water Utilities Director should request that the future IWR system vendor mitigate the risks associated with public use of its software.

Management Response:

Water Utilities will ensure that the future IWR system will mask the display of credit card numbers. This is an issue only for public workstations that use a browser autofill function. This functionality will be included in the statement of work.

Target Date: September 30, 2008

Responsibility: WIS Manager

Implementation Status:

Fully Implemented. The Information Services Manager has disabled the auto-fill function for the credit card number field. The City Auditor's Office noted that the system now masks the display of credit card numbers.

Recommendation:

The Water Utilities Director should ensure that the future IVR system include customer authentication.

Management Response:

Water Utilities will ensure that any future IVR system or upgrade will include customer authentication in the contract statement of work.

Target Date: December 31, 2008
Responsibility: WIS Manager

Implementation Status:

Not Implemented. The proposal for the IVR system upgrade includes the customer authentication requirement. The vendor has proposed the use of the zip code, as a means of authentication. The upgrade to the IVR is dependent on installation of specialized communication lines (T1 lines) in the City's infrastructure. Management expects to complete the upgrade by summer 2009.

Recommendation:

The Water Utilities Director should coordinate with the Information Technology Director to request that the future IWR vendor retain documentation of failed log-on attempts for a specific time period, including the user IP address. Failed log-on attempts should be monitored by the System Administrator in order to detect hacking or other unauthorized activity.

Management Response:

Modifications to the existing IWR system are not recommended due to lack of vendor support. Water Utilities will request that the future IWR vendor retain documentation of failed log-on attempts for a specified period of time, including the IP address if feasible.

Target Date: September 30, 2008
Responsibility: WIS Manager

Implementation Status:

Fully Implemented. The Information Services Manager has introduced a report that identifies failed log-on attempts.

Recommendation:

The Water Utilities Director should ensure that staff begins processing deposit refunds on accounts with overdue refunds.

Management Response:

The Water Utilities Customer Services is currently reviewing a billing system generated report monthly, and processing any overdue refunds identified on the report.

*Target Date: Currently in place.
Responsibility: Water Utilities Customer Services Manager*

Implementation Status:

Fully Implemented. The Customer Service Manager has begun a periodic review of overdue refunds.

Recommendation:

The Water Utilities Director should ensure that staff begins monitoring the system report that identifies overdue deposit refunds and documents review of the report on a periodic basis.

Management Response:

An existing billing system report is currently being reviewed by the Water Utilities Customer Services Manager monthly to identify any overdue refunds.

*Target Date: Currently in place.
Responsibility: Water Utilities Customer Services Manager*

Implementation Status:

Fully Implemented. The City Auditor's Office reviewed a random sample of accounts on the overdue refund list and found that the Customer Service Manager appropriately researched and refunded the accounts.

Recommendation:

The Water Utilities Director should request that S&S disable the ability to post transactions to inactive accounts. If system enhancement is not cost effective, other compensating controls that would prevent payments to inactive accounts should be considered.

Management Response:

The Water Utilities Department will investigate possible solutions, taking into account circumstances requiring the application of payments to inactive accounts. Any solution selected would need to avoid interfering with revenue collection and posting.

Target Date: September 30, 2007
Responsibility: Water Utilities Customer Services Manager

Implementation Status:

Fully Implemented. The Customer Service Manager utilizes a system-generated report to identify payments posted to inactive accounts. The City Auditor's Office noted that if a valid account is not found, the payment is sent back to the person that paid.

Recommendation:

The Water Utilities Director should request that S&S create a suspense account for payments without valid account numbers and routinely monitor activity in suspense accounts.

Management Response:

Payments without valid account numbers occur only through online bill payment through a customer's banking institution. The billing system vendor has been contacted regarding the implementation of a suspense account. A determination will be made based on cost effectiveness. The Customer Information Systems Analyst currently reviews all payments attempted on an invalid account number on a daily basis and posts them to the correct account number.

Target Date: September 30, 2007
Responsibility: Water Utilities Customer Services Manager

Implementation Status:

Fully Implemented. The Water Utilities Department requested a suspense account from the system vendor. However, due to the cost and compensating controls mentioned above, the need for suspense accounts has been negated.

Recommendation:

The Financial Services Director and the Water Utilities Director should coordinate to periodically reconcile the meter deposit account and research why an adjustment is necessary to this account every year. Necessary changes to the interface methodology should be made so that the need for future adjustments is reduced.

Management Response:

The interface from enQuesta to the City's financial accounting system will be reviewed to determine if it is set up correctly. The billing system vendor has been asked to flowchart the meter deposit process through enQuesta. After receipt of the flowchart, Financial Services will trace transactions and work with Customer Services to decide the best way to proceed with a monthly reconciliation.

Target Date: August 31, 2007
Responsibility: Water Utilities Customer Services Manager and Financial Accountant
(Finance)

Implementation Status:

Fully Implemented. Financial Services staff now reconciles the meter deposit account monthly. No significant year-end reconciling entry was required for fiscal year 2008.

Recommendation:

The Water Utilities Director and the Financial Services Director should coordinate, identify and discuss reconciling items on a periodic basis and determine if system enhancements to interface methodologies or processing are needed.

Management Response:

All reconciling items are the result of timing differences arising from customer refunding. Customer Services staff are currently working with the City's Financial Services Department to set up a process or to ensure that reconciling items are identified in a timely manner. A copy of the monthly reconciliation will be provided to the Water Utilities Director and the Financial Services Director for their review.

Target Date: June 30, 2007
Responsibility: Water Utilities Customer Services Manager and Financial Accountant
(Finance)

Implementation Status:

Not Implemented. The Financial Services and Water Utilities Departments have not coordinated to identify and discuss reconciling items.