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DC WATER AND SEWER AUTHORITY
BOARD OF DIRECTORS
AUDIT COMMITTEE
AGENDA
Thursday, July 28, 2011
9:30 am
5000 Overlook Avenue, SW
Room 407

1. Call to Order   Chairman Timothy Firestine

2. Summary of Internal Audit Activity -   Joseph Freiburger
   Internal Audit Status

   - Permit Operations
   - Fleet Management
   - AMR & Customer Billing June 2011
   - IT – Disaster Recovery & Business Continuity Plans

3. Executive Session   Chairman Timothy Firestine

4. Adjournment   Chairman Timothy Firestine

Internal Audit Update

Audit Committee Meeting

July 28, 2011

The following represents a summary of the activities and achievements since the May 26, 2011 meeting.

I.   HIGHLIGHTS:

<u>Performance of scheduled internal audits</u> – Internal Audit performed audit work in seven separate audit areas. Four of the projects were totally completed and final reports issued.   The four projects completed are Permit Operations, Fleet Management, AMR & Customer Billing, and IT-Disaster Recovery & Business Continuity Plans. The one project in Draft stage is P-Cards. The two projects in fieldwork stage are Human Resources, and Grant Operations. The chart below depicts the planned projects and their status.

   A. **Stage of Audits & Special Projects -** The following represents an indication of the stage of completion for each scheduled audit and requested special project.

PROJECT	PLANNING / SCOPING	FIELDWORK	Draft Report	Final Report
Facility Security & Contingency Planning	███	███	███	███
Pumping & Storage Water Leakage Review	███	███	███	███
Fixed Assets[1]				
Warehouse & Inventory[1]				
IT – Disaster Recovery & Business Continuity Plans	███	███	███	███
Permit Operations	███	███	███	███
Grant Operations	███	███		
Fire Hydrant Maintenance	███	███	███	███
IT – Business & Operating Applications				
Engineering – Contractor Management				
Fleet Management	███	███	███	███
AMR & Customer Billing	███	███	███	███

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IT – Vendor Management & Software Licensing				
P-Cards[2]				
Human Resources[2]				

Note: [1] indicates postponed at the request of Executive Management.
[2] indicates audit added to the plan

B. **Analysis of key milestone dates -** The following represents an indication of the date of completion of key project milestones.
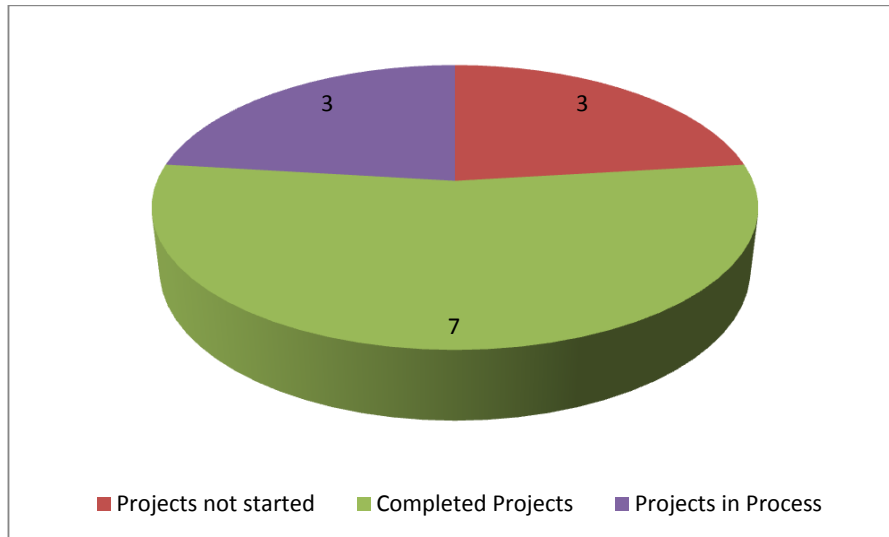

PROJECT	Start Date	FIELDWORK End Date	Draft Report Issuance Date	Final Report
Facility Security & Contingency Planning	10/8/2010	12/15/2010	12/22/2010	2/18/2011
Pumping & Storage Water Leakage Review	10/27/2010	1/5/2011	1/12/2011	3/1/2011
IT – Disaster Recovery & Business Continuity Plans	2/10/2011	5/10/2011	5/10/11	6/10/2011
Permit Operations	1/20/2011	4/29/2011	5/9/2011	6/7/2011
Fixed Assets[1]				
Warehouse & Inventory[1]				
Grant Operations	6/28/2011			
Fire Hydrant Maintenance	1/17/2011	3/29/2011	4/4/2011	5/19/2011
IT – Business & Operating Applications				
Engineering – Contractor Management				
Fleet Management	3/24/2011	5/15/2011	6/23/2011	7/6/2011
AMR & Customer Billing	4/4/2011	5/13/2011	6/10/2011	6/14/2011
IT – Vendor Management & Software Licensing				
P-Cards[2]	5/6/2011	6/13/2011		
Human Resources[2]	6/2/2011			

Note: [1] indicates postponed at the request of Executive Management.
[2] indicates audit added to the plan
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C. **Analysis of Hours** – The chart below indicates the actual hours used through June 30, 2011 toward completion of the internal audit plan, along with an indication of the total hours included in the 2011 plan.

Status of 2011 Budgeted Hours
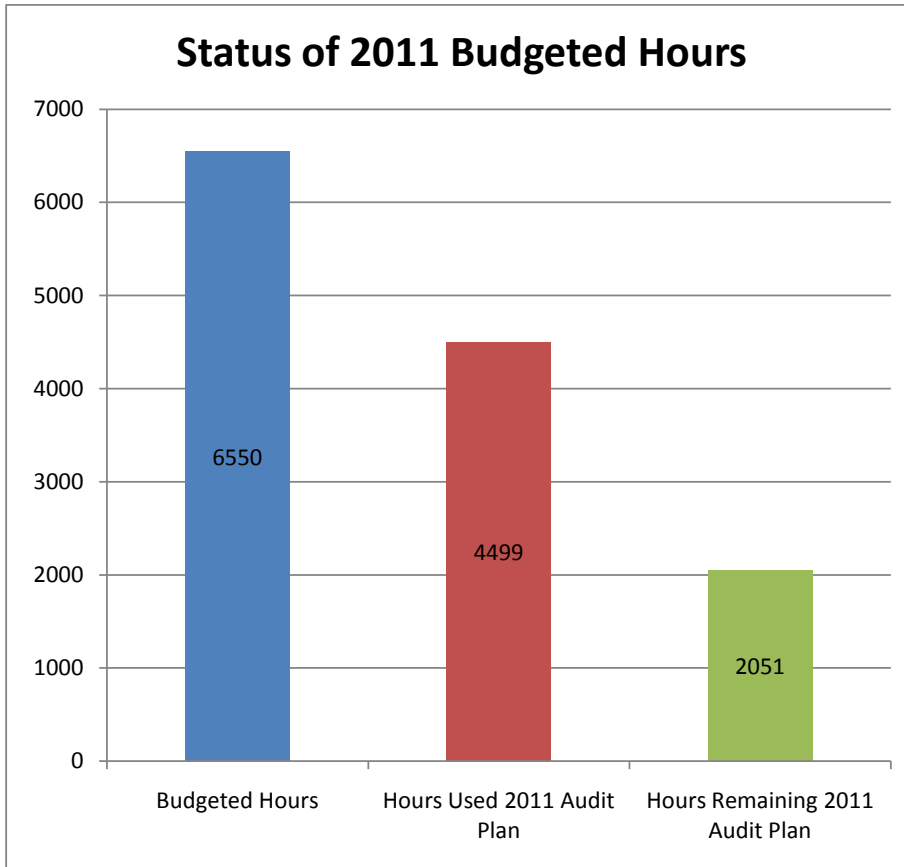
II.   2011 Audit Plan Status

Legend: ■ Projects not started   ■ Completed Projects   ■ Projects in Process

A. Completed Projects Since Last Audit Committee Meeting

Permit Operations

Our overall audit objective was to examine the process used to issue permits including a review for proper authorization, timeliness of processing, and accurate recording of data and fees charged.   Specifically, Internal Audit performed the following:

➢ Obtained and reviewed existing policies and procedures relating to Permit Operations to ensure they were current and appeared to be comprehensive.
➢ Tested the processing of permit applications for timeliness and proper approval.
➢ Tested fees charged for accuracy, prompt payment, and proper recording.
➢ Tested fees received for proper safeguarding of funds and timely processing.

Internal Audit (IA) concludes that the control environment within the Permit Operations Department could be enhanced to promote a more efficient and effective process. Specifically IA identified that:

➢ The current Permit control environment is decentralized in location and department which increases the risk of incomplete and/or missing documentation to support appropriate approval of permit projects.
➢ The process of scanning and filing supporting documentation into Maximo for permit projects is inconsistently followed within the department.

➢ The current control process does not enforce timely completion at each stage of the permit process documented within Maximo, leading to the inability to develop meaningful performance metrics and management reporting.
➢ The process using the Maximo system is not configured to provide appropriate segregation of duties between project input, review, and approval as well as limiting the approval access to appropriate authorized users.

Fleet Management

Internal Audit established four objectives for its review of fleet management:

➢ Ensure that services are provided according to the Maintenance and Repair contract
➢ Ensure that DC Water's fleet is being properly safeguarded
➢ Ensure that DC Water acquires vehicles & equipment only when needed, maintains vehicles & equipment according to schedule, and disposes of vehicles in accordance with policy
➢ Ensure that fuel purchases are for the normal course of DC Water operations only

Internal Audit attempted to analyze the Fleet records to assess the trend relative to the length of time the vehicles were out-of-service for maintenance. We were not able to complete a reasonable analysis because of the methodology used by Fleet to create and assign work orders. Frequently, multiple services/tasks must be performed on a specific vehicle. Fleet has been creating multiple work orders for a particular vehicle, making it difficult to identify the length of time service takes place from inception of the work to completion. Assigning a "Master Work Order" for a vehicle from the time the vehicle is delivered to Fleet and closing it when the vehicle is returned will permit effective monitoring.

Internal Audit reviewed the Maintenance and Repair contract and conducted a review to assess whether services are being delivered. We obtained a sample of weekly, monthly, and annual contractor performance and productivity reports to determine if productivity metrics outlined in the First Vehicle Services contract are provided to Fleet management and that productivity is reasonable. We determined that the contract reporting requirements were met, and we did not notice any contractor productivity issues.
Additionally, we reviewed First Vehicle Services invoices for January, February, and March 2011 to verify that the invoices have proper supporting documentation for the amount billed. We found that all invoices had sufficient support for the total billing amount.

In order to determine if DC Water vehicles received the required periodic maintenance, we reviewed the records describing preventive maintenance performed on each vehicle within a 14 month period. We determined that all vehicles which required regular preventive maintenance had been received at least twice over the 14 month period under review.

As part of ensuring that services were being provided to DC Water staff, we conducted a survey of DC Water departments who are Fleet customers to determine if the departments are experiencing any deficiencies in service. We created a questionnaire to solicit feedback relative to Fleet processes which work exceptionally well or which do not work well.

We issued 17 surveys to employees identified as being either fleet coordinators within their department or who had experience with fleet operations as a customer. We received responses from 5 recipients. In general, the responses indicated that fleet operations were supportive of operations throughout the organization; however, we identified a few instances in which departments expressed the view that that they had little or no input as to the type of vehicle necessary when vehicles were procured.

We reviewed a sample of information compiled by Fleet prior to equipment purchases and determined that a thorough analysis of the number of vehicles necessary for future operations and the precise nature of the vehicles needed was incomplete.

In order to ensure that DC Water's fleet is being safeguarded, we conducted a review of the process for securing and safeguarding the fleet. We determined that DC Water employees are prohibited from taking DC Water vehicles to their home, and in a situation in which the location of a vehicle cannot be readily identified; Fleet would be able to locate the vehicle via a GPS system. However, we noted that DC Water in general does not have a good system in place to prevent employees from inappropriate utilization of the fleet. We, therefore, recommend that DC Water develop a policy which outlines each department's responsibility for safeguarding its assigned fleet and making sure that the assigned fleet is only being used to support DC Water operations.

We conducted a review of the processes for acquiring, maintaining, and disposing of vehicles. We met with Fleet management to discuss fleet's acquisition and disposition process and we reviewed DC Water's policy for disposing and acquiring vehicles & equipment. During our review we noted that Fleet employees are not prohibited from bidding on DC Water vehicles when planned for auction.

To prevent a situation in which DC Water funds are unnecessarily used to improve vehicles about to be auctioned away and Fleet employees at a later point bid on these vehicles based on "insider knowledge" of the condition of the vehicles, we recommend that DC Water develop a formal policy prohibiting all Fleet employees from bidding on disposed DC Water vehicles.

We obtained and reviewed the fuel invoices for January and February 2011 and attempted to analyze the trend of the total fuel usage, and fuel usage by vehicle, in order to detect any unusual spikes in fuel consumption.

Due to limited information included on the fuel invoices, we were unable to use the invoices to develop a trend for fuel usage and usage by vehicle. The CANceiver technology has special designed "fuel view software". This software is operated by DC Government and enables the user to generate various fuel reports based on data received from the CANceiver. The software facilitates the ability to trend out fuel usage and identify irregular fuel consumption spikes. Fleet has access to the fuel view software; however, Fleet has not been generating reports to monitor and analyze fuel usage by vehicle. We therefore see a need to implement a system that would allow Fleet to monitor and analyze fuel usage of every vehicle in the fleet in a timely and non-labor intensive fashion.

AMR & Customer Billing

Internal Audit established five objectives for its review of the AMR & Customer Billing process:

➢ Ensure that customer water usage is being accurately captured and recorded for billing purposes.
➢ Ensure that customer account adjustments are warranted, accurate, reviewed, and appropriately approved.
➢ Ensure that a lien placed on an account for delinquent charges is accurately placed on the appropriate account, account holder, and premise.
➢ Ensure that customer accounts that have a lien on the property, which have been brought to current status, appropriately have the lien removed.
➢ Verify that information on customer accounts that are eligible to be disconnected, based on amount in arrears and length of time since payment, is being appropriately sent to Meter Operations for disconnection of service.

Internal Audit concludes that customer water usage is being accurately captured and billed and delinquent accounts are being processed accurately. We did identify opportunities for improvement over monitoring of customer account adjustments, and manual meter reading by Field Technicians.

IT-Disaster Recovery & Business Continuity Plans

Our overall audit objective was to evaluate and test the effectiveness of controls relative to the design, approval, and execution of the DC Water Disaster Response Plan as it relates to the IT operations. Likewise, our evaluation included an assessment of the plans themselves, as well as a review of documented testing procedures and results to determine whether the plans are adequately tested on a periodic basis to ensure their effectiveness in the event of a disaster. Specific goals included determining if:

➢ A formally documented IT Disaster Response Plan (DRP) is in place; the plan is current and adequate enough to ensure information processing activities are recovered and restored in the event of a disaster
➢ Responsibility for the overall development, testing, and maintenance of the DRP has been assigned to a particular individual or group
➢ The DRP has been formally reviewed and signed off by appropriate members of executive management
➢ The DRP has been reviewed and updated within the past 12 months; a process is in place to review and update the plan on at least an annual basis
➢ The current version of the DC Water DRP:
  - includes a tests, training, and exercise (TT&E) schedule, methodology, and results
  - identifies critical systems and functions
  - identifies critical resources
  - identifies and prioritizes activities that are essential to DC Water operations

- includes a business impact analysis
- designates a disaster recovery site(s)
- identifies DRP roles and responsibility designations
- defines reasonable time requirements for recovery and availability of each critical system

➢ Users and/or IT personnel have been trained in their responsibilities in the event of an emergency or disaster; users have a clear understanding of their role in working towards the resumption of normal operation and are aware of manual procedures that are to be used when processing is delayed for an extended period of time

➢ The back-up processing site(s) are suitable and compatible with the current computer facility; copies of the DRP are stored at the back-up processing site

➢ A testing schedule exists for each critical system identified and is adequate (at least annually); documented test plans are reflective of realistic scenarios and adequate enough to assess the plans' overall effectiveness in the event of a disaster

➢ Test results are formally evaluated for future plan improvements; corrective action has been taken for any problems or issues incurred during DRP testing

➢ A formally documented Business Continuity Plan (BCP) is in place

➢ The BCP has been formally reviewed and signed off by appropriate members of executive management

Internal Audit concludes that while a Disaster Response Plan and some associated test procedures for DC Water's critical systems have been documented, a number of improvement opportunities exist within the disaster recovery planning process. Internal Audit determined that policies and procedures for periodic disaster recovery testing, as well as formally documented critical systems test results, were either non-existent for certain critical systems, or incomplete.

At the time of our testing, Internal Audit also determined that a copy of the DC Water Disaster Response Plan is not stored at the back-up processing site. Additionally, Internal Audit identified that the current DC Water Disaster Response Plan had not been formally approved by DC Water executive management. However, since the conclusion of our testing, both of these observations have been addressed and remediated by management. Furthermore, DC Water IT executive management has implemented plans to continuously review the DRP on an annual basis. Internal Audit identified during testing that a formally documented DC Water Business Continuity Plan has yet to be completed and put in place. Although the basic structure for the plan has been created, the plan is still in draft form and not yet finalized.

B. Audits Currently in Process

Grant Operations – This audit is designed to evaluate and test the process used to apply for funding, receive funds and properly apply funds in accordance with the contract. Effective monitoring and management of the programs will be an area of audit focus. This project is currently in the fieldwork stage.

P-Cards –This is audit is designed to evaluate the controls over the P-Card process. This audit is currently in the Draft reporting stage.

Human Resources – This audit is designed to test controls over the Human Resources processes including hiring, termination, performance monitoring and reporting, and HR system access controls.

III.   Follow Up

In addition to our work performed relative to the audit projects identified in the 2011 Internal Audit Plan, Internal Audit conducted follow-up activity.   The table below summarizes the issues by area of responsibility and the current status of the action plan proposed by Management.

	Chief Engineer	AGM Consumer Services	Chief Financial Officer	General Counsel	Chief Information Officer	AGM Support Services	General Manager	Total
New Management Action Plans Since Previous Meeting	3	2	-	-	5	4	-	14
Management Action Plans Implementation Date Not Expired					1	9		10
Management Action Plans Implementation Date Expired	-	1	-	-	9	9	1	20
Total	3	3	-	-	15	22	1	44

Listed Below is the Originating Audit of the Management Action Plans With Expired Implementation Dates

AGM Consumer Services –Pumping & Storage Water Leakage

AGM Support Services – Safety Programs Training & Compliance, Legal & Regulatory Compliance Monitoring – Regulatory Compliance Review, Corporate Policies & Procedures, Procurement, Security, Success Planning and Training

Chief Information Officer –IT – System Development Life Cycle, Access Provisioning

General Manager –Legal & Regulatory Compliance Monitoring – Regulatory Compliance Review

IV.   Additional Activities

In addition to our work performed in conjunction with the 2011 Internal Audit Plan listed below are additional activities we have performed during this reporting period in an effort to increase the effectiveness of operations and help ensure the achievement of DC Water business objectives:

➢ Internal Audit received an indication that the processing of vendor invoices related to activities pertaining to Public Space were not being monitored and expedited properly. Concerns were expressed that the vendor relationship was deteriorating. Internal Audit reviewed the existing process through inquiry and observation and provided suggestions to improve the day-to-day operations.

INTERNAL AUDIT OF PERMIT OPERATIONS

June 7, 2011

INTERNAL AUDIT STAFF

Audit Senior: Anthony Digiulian
Audit Senior Manager: Dennis FitzGerald
Audit Principal: Joseph Freiburger

DC Water Internal Audit Permit Operations

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DC Water Internal Audit Permit Operations

I. EXECUTIVE SUMMARY

Background

The District of Columbia Water and Sewer Authority (DC Water) issues permits for activities directly related to the public water and sewerage systems and also provides input to the District of Columbia for the issuance of related permits. All residents, private companies and government agencies must obtain a DC Water permit when using the services associated with the public water and sewerage systems.

An applicant must obtain a Water and Sewer Availability Certificate (WSAC) from DC Water in order to obtain a Building Permit when a connection to the public water and/or sewer main is required. A WSAC is completed for all projects that entail a connection to the water and/or sewer system, a temporary water connection, the razing of an existing building, a foundation to grade permit, or a sheeting and shoring permit. In order to obtain a WASC, an applicant must submit Preliminary Plans, which upon review and approval will be stamped as approved and signed by DC Water management. The WSAC is the final approval document that an applicant will receive from DC Water. It signifies that the plans are in accordance with DC Water's design requirements and guidelines and all fees have been paid.

DC Water's Asset Management System, Maximo, is the system of record for management of permit project details and permit related activities. All permit applications should be entered timely into Maximo once they are received. Plan designs are reviewed by appropriate DC Water management and stamped for approval and scanned into Maximo for retention and final project review. The Documents Permits Office (DPO) issues invoices to approved applicants identifying fees to be paid. Invoices include project location, description of services, Maximo Id Number, and applicant's name, address, and phone number. Applicants present the invoice to DC Water Finance for payment. A hand written receipt, using DC Water Standard protocol, is issued by Finance and provided to the applicant. A WSAC permit is issued to applicants who provide evidence of payment and approved plan designs. DPO, after receiving the receipt from the applicant, initiates work orders in the Maximo System, scans the invoice and receipt, and then attaches all supporting documents to the Maximo record.

Scope

This audit was conducted based on the approved 2011 internal audit plan and included the review and evaluation of the process used to issue various permits. The audit was initiated in January 2011 and completed in April 2011. The period in scope for review was September 1, 2010 – March 1, 2011.

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DC Water Internal Audit Permit Operations

Objectives

Our overall audit objective was to examine the process used to issue permits including a review for proper authorization, timeliness of processing, and accurate recording of data and fees charged.   Specifically, Internal Audit performed the following:

> ➢ Obtained and reviewed existing policies and procedures relating to Permit Operations to ensure they were current and appeared to be comprehensive.
> ➢ Tested the processing of permit applications for timeliness and proper approval.
> ➢ Tested fees charged for accuracy, prompt payment, and proper recording.
> ➢ Tested fees received for proper safeguarding of funds and timely processing.

Summary of Work

Internal Audit (IA) concludes that the control environment within the Permit Operations Department could be enhanced to promote a more efficient and effective process. Specifically IA identified that:

> ➢ The current Permit control environment is decentralized in location and department which increases the risk of incomplete and/or missing documentation to support appropriate approval of permit projects.
> ➢ The process of scanning and filing supporting documentation into Maximo for permit projects is inconsistently followed within the department.
> ➢ The current control process does not enforce timely completion at each stage of the permit process documented within Maximo, leading to the inability to develop meaningful performance metrics and management reporting.
> ➢ The process using the Maximo system is not configured to provide appropriate segregation of duties between project input, review, and approval as well as limiting the approval access to appropriate authorized users.

SC&H Consulting

By: _____

Joe Freiburger, CPA, CIA

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DC Water Internal Audit of Permit Operations

II. DETAILED OBSERVATIONS & RECOMMENDATIONS

The existence of internal control gaps could increase the likelihood that future errors or inappropriate transactions would not be prevented or detected. In order to mitigate this risk, we have provided recommendations to remediate the control gaps via the implementation of additional controls or modification of existing controls. However, we also recommend that management consider the cost-benefit of additional controls prior to implementing any changes.

Observation #1	Internal Audit Recommendations	Management Comments
Internal Audit identified 9 out of 15 samples where requested documentation was not readily available in order to evidence that all permitting process requirements were received, scanned and reviewed prior to issuance of the Water and Sewer Availability Certificate (WSAC). Supporting permit process documents, including stamped as "paid" invoices and approved permit design plans should be scanned into Maximo prior to approval and issuance of the WSAC. The current process allows users to review and approve permit projects within Maximo without appropriate supporting documents being readily accessible as evidence of completion.	Internal Audit recommends that DC Water develop a centralized control environment that requires all supporting permit project documents, including permit applications, stamped paid invoices, and approved permit design plans; be completed, reviewed, and included within the project file prior to final project approval and issuance of the Water and Sewer Availability Certificate (WSAC).	<u>Action Plan and Implementation Date:</u> We have long recognized the need to consolidate the permitting activities into a central location with a singular intake station. We have started this process by hiring additional supervisory staff and reorganizing. Job positions have been transferred to the new department and are in the process of recruiting staff. We intend to relocate to central office space alongside DCRA and DDOT at 1100 4th street SW. Unfortunately, there have been significant delays obtaining an executable lease from DCRA/ DRES; however, we anticipate having a lease and space by Sept. of 2011. We accept IA's recommendation that centralized control of the permitting process will enhance the permitting effort.

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DC Water Internal Audit Permit Operations

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Observation #1	Internal Audit Recommendations	Management Comments
		These controls can be provided by instituting the following permissive steps: 1) Formation of Permit Operations Department in a central, singular location with a revised management structure. The management reorganization is under way and the office space is being negotiated. 2) Confining intake of all permit applications to one location (accomplished with step 1). 3) Creation of intake staff positions that will have responsibility for timely recording scanning and assignment of new permit applications and of completed/stamped documents. This control will include holding senior staff responsible for detailed review of all applications for completeness prior to acceptance. 4) Restriction of authority in Maximo to perform final routing of a record to supervisory staff only and eliminating the ability of a supervisor to route their own work

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DC Water Internal Audit Permit Operations

Observation #1	Internal Audit Recommendations	Management Comments
		to completion. We have recently increased our permits supervisory staff in order to manage our work load. Previously, certain non-supervisory staff had been temporarily given approval authority in order to manage the load. These temporary authorizations can now be revoked.
		5) Authority to stamp plans for approval in the preliminary review phase is already limited to the section supervisor only. The standard procedures manual will be amended to direct that the signing physical process will not be performed until the Maximo records have been verified by the supervisor for completeness. The second phase of review in DPO is not to accept documents that do not have the appropriate PPR signature. This ensures the processes are not bypassed.
		6) Creating a Maximo generated WSAC (final Certificate) with controls that will only allow

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DC Water Internal Audit Permit Operations

Observation #1	Internal Audit Recommendations	Management Comments
		creation of the certificate once appropriate status has been achieved. This will ensure records are completed prior to releasing the plans. This, coupled with the segregation of approval authority will ensure control of the process. This will also replace the hand written WSAC and eliminate the potential for its creation without all data being entered and reviewed. 7) Implementation of Livelink with Cofax provides the control for ensuring that records are linked and appropriately validated. We mark all approved documents with the Maximo record number prior to scanning for cross reference. 8) We are working with IT to procure upgraded large format scanning equipment in order to streamline/expedite the process. Date of implementation: October 1, 2011

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DC Water Internal Audit Permit Operations

Observation #2	Internal Audit Recommendations	Management Comments
IA noted that documentation for 3 out of 15 permit project samples was not entered into Maximo in a timely manner. The identified projects were noted as complete in Maximo, and were identified as being reviewed and marked as paid in the system within a short period of time, but not in alignment with expected project timelines. Indications were that certificates were issued and subsequently the related information was recorded in Maximo. In one instance, Internal Audit identified a project that was approved and paid February 15, 2011. However, the project was not updated within the system as completed and paid until April 20, 2011. Therefore, Internal Audit was unable to conclude that the project was reviewed and completed timely. By not updating project information timely within Maximo, there is an increased risk that inaccurate information is recorded and reporting metrics are unreliable.	Internal Audit recommends that DC Water institute a control that enforces each stage of the permit issuance process to be entered into Maximo timely in order to reduce the risk that projects are entered into the system after approval, payment, and issuance of the WASC. Additionally, with accurate and timely data captured within the system, management will be in a position to develop performance metrics and useful management reports.	Action Plan and Implementation Date: (re timely recordation of activities) The eight controls identified in the Management Comments to Observation #1 above will enforce the timely and complete recordation of the permitting process in Maximo with special emphasis on item #6. Some of these controls are already in practice and some are to be instituted. Item #6 above will be an important control for ensuring that the permitting process is recorded in a timely fashion. The most critical documents for an applicant are the signed plans and the Availability Certificate. Item #6 replaces what is currently a hand written availability certificate with status a dependant Maximo generated document. The initial coding for this has already been accomplished. Development of a final format for the Maximo generated certificate is underway. An existing current control is the weekly staff meeting at which we evaluate submittals, assign tasks and review status. Review tasks are assigned at that time using Maximo to verify that submittals

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DC Water Internal Audit Permit Operations

Observation #2	Internal Audit Recommendations	Management Comments
		have been recorded and assigned in a timely fashion. Additionally, the current project status report is run and reviewed with staff to verify that tasks are up to date. This is a standard Maximo report. Date of Implementation: To be discussed with IT, proposing October 1, 2011.

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DC Water Internal Audit Permit Operations

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Observation #3	Internal Audit Recommendations	Management Comments
Internal Audit noted that appropriate segregation of duties does not exist between project input, review, and approval. Currently, the system allows the same user to input permit projects, mark projects for review, complete review, approve plan submittal, and mark projects as paid. Without appropriate segregation of duties, there is a risk that the same individual is allowed to execute two or more conflicting sensitive transactions. Additionally, Internal Audit identified inappropriate access within Maximo which allows non-approved users to approve projects. This access creates a risk that a permit project can be completed and approved within Maximo without required evidence that all necessary documentation was appropriately reviewed.	Internal Audit recommends that DC Water remove inappropriate access which allows non-approved users to approve projects within Maximo. Additionally, Internal Audit recommends that DC Water create a control which requires the initiation of the project and entering relevant data be separated from the review and approval of the permit projects within Maximo.	Action Plan and Implementation Date: (Segregation of duties issue) The controls #4 and #5 identified in Management Comments #1 will serve to ensure segregation of authority to assign and route to completion tasks. Additional Maximo coding will be requested that will ensure task status cannot be changed within the same day by the same person and that no on e can self authorize/final route a record. Project Date of Implementation: To be discussed with IT however control #4 can be implemented, step two will require s some coding. proposing October 1, 2011

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INTERNAL AUDIT OF FLEET MANAGEMENT

July 6, 2011

INTERNAL AUDIT STAFF

Staff Auditor: Perry Eggers
Senior Auditor: John Suire
Audit Manager: Dennis Fitzgerald
Audit Principal: Joseph Freiburger

DC Water Internal Audit of Fleet Management

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DC Water Internal Audit of Fleet Management

I. EXECUTIVE SUMMARY

Background

The primary purpose of the DC Water Department of Fleet Management (Fleet) is to oversee maintenance and repair for DC Water's approximately 575 vehicles and 1300 pieces of related utility equipment. Fleet also manages the procurement and distribution of vehicles and vehicular equipment that supports all DC Water operations. Furthermore, Fleet monitor's fuel purchases and other fleet operating costs.

Fleet has outsourced it daily maintenance and repair operations to First Vehicle Services (Contractor) by way of a five-year contract expiring, and eligible for renewal, on September 30, 2011. The Contractor uses DC Water's fleet maintenance facilities at O Street and at Blue Plains, consequently they are an integral part of DC Water's fleet operations. Using a contractor instead of an in-house team of fleet technicians to perform maintenance and repair services was determined to be the most beneficial solution for DC Water by DC Water's executive management.

As part of a DC Government-wide program, the majority of DC Water's fleet vehicles use an automated fuel management and vehicle fleet data reporting system known as CANceiver "fuel ring" technology. This system deters fuel theft by only allowing vehicles with the fuel ring installed to pump gas at two designated gas stations in the District. The system also has the capability of tracking and monitoring vital vehicle parameters such as driver performance, vehicle tracking, miles per gallon, tire pressure data, etc. which is designed to prevent unexpected vehicle breakdowns by constantly identifying the condition of the fleet. CANceiver "fuel ring" technology has been implemented and installed on the majority of vehicles at DC Water assisting in regulating and monitoring fuel purchases. This fuel management system registers gallons fueled, vehicle odometer reading, average miles per gallon, etc., and electronically sends this data to a local server located at the DC Government. Based on fuel data received, DC Government bills DC Water monthly for its fuel usage. The CANceiver technology also limits the amount of fuel each vehicle is allowed to receive over a period of time. These fuel limits are set by Fleet and the department using the vehicle.

DC Water has implemented multiple policies and procedures governing fleet operations. These policies outline in detail Fleet's responsibilities and assist Fleet in carrying out these operational responsibilities and thereby ensuring that all DC Water departments have the required support from Fleet as needed to carry out daily operational duties.

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DC Water Internal Audit of Fleet Management

Scope

This audit was conducted as part of the approved 2011 Internal Audit plan. The audit was initiated in April 2011 and completed in June 2011, and included a review of Fleet's maintenance and repair processes, fuel purchase operations, fleet safeguarding procedures as well as a review of Fleet's procedures for acquiring and disposing of vehicles and equipment.

We reviewed the processes with individuals in the Fleet management group involved in the various types of maintenance and repair, fueling, safeguarding, fleet procurement and disposal operations. We used the results of these reviews to determine the nature of processes in place at DC Water with regard to keeping fleet vehicles and equipment functional allowing DC Water departments to carry out operational duties.

Following the walkthrough of the process and formal documentation of the relevant processes, we performed various tests to determine the effectiveness of the control system within the fleet management processes.

Objectives

Internal Audit established four objectives for its review of fleet management:

- Ensure that services are provided according to the Maintenance and Repair contract
- Ensure that DC Water's fleet is being properly safeguarded
- Ensure that DC Water acquires vehicles & equipment only when needed, maintains vehicles & equipment according to schedule, and disposes of vehicles in accordance with policy
- Ensure that fuel purchases are for the normal course of DC Water operations only

Summary of Work

Internal Audit attempted to analyze the Fleet records to assess the trend relative to the length of time the vehicles were out-of-service for maintenance. We were not able to complete a reasonable analysis because of the methodology used by Fleet to create and assign work orders. Frequently, multiple services/tasks must be performed on a specific vehicle. Fleet has been creating multiple work orders for a particular vehicle, making it difficult to identify the length of time service takes place from inception of the work to completion. Assigning a "Master Work Order" for a vehicle from the time the vehicle is delivered to Fleet and closing it when the vehicle is returned will permit effective monitoring.

Internal Audit reviewed the Maintenance and Repair contract and conducted a review to assess whether services are being delivered. We obtained a sample of weekly, monthly, and annual contractor performance and productivity reports to determine if productivity metrics outlined in the First Vehicle Services contract are provided to Fleet management and that productivity is reasonable. We determined that the contract reporting requirements were met, and we did not notice any contractor productivity issues.

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DC Water Internal Audit of Fleet Management

Additionally, we reviewed First Vehicle Services invoices for January, February, and March 2011 to verify that the invoices have proper supporting documentation for the amount billed. We found that all invoices had sufficient support for the total billing amount.

In order to determine if DC Water vehicles received the required periodically maintenance, we reviewed the records describing preventive maintenance performed on each vehicle within a 14 month period. We determined that all vehicles which required regular preventive maintenance had been reviewed at least twice over the 14 month period under review.

As part of ensuring that services were being provided to DC Water staff, we conducted a survey of DC Water departments who are Fleet customers to determine if the departments are experiencing any deficiencies in service. We created a questionnaire to solicit feedback relative to Fleet processes which work exceptionally well or which do not work well. We issued 17 surveys to employees identified as being either fleet coordinators within their departments or who had experience with fleet operations as a customer. We received responses from 5 recipients. In general, the responses indicated that fleet operations were supportive of operations throughout the organization; however, we identified a few instances in which departments expressed the view that that they had little or no input as to the type of vehicle necessary when vehicles were procured.

We reviewed a sample of information compiled by Fleet prior to equipment purchases and determined that a thorough analysis of the number of vehicles necessary for future operations and the precise nature of the vehicles needed was incomplete.

In order to ensure that DC Water's fleet is being safeguarded, we conducted a review of the process for securing and safeguarding the fleet. We determined that DC Water employees are prohibited from taking DC Water vehicles to their home, and in a situation in which the location of a vehicle cannot be readily identified; Fleet would be able to locate the vehicle via a GPS system. However, we noted that DC Water in general does not have a good system in place to prevent employees from inappropriate utilization of the fleet. We, therefore, recommend that DC Water develop a policy which outlines each department's responsibility for safeguarding its assigned fleet and making sure that the assigned fleet is only being used to support DC Water operations.

We conducted a review of the processes for acquiring, maintaining, and disposing of vehicles. We met with Fleet management to discuss fleet's acquisition and disposition process and we reviewed DC Water's policy for disposing and acquiring vehicles & equipment. During our review we noted that Fleet employees are not prohibited from bidding on DC Water vehicles when planned for auction.

To prevent a situation in which DC Water funds are unnecessarily used to improve vehicles about to be auctioned away and Fleet employees at a later point bid on these vehicles based on "insider knowledge" of the condition of the vehicles, we recommend that DC Water develop a formal policy prohibiting all Fleet employees from bidding on disposed DC Water vehicles.

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DC Water Internal Audit of Fleet Management

We obtained and reviewed the fuel invoices for January and February 2011 and attempted to analyze the trend of the total fuel usage, and fuel usage by vehicle, in order to detect any unusual spikes in fuel consumption.

Due to limited information included on the fuel invoices, we were unable to use the invoices to develop a trend for fuel usage and usage by vehicle. The CANceiver technology has special designed "fuel view software". This software is operated by DC Government and enables the user to generate various fuel reports based on data received from the CANceiver. The software facilitates the ability to trend out fuel usage and identify irregular fuel consumption spikes. Fleet has access to the fuel view software; however, Fleet has not been generating reports to monitor and analyze fuel usage by vehicle. We therefore see a need to implement a system that would allow Fleet to monitor and analyze fuel usage of every vehicle in the fleet in a timely and non-labor intensive fashion.

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II. DETAILED OBSERVATIONS & RECOMMENDATIONS

The existence of internal control weaknesses increases the likelihood that future errors or inappropriate transactions would not be prevented or detected. In order to mitigate this risk, we have provided recommendations to remediate the control weaknesses via the implementation of additional controls or modification of existing controls. However, we also recommend that management consider the cost-benefit of additional controls prior to implementing any changes.

Observation #1	Internal Audit Recommendations	Management Comments
Maintenance of Fleet		
Observations: DC Water does not have an effective automated system in place to monitor and manage the servicing of each job and timeliness of completing the work. This situation constitutes a risk where DC Water vehicles may be kept out-of-service for a longer period of time than necessary without being identified. Unnecessary fleet downtime can result in an expensive burden on DC Water. Because Fleet did not have detailed records with respect to the length of time vehicles were out-of-service, we were unable to assess the timelines for repair work and maintenance.	*Recommendation(s):* We recommend that Fleet Management implement a system which would allow management to closely monitor and analyze fleet downtime in a timely and non-labor intensive fashion. The system should ideally be able to set up a "Master Work Order" for a vehicle, which can then include sub-work orders for individual maintenance or repair tasks. *Business Owner(s):* O. Z. Fuller, Director of Fleet Management	*Management's Action Plan and Implementation Date:* In the short term we will continue to closely monitor and analyze fleet downtime as much as possible. Unfortunately this will continue to be a labor intensive task until such time as we are able to procure an industry approved automated fleet management information system. We are working with Procurement and IT to acquire a best in class Automated Fleet Management Information System. Acquisition is ongoing. Date of anticipated implementation (FY2013)

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Observation #2	Internal Audit Recommendations	Management Comments
Monitoring of Fuel Consumption		
Observations: DC Water does not have a useful system in place to effectively monitor and analyze fuel consumption and fuel purchases. This situation represents a risk where DC Water vehicles which are operating within a below standard MPG or are experiencing unusual spikes in fuel consumption are not being identified and investigated for correction.	*Recommendation(s):* We recommend that Fleet Management implement a system which would allow management to closely monitor and analyze fuel consumption and fuel purchases of every vehicle in the fleet in a timely and non-labor intensive fashion. *Business Owner(s):* O. Z. Fuller, Director of Fleet Management	*Management's Action Plan and Implementation Date:* We will continue to monitor fuel cost and usage through the DPW-FMA fuel interface. However this will continue to be a labor intensive task until such time as we are able to procure an industry approved automated fleet management information system with the integrated fuel interface that trends performance and usage. We have worked with DPW-FMA which is the facilitator of fueling for District of Columbia government. We are able to track fuel cost, consumption and usage. However this method is not automated. We anticipate being able to better track spikes and consumption through the fuel interface with the implementation of the Automated Fleet Management Information System. Date of anticipated implementation (FY2013)

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Observation #3	Internal Audit Recommendations	Management Comments
Safeguarding of Fleet		
Observations: DC Water does not have an effective system in place to prevent employees from inappropriate utilization of DC Water vehicles. This situation constitutes a risk in which employees could be using the fleet vehicles at DC Water's expense for operations outside the scope of DC Water normal operations. Reports and records are not sufficient to identify whether vehicles have been used without proper authorization.	*Recommendation(s):* We recommend that a fleet management policy be developed which would outline each DC Water department's responsibilities for safeguarding its assigned fleet and making sure that the assigned fleet is only being used to support DC Water operations. *Business Owner(s):* O. Z. Fuller, Director of Fleet Management	*Management's Action Plan and Implementation Date:* We have effectively revised our policy to reflect this recommendation. Date 07/30/2011

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Observation #4	Internal Audit Recommendations	Management Comments
Disposal of Fleet		
Observations: DC Water does not prohibit employees of the Department of Fleet Management from bidding on disposed vehicles under auction. This situation constitutes a risk where DC Water funds unnecessarily could be spent on fixing vehicles about to be disposed of on auction, and that Fleet employees then at a later time decide to privately bid on these vehicles based on "insider knowledge" of the condition of the vehicles.	*Recommendation(s):* We recommend that a formal policy be developed prohibiting all employees of the Department of Fleet Management from bidding on disposed DC Water vehicles. *Business Owner(s):* O. Z. Fuller, Director of Fleet Management	*Management's Action Plan and Implementation Date:* We have effectively revised our policy to reflect this recommendation. Date 07/30/2011

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INTERNAL AUDIT OF AUTOMATED METER READING (AMR) AND CUSTOMER BILLING

June 14, 2011

INTERNAL AUDIT STAFF

Audit Manager: Chris Patrick
Audit Sr. Manager: Dennis Fitzgerald
Audit Principal: Joseph Freiburger

DC Water Internal Audit of Automated Meter Reading and Customer Billing

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DC Water Internal Audit of Automated Meter Reading and Customer Billing

I. EXECUTIVE SUMMARY

Background

DC Water currently provides service to approximately 122,000 metered customer accounts. Billing for these accounts is calculated based upon the volume of water consumed by the customer during the billing period. Consumption, measured by a water meter attached to the premise, is tracked and recorded by the meter's register which is activated by the pressure of the consumed water.

In 2002, in an effort to streamline the collection of consumption data and the billing process for these metered customers, DC Water began the implementation of an Automated Meter Reading (AMR) system.

As opposed to having a meter reader technician physically read each customer's meter the AMR system is a fixed network system that transmits the meter readings electronically using radio frequency and cell phone technology.

Connected to each of the 122,000 water meters is a Meter Transmission Unit (MTU) which transmits the current meter reading by radio signal to a Data Collection Unit (DCU). This transmission occurs twice each day. There are 62 DCU's strategically located throughout the city which receive and store the electronic meter readings transmitted by the MTU's. The purpose of the DCU is to store the meter readings for later transmission to the Network Collection Center (NCC). Each DCU is programmed to make a cell phone call to the servers located at 810 First Street and transmit the meter readings to the NCC.

On occasion an MTU may fail to function or is unable to successfully transmit a signal to the DCU due to environmental interference. These occurrences are identified by the NCC. The NCC is programmed to receive an automated meter reading from each of the 122,000 on the AMR system. If a reading is not received from a specific meter for 10 consecutive days the NCC system generates a manual read file. This file is sent to Meter Operations and a technician is deployed to obtain a manual meter read in each of these instances. At that time the source of the transmission issue is identified and corrective actions are placed in motion to return the MTU to an operational status. Manual meter reads are uploaded back into the NCC system and merged with the automated meter reads for billing.

Because the MTU's transmit a radio frequency it is possible for a single meter reading to be detected and collected by multiple DCU's. As a result, DC Water is not dependent on any single DCU to collect a meter reading. DC Water uses a back-end application to ensure that only one reading is used for billing and analytical purposes. Once this process is completed, the meter readings are batched and transmitted to the Customer Information System (CIS) which is managed by Vertex, a third-party billing vendor.

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DC Water Internal Audit of Automated Meter Reading and Customer Billing

Vertex performs a series of analytical queries on the batched data ensuring that the level of consumption appears reasonable for each account based upon historical data and that the account specifications such as the rate schedule, equivalent residential units, and bill class appear correct.

In the event that Vertex's queries produce an anomaly, such as there was no recorded usage during the period on an active account, these instances are communicated to the Billing Department for research and resolution.

Once resolved the Billing Department instructs Vertex of the appropriate resolution. Resolution may include, but is not limited to, a consumption adjustment or estimation of consumption for the period. Once the billing file has been completely vetted Vertex prepares an invoice file based upon the vetted consumption data. This invoice file is delivered to Regulus, a separate third-party vendor, who is responsible for preparing customer invoices and delivering them to the account holders for payment.

If payment on an account is 30 days past due the collections process begins. As of March 31, 2011 there were approximately 13,600 accounts delinquent greater than 90 days delinquent representing $5.7 million dollars in accounts receivable. Initially, the collections process is fully automated and managed by Vertex, the third party billing vendor. Customers are systematically notified and reminded of the delinquency, the intent to disconnect, and the intent to lien. Notifications are disseminated via phone, e-mail, and traditional mail. Once an account has been delinquent 80 days and the balance is greater than $200, DC Water begins the process of placing a lien on the premise and the account holder. The lien process is manual and is managed by the Collections Department.

Once an account that has an active lien has brought to current status with a $0 or credit balance the Collections Department is notified and the lien is removed.

Scope

This audit was conducted as a part of the approved 2011 Internal Audit plan. The audit was initiated in April 2011 and completed in May 2011. The audit included a review of the automated meter reading, manual meter reading, customer billing, and collections processes.

Internal Audit conducted walkthroughs with individuals involved in each of the processes indicated above. Audit used the results of these walkthroughs to identify and document the inherent risks, mitigating controls, control gaps, and efficiency opportunities as they currently exist within each of the processes.

Following walkthroughs, Audit performed testing for each of the identified controls to evaluate their effectiveness.

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DC Water Internal Audit of Automated Meter Reading and Customer Billing

Objectives

Internal Audit established five objectives for its review of the AMR & Customer Billing process

- Ensure that customer water usage is being accurately captured and recorded for billing purposes.
- Ensure that customer account adjustments are warranted, accurate, reviewed, and appropriately approved.
- Ensure that a lien placed on an account for delinquent charges is accurately placed on the appropriate account, account holder, and premise.
- Ensure that customer accounts that have a lien on the property, which have been brought to current status, appropriately have the lien removed.
- Verify that information on customer accounts that are eligible to be disconnected, based on amount in arrears and length of time since payment, is being appropriately sent to Meter Operations for disconnection of service.

Summary of Work

Internal Audit concludes that customer water useage is being accurately captured and billed and delinquent accounts are being processed accurately. We did identify opportunities for improvement over monitoring of customer account adjustments, and manual meter reading by Field Technichians.

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II. DETAILED OBSERVATIONS & RECOMMENDATIONS

The existence of internal control gaps could increase the likelihood that future errors or inappropriate transactions would not be prevented or detected. In order to mitigate this risk, we have provided recommendations to remediate the control gaps via the implementation of additional controls or modification of existing controls. However, we also recommend that management consider the cost-benefit of additional controls prior to implementing any changes.

Observation #1	Internal Audit Recommendations	Management Comments
Customer Account Adjustments		
Observations: Internal Audit noted that Customer Service Representatives can circumvent the system based adjustment level threshold by making multiple adjustments to a customer's account at or below their pre-authorized adjustment levels. For example, a Customer Service Representative with an approved $700 credit adjustment level can effectively make a $1,400 adjustment to a customer account by posting two credit adjustments of $700. Per discussion with the Customer Service Manager, we determined that a report is generated monthly which details all customer account adjustments made. This report is disseminated to the Managers; however there is no evidence of review and approval of this report by the Manager of Customer Service.	*Recommendation(s):* We recommend that Management research the capability of the CIS system to limit customer adjustments to the pre authorized Userid levels. At a minimum, we recommend that the customer account adjustment report be reviewed, initialed and dated as evidence of the review by the Manager of Customer Service. *Business Owner(s):* AGM Consumer Services	*Management's Action Plan and Implementation Date:* Management agreed to contact Vertex immediately to determine if the customer information system can be enhanced to limit adjustments to the pre authorized Userid level. Management also agreed to provide some measure of proof that the adjustment reports are reviewed monthly. This may be done manually by initial and date or electronically effective the month end June report.

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Observation #2	Internal Audit Recommendations	Management Comments
Monitoring of Manual Meter Reading		
Observations: Every second and fourth Tuesday, a MVRS Read Report is generated which shows which Meter Tech obtained meter reads, the Tech's ID, Meter Location, and reason why a meter wasn't read. The Supervisor reviews this report to ensure that Meter Techs are fulfilling their duties by completing their assigned routes, and ensuring that meters which need to be read manually are visited. We determined that the reports were being generated but there was no documented review of the reports by the Supervisor.	*Recommendation(s):* We recommend that the Supervisor intital and date the MVRS Read Reports as evidence of review and approval. *Business Owner(s):* AGM Consumer Services	*Management's Action Plan and Implementation Date:* Management agreed to document its review of the MVRS read reports effective immediately.

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INTERNAL AUDIT OF IT – DISASTER RESPONSE PLANS

June 10, 2011

INTERNAL AUDIT STAFF

Senior Auditor: Anthony DiGiulian
Audit Managers: Scott Heflin
Audit Principal: Joseph Freiburger

DC Water Internal Audit of IT - Disaster Recovery

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DC Water Internal Audit of IT - Disaster Recovery

I. EXECUTIVE SUMMARY

Background

As a major utility company, DC Water is dependent on information technology to support critical mission and business processes. Since the establishment of the DC Water IT Department in 1999, the Authority has been increasingly applying information technology in an operational capacity as a business enabler to reduce costs and increase efficiency. In addition to supporting day-to-day operations from multiple computer systems, platforms and applications, the DC Water IT Department has been deploying commercial off-the-shelf (COTS) technology to reduce complexity, eliminate dependencies on proprietary technology, and increase the efficiency of support operations; deploying communications technologies to connect geographically dispersed or remote locations; and enabling mobile computing and remote telecommuting to support off-site access.

The increasing dependency on information assets (systems and data) has created many potential risks that must be managed appropriately to ensure efficient and effective operations. Establishing an effective disaster recovery and business continuity plan to recover from a disaster and/or an unexpected event, and resume or continue operations, is a key component in mitigating these risks. It is necessary that the organization have a successfully tested plan in place that outlines all key steps and components of recovery and continuity of operations before any disaster strikes.

Scope

This audit was conducted in accordance with the approved 2011 internal audit plan. The audit was initiated in February 2011 and completed in April 2011. The audit included a review of the most recent version of the DC Water IT Disaster Response Plan, documented critical system test procedures, and results of critical system tests performed during the period of March 2010 through March 2011. Internal Audit (IA) met with management and key members of the Information Technology Department to discuss the process of developing, formalizing, maintaining, and testing the Disaster Response Plan. Through interviews with management and review of the current Disaster Response Plan, Internal Audit chose to include the following DC Water critical systems in the scope of this audit:

- Customer Information System (CIS)
- Geographic Information System (GIS)
- Asset Management System (Maximo)
- DC Water Financial System (Lawson)
- Supervisory Control and Data Acquisition System (SCADA)
- Enterprise Document Management System (Livelink)
- Telephony System
- Oracle Database Services
- DC Water Web Site

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DC Water Internal Audit of IT - Disaster Recovery

Internal Audit verified that each of the identified systems were included within the DC Water Disaster Response Plan under the critical systems list for DC Water.

Due to the inherent integration and coordination necessary between Disaster Response and Business Continuity, Internal Audit also incorporated a review of the Business Continuity Plan into the scope of this audit. It should be noted, however, that the responsibility of developing and maintaining the DC Water Business Continuity Plan resides within the DC Water Department of Occupational Safety & Health, not the IT department.

Objectives

Our overall audit objective was to evaluate and test the effectiveness of controls relative to the design, approval, and execution of the DC Water Disaster Response Plan as it relates to the IT operations. Likewise, our evaluation included an assessment of the plans themselves, as well as a review of documented testing procedures and results to determine whether the plans are adequately tested on a periodic basis to ensure their effectiveness in the event of a disaster. Specific goals included determining if:

- A formally documented IT Disaster Response Plan (DRP) is in place; the plan is current and adequate enough to ensure information processing activities are recovered and restored in the event of a disaster
- Responsibility for the overall development, testing, and maintenance of the DRP has been assigned to a particular individual or group
- The DRP has been formally reviewed and signed off by appropriate members of executive management
- The DRP has been reviewed and updated within the past 12 months; a process is in place to review and update the plan on at least an annual basis
- The current version of the DC Water DRP:
  - includes a tests, training, and exercise (TT&E) schedule, methodology, and results
  - identifies critical systems and functions
  - identifies critical resources
  - identifies and prioritizes activities that are essential to DC Water operations
  - includes a business impact analysis
  - designates a disaster recovery site(s)
  - identifies DRP roles and responsibility designations
  - defines reasonable time requirements for recovery and availability of each critical system

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DC Water Internal Audit of IT - Disaster Recovery

> ➢ Users and/or IT personnel have been trained in their responsibilities in the event of an emergency or disaster; users have a clear understanding of their role in working towards the resumption of normal operation and are aware of manual procedures that are to be used when processing is delayed for an extended period of time
> ➢ The back-up processing site(s) are suitable and compatible with the current computer facility; copies of the DRP are stored at the back-up processing site
> ➢ A testing schedule exists for each critical system identified and is adequate (at least annually); documented test plans are reflective of realistic scenarios and adequate enough to assess the plans' overall effectiveness in the event of a disaster
> ➢ Test results are formally evaluated for future plan improvements; corrective action has been taken for any problems or issues incurred during DRP testing
> ➢ A formally documented Business Continuity Plan (BCP) is in place
> ➢ The BCP has been formally reviewed and signed off by appropriate members of executive management

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DC Water Internal Audit of IT - Disaster Recovery

Summary of Work - IT Disaster Response Planning:

Internal Audit concludes that while a Disaster Response Plan and some associated test procedures for DC Water's critical systems have been documented, a number of improvement opportunities exist within the disaster recovery planning process. Internal Audit determined that policies and procedures for periodic disaster recovery testing, as well as formally documented critical systems test results, were either non-existent for certain critical systems, or incomplete.

At the time of our testing, Internal Audit also determined that a copy of the DC Water Disaster Response Plan is not stored at the back-up processing site. Additionally, Internal Audit identified that the current DC Water Disaster Response Plan had not been formally approved by DC Water executive management. However, since the conclusion of our testing, both of these observations have been addressed and remediated by management. Furthermore, DC Water IT executive management has implemented plans to continuously review the DRP on an annual basis.

Summary of Work - Business Continuity Planning:

Internal Audit identified during testing that a formally documented DC Water Business Continuity Plan has yet to be completed and put in place. Although the basic structure for the plan has been created, the plan is still in draft form and not yet finalized.

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II-A. DETAILED OBSERVATIONS & RECOMMENDATIONS - IT Disaster Recovery Planning

The existence of internal control weaknesses increases the likelihood that future errors or inappropriate activities would not be prevented or detected. In order to mitigate this risk, we have provided recommendations to remediate the control weaknesses and further improve existing processes via the implementation of additional controls or modification of existing controls. However, we also recommend that management consider the cost-benefit of additional controls prior to implementing any changes.

Observation #1	Internal Audit Recommendations	Management Comments
Disaster Response Plan Off-Site Storage		
Observation(s): A copy of the DC Water IT Disaster Response Plan is not currently stored at the back-up processing site. By not storing copies of the finalized plan at the back-up processing site, there is an increased risk that the plan itself will be unavailable in the event of a disaster which could slow or prevent the recovery of critical IT systems.	*Recommendation(s):* DC Water IT management should store copies of the formalized and approved Disaster Response Plan (and Business Continuity Plan once finalized) at the designated back-up processing site(s). Internal Audit notes that this observation has been remediated in compliance with our recommendation.	*Management's Action Plan:* Department of Information Technology agrees with the recommendations. A copy of the DRP has been placed at the COF, CMF, and O street data center locations. *Implementation Date:* This task was completed on 5/24/11.

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Observation #2	Internal Audit Recommendations	Management Comments
Disaster Response Plan Approval		
Observation(s): The current DC Water IT Disaster Response Plan has not been formally approved by DC Water executive management. Without obtaining formal approval from executive management, there is an increased risk that the content and overall design of the plan does not adequately address all organizational requirements to effectively and efficiently recover critical IT infrastructure in the event of a disaster.	*Recommendation(s):* DC Water IT management should present the finalized DC Water IT Disaster Response Plan to executive management for review and formal approval as soon as possible. Internal Audit notes that this observation has been remediated in compliance with our recommendation.	*Management's Action Plan:* Department of Information Technology agrees with the recommendations. The CIO has formally reviewed and approved the DIT Disaster Recovery Plan. *Implementation Date:* This task was completed on 5/24/11.

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Observation #3	Internal Audit Recommendations	Management Comments
Disaster Recovery Critical Systems Test Procedures		
Observation(s): Policies and procedures for periodic disaster recovery testing were not available for review for the following 5 critical systems: o Core Network System (CNS) o Customer Information System (CIS) o DC Water Web Site o Enterprise Document Management (EDM) o Geographic Information System (GIS)	*Recommendation(s):* DC Water IT Management has initiated development of formalized policies and procedures for periodic disaster recovery testing of critical systems. As a result, two critical systems (VoIP and SCADA) have already developed adequate policies and procedures for disaster recovery testing. In order to ensure all identified critical systems have formally documented disaster recovery testing policies and procedures in place, DC Water IT management should continue to enforce the development of such documentation and require that each critical system owner submit the completed policies and procedures to IT Management for review and approval.	*Management's Action Plan:* Department of Information Technology agrees with the recommendations. Existing policy requires regular testing of the DRP. Our DRP Test Plan requires system-specific test procedures to ensure policy compliance. *Implementation Date:* System-specific test plans for the remaining critical systems is expected to be completed by 8/1/11.
Policies and procedures for periodic disaster recovery testing are documented for the following 2 critical systems: o Asset Management System (AMS) o Oracle Database Services However, in-depth review of the policies and procedures indicated that the test plans were missing key pieces of information and ultimately were not suitably designed for testing. Specifically, tester roles and responsibilities were not defined, testing schedules were not identified, and detailed test procedures were not included.	DC Water IT Management should enforce the owners of the 3 critical systems identified as not having adequate disaster recovery testing policies and procedures to update those policies and procedures to include the following information for each system: • clearly defined tester roles and responsibilities • testing schedules that include defined periods of testing • detailed test procedures • requirements for approval	Department of Information Technology agrees with the recommendations. *Implementation Date:* Tester roles & responsibilities and testing schedules that include pre-defined periods of testing will be incorporated into system-specific test procedures to be completed by 8/1/11.

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Test procedures for the DC Water Financial System (Lawson) were also found to be missing key pieces of information; however it was noted that the system is still undergoing a major upgrade and therefore test plans would not be finalized until the upgrade is completed. By not having documented, comprehensive test plans in place for all critical systems, DC Water may not be able to conduct testing to ensure the successful recovery of IT infrastructure required for the continuity of operations in the event of a disaster.	The content of the updated disaster recovery testing policies and procedures should be in close alignment with the information already included in the completed disaster recovery testing policies and procedures for SCADA and VoIP.	

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Observation #4	Internal Audit Recommendations	Management Comments
Disaster Recovery Critical Systems Test Results		
Observation(s): Disaster Response Plan test results were not formally documented for the following 5 critical systems: o Core Network System (CNS) o Customer Information System (CIS) o DC Water Web Site (WWW) o Enterprise Document Management (EDM) o Geographic Information System (GIS)	*Recommendation(s):* IT Management has initiated and communicated requirements for periodic disaster recovery testing, resulting in the completion of appropriate testing for 2 critical systems (VoIP and SCADA). In order to ensure disaster recovery testing is completed and results appropriately documented for all critical systems, DC Water IT management should continue to enforce the owners of all identified critical systems to perform, document, and approve periodic testing in alignment with approved policies and procedures.	*Management's Action Plan:* Department of Information Technology agrees with the recommendations. Test results will be formally documented upon completion of testing (during the course of scheduled maintenance windows). *Implementation Date:* Considering that time must be given to complete system-specific test procedures and the actual testing process, completion is planned for 10/31/11.
Disaster Response Plan test results are documented for the following 2 critical systems: o Asset Management System (AMS) o Oracle Database Services However, the test results inadequately address all expected areas of coverage. Specifically, the test results did not include the date(s) the testing was performed, roles of the testing team, detailed documentation of test steps performed, expected vs. actual results, or approval of any test results.	DC Water IT Management should enforce the owners of the 2 critical systems identified as not having adequately documented disaster recovery test results to update test plans to include more thorough documentation similar to the completed testing documents for VoIP and SCADA. Test results should clearly identify the date(s) of testing performed, roles and responsibilities of the testing team, detailed documentation of test steps performed, expected vs. actual results, and approval of the results.	Department of Information Technology agrees with all recommendations. Phase 1: as discussed, DIT will be revising the aforementioned test plans. Phase 2: as regularly scheduled testing is performed, all results will be documented appropriately.

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		Implementation Date:
By not formally documenting periodic test results for critical systems, DC Water management may not be able to verify that the tests yielded successful results that are indicative of the successful recovery of IT infrastructure required for the continuity of operations in the event of a disaster. Furthermore, DC Water management may not be able to evaluate poorly documented test results for future plan improvements and/or to determine if any corrective action needs to be taken for any problems or issues incurred during disaster recovery testing.		Completion is planned for 10/31/2011.

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II-B. DETAILED OBSERVATIONS & RECOMMENDATIONS – Business Continuity Planning

The existence of internal control weaknesses increases the likelihood that future errors or inappropriate activities would not be prevented or detected. In order to mitigate this risk, we have provided recommendations to remediate the control weaknesses and further improve existing processes via the implementation of additional controls or modification of existing controls. However, we also recommend that management consider the cost-benefit of additional controls prior to implementing any changes.

The following item is included under the purview of DC Water's Department of Occupational Safety & Health.

Observation #1	Internal Audit Recommendations	Management Comments
Incomplete Business Continuity Plan		
Observation(s): A formally documented DC Water Business Continuity Plan has yet to be completed and put in place. Although the basic structure for the plan has been created, the plan is still in draft form. By not having a documented, comprehensive Business Continuity Plan in place, DC Water may not be able to continue critical business operations in the event of a disaster.	*Recommendation(s):* The DC Water Occupational Safety & Health Department should finalize the DC Water Business Continuity Plan and present it to executive management for review and formal approval as soon as possible.	*Management's Action Plan:* We will be submitting the completed draft version to the senior executive team June 30 for final comments and then submitting the finalized version to the General Manager for signature by July 31. There will then be a series of training sessions for employees and contractors in August and September 2011.

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