DISTRICT OF COLUMBIA
WATER AND SEWER AUTHORITY

Board of Directors

Audit Committee

Thursday, September 25, 2014

9:30 a.m.

1. **Call to Order**.....Nicholas Majett, Chairperson

2. **Review of Internal Audit Status**…….…….....Joseph Freiburger
   A. Emergency management and Response Report
   B. IT – Disaster Recovery Report
   C. IT - Asset Management Report
   D. GIS System Report
   E. Outside Contractor Management – Part Two Report
   F. Warehouse & Inventory Operations Report

3. **SC&H Five-Year Summary** …….....Joseph Freiburger

4. **Executive Session**

5. **Adjournment**…….. Nicholas Majett

Internal Audit Update

Audit Committee Meeting

September 25, 2014

The following represents a summary of the activities and achievements since the June 26, 2014 Audit Committee meeting.

I. Highlights

Performance of scheduled internal audits – Internal Audit performed audit work in eight separate audit areas. Six final reports were issued to conclude the work performed under the FY2014 Internal Audit Plan (Emergency Management – Mitigation and Response, IT – Disaster Recovery, IT – Asset Management, GIS System, Outside Contractor Management – Part Two, and Warehousing & Inventory). Based on the request of Management, two audits (Maintenance Services and IT – GIS) from the FY2014 Internal Audit Plan have been cancelled. The chart below depicts the FY2014 planned projects and their status for the fiscal year.

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

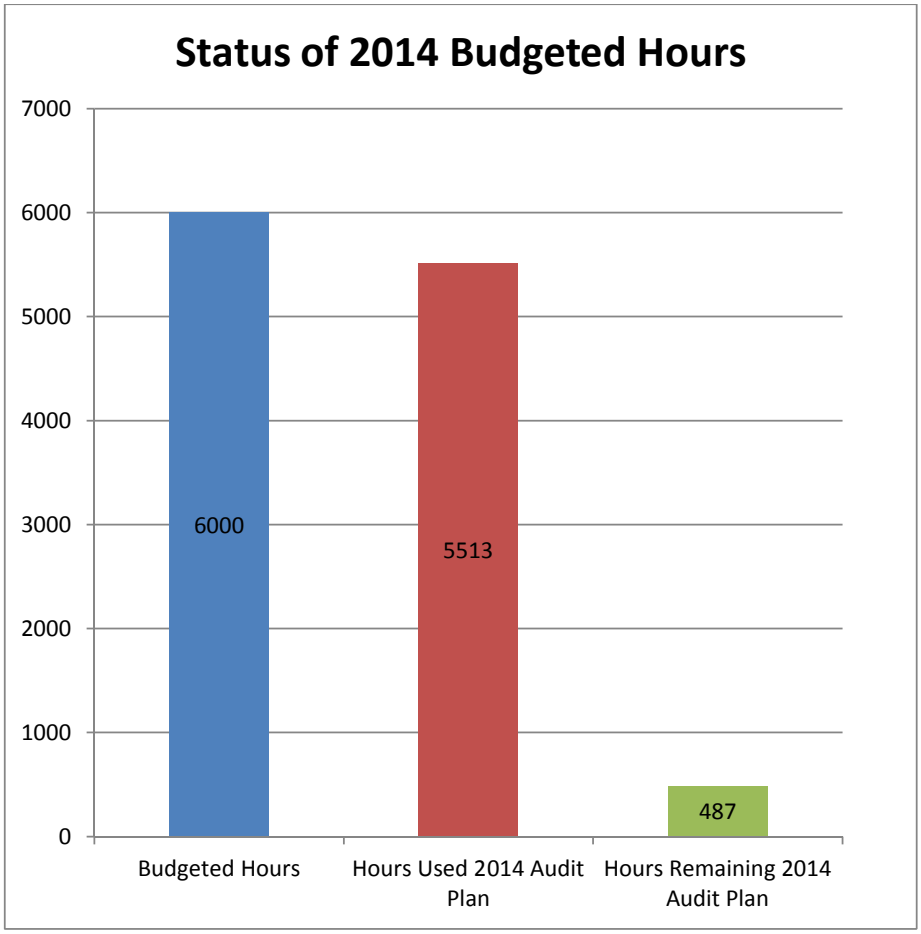
PROJECT	PLANNING / SCOPING	FIELDWORK	DRAFT REPORT	FINAL REPORT
Legal Operations				
Disposal of Assets				
Clean Rivers Project Management				
Safety Compliance – Part 1				
Employee Benefit Plans				
Sewer Services – Construction & Repair				
Outside Contractor Management, Part 1				
Emergency Management - Recovery				
Emergency Management – Mitigation and Response				
IT – Disaster Recovery				
Safety Compliance – Part 2				
IT – Asset Management				
GIS System				
Outside Contractor Management, Part 2				

Maintenance Services				
Warehousing & Inventory				
IT – GIS				

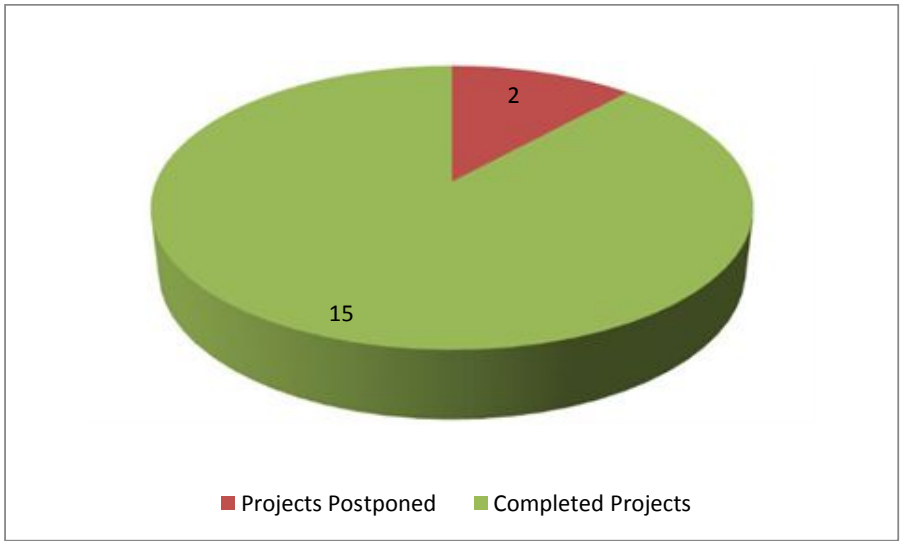
B. **Analysis of key milestone dates –** The following represents an indication of the date of completion of key project milestones.

PROJECT	START DATE	FIELD-WORK END DATE	DRAFT REPORT ISSUANCE DATE	FINAL REPORT
Legal Operations	10/14/2013	1/17/2014	1/24/2014	2/11/2014
Disposal of Assets	10/14/2013	12/6/2013	1/22/2014	2/18/2014
Clean Rivers Project Management	11/13/2013	1/17/2014	1/27/2014	2/11/2014
Safety Compliance – Part 1	12/18/2014	1/22/2014	1/29/2014	2/18/2014
Employee Benefit Plans	1/29/2014	3/26/2014	3/31/2014	4/2/2014
Sewer Services – Construction & Repair	2/6/2014	3/31/2014	4/4/2014	5/12/2014
Outside Contractor Management, Part 1	2/11/2014	3/28/2014	4/2/2014	5/23/2014
Emergency Management - Recovery	2/7/2014	4/8/2014	4/10/2014	5/12/2014
Emergency Management – Mitigation and Response	4/7/2014	4/29/2014	5/6/2014	6/27/2014
IT – Disaster Recovery	3/31/2014	6/26/2014	7/11/2014	7/31/2014
Safety Compliance – Part 2	4/10/2014	4/29/2014	5/23/2014	6/19/2014
IT – Asset Management	6/4/2014	7/31/2014	8/20/2014	9/10/2014
GIS System	4/22/14	6/5/2014	6/17/2014	
Outside Contractor Management, Part 2	4/7/2014	5/30/2014	6/16/2014	7/22/2014
Maintenance Services	7/14/2014	8/15/2014	N/A	N/A
Warehousing & Inventory	6/9/2014	8/1/2014	8/8/2014	9/15/2014
IT – GIS	7/16/2014	N/A	N/A	N/A

C. **Analysis of Hours –** The chart below indicates the actual hours used through August 31, 2014 toward completion of the internal audit plan, along with an indication of the total hours included in the FY2014 plan.



II. 2014 Audit Plan Status



A. Reports Issued Since Last Audit Committee Meeting

1. Emergency Management – Mitigation and Response

Our overall audit objective included an evaluation of the Office of Emergency Management's emergency response plans and activities. Specific audit objectives included:

- Assess the adequacy of the Emergency Management response plans and ensure compliance with applicable laws and regulations;
- Evaluate DC Water's preparedness to respond effectively and efficiently to an emergency;
- Ensure that emergency response training, drills, and exercises are adequate and performed regularly;
- Verify that emergency purchase protocols are properly documented and available for emergency funding and reimbursement; and,
- Assess the incident mitigation processes and procedures for adequacy and effectiveness.

Internal Audit concludes that while emergency response plans have been documented, several opportunities for improvement exist to assure a timely response to emergencies. Internal Audit identified instances of incomplete and inconsistent information within the emergency response plans.

Internal Audit has identified several items that should be addressed by management in order to better prepare DC Water to address potential hazards and to effectively and efficiently response to emergencies. In particular, there is a need to address the following:

- We noted a need to finalize the EMP and correct inconsistencies within the emergency response plans;
- The completion of all training courses by each required employee needs to be monitored and the requirements for emergency response training, exercises, and emergency drills needs to be captured in the EMP;
- We determined a need for the development of a DC Water specific mitigation plan and procedures; and,
- The OEM should develop, document and implement a consistent methodology for documenting after-action reports.

This audit resulted in the addition of four Management Action Items in the chart in Section III Follow Up.

2. IT – Disaster Recovery

Our overall audit objective included an evaluation of the content and comprehensiveness of the DC Water Disaster Recovery Plan ("DRP"). Specific audit objectives included:

- Evaluate the adequacy and completeness of DC Water's DRP;
- Determine whether the DRP is properly reviewed and updated in order to remain effective;
- Ensure that critical areas have been properly identified and addressed including:

- identification of critical systems and functions
- identification of critical resources
- identification and prioritization of activities that are essential to DC Water operations
- business impact analysis
- designation of a disaster recovery site(s)
- identification of DRP roles and responsibilities
- definition of reasonable time requirements for recovery and availability of each critical system;

- ❑ Evaluate the adequacy and occurrence of tests, training, and exercises performed for recovery activities; and,
- ❑ Determine whether appropriate procedures have been established for recovery measures, and if the requirements of the DRP are being met.

Internal Audit concludes that while an IT Disaster Recovery Plan has been documented, certain components are in need of improvement to assure the successful execution of the Recovery Phase. We identified instances of out-dated, inaccurate, and incomplete information in the DRP, as well as non-compliance to the current requirements of the plan.

We identified several items that should be addressed by management in order to better prepare DC Water to restore critical systems in the event of a disaster. In particular, there is a need to address the following:

- ❑ The DC Water DRP is not being thoroughly reviewed and updated on an at least an annual basis to reflect changes to the environment;
- ❑ The DC Water DRP does not include a formal testing methodology or testing exercise schedule requirements; and
- ❑ Documentation supporting the shut-down start-up tests performed, and the detailed results of those tests, were not captured and maintained on file. Additionally, evidence of post-exercise review and formal approval/sign-off indicating whether the tests were successful and the results satisfactory were not available.

This audit resulted in the addition of three Management Action Items in the chart in Section III Follow Up.

3. IT – Asset Management

The purpose of our review of the IT Asset Management process was to validate the effectiveness of the implementation and use of the PASSPORT IT asset management database, as well as the additional internal controls that were implemented and/or revised since the last full physical audit completed in December, 2013.

Our overall audit objective was to evaluate the effectiveness and efficiency of the IT asset management program. Specific audit objectives included:

- To verify that an accurate inventory listing of IT assets was being maintained;
- To verify the adequacy of the process with respect to properly receiving all IT;
- To validate whether issuances, transfers and returns of IT assets are properly documented and approved;
- To verify that the disposal of IT assets is properly documented and approved;
- To determine whether IT assets are appropriately physically inventoried on a periodic basis; and,
- To assess whether IT assets are adequately safeguarded.

We have concluded that the IT department has begun to make the changes necessary to ensure that an accurate record of their assets is available; however, opportunities to improve the controls and processes around the management and safeguarding of the IT assets remains.

We have identified several items that should be addressed by management in order to further strengthen the IT Department's management of IT assets. In particular, there is a need to address the following:

- Segregate the IT asset management duties that are currently being performed by the ITSC Manager;
- Review available IT asset management database reporting, and implement a process to reconcile each asset-related ITSC service ticket to a completed property pass on a periodic basis;
- Revise the current method of conducting ad hoc and quarterly IT asset inventory physical counts to ensure that blind counts are used as a way to validate the location of IT assets deployed to end users in the field;
- Ensure that all ITSC service tickets and completed property passes are properly retained;
- Ensure that access to DC Water IT assets is limited to the appropriate authorized individuals;
- Develop and implement a comprehensive training program and corresponding end-user manual to assure that IT personnel are appropriately trained to utilize the IT asset management system; and,
- Update and improve the IT asset management procedure documents to ensure they provide adequate detail for each of the procedures outlined.

This audit resulted in the addition of seven Management Action Items in the chart in Section III Follow Up.

4. GIS System

The overall audit objective was to evaluate the effectiveness and efficiency of the operations and activities surrounding the GIS as well as to ensure compliance with industry best practices. Specific audit objectives were:

- To ensure that GIS processes are in compliance with established DC Water Policies and Procedures, as well as applicable laws, regulations, and industry best practices/standards;

- To ensure the data associated with the GIS are updated timely, accurately, and consistently;
- To ensure that GIS activity is done in a manner to effectively support DC Water strategic goals and objectives and to examine the adequacy of system attributes and outputs;
- To ensure communication between departments and users of the GIS is effective and efficient and that an appropriate training program exists; and
- To ensure that GIS projects are appropriately monitored and managed and that a sufficient quality control of GIS projects is in place.

Internal audit concludes that the GIS Asset Mapping group updates the GIS accurately and efficiently when the appropriate information is provided to their group in a timely manner. Further, Internal Audit concludes that the internal controls surrounding the operational aspects of the GIS Asset Mapping group are effective. However, we noted that overall, the GIS is ineffective and underutilized due to the inaccuracies within the GIS. The inaccuracies in the Counter Maps were carried over to the GIS, and since the conversion known errors have not been communicated to the GIS Asset Mapping group consistently or timely. This has resulted in the people and groups who need to use the GIS to mistrust its information and therefore not utilize it. For the GIS to truly be effective, information quality needs to be substantially improved at a faster pace.

On a macro level, time and monetary resources have been allocated to this system without specific goals, objectives, or a strategy/long-term plan being set by DC Water Management. Further, there has been insufficient analysis of success or failure of initiatives and investments made. On a micro level, since the inception of the GIS Asset Mapping group, they have developed a process, a tracking database, detailed instructions for editing both water and sewer features, and quality control measures to ensure edits made to the GIS are accurate and timely in regards to when they were received. Since the group is reliant on other groups internal and external to DC Water for information, they can only input the information that is made available to them. While they are successful in editing current changes to the infrastructure, the strategy to correct the inaccuracies in the existing infrastructure is limited to correction of errors discovered during the normal course of work. With DC Water's increased focus on Asset Management, DC Water Management needs to decide what the goals and objectives of the GIS will be, and what continued investment there will be in enhancing the data integrity of the information stored within the GIS to increase user's confidence.

Furthermore, Internal Audit has identified some areas that should be addressed by DC Water management in order to further strengthen DC Water's GIS Asset Mapping group's operational processes. In particular, there is a need to address the following:

- Lack of enterprise-wide goals, objectives and strategies for the GIS at DC Water;
- Inconsistent flow of information to the GIS Asset Mapping group;
- Undefined procedure for flow of information from Water and Sewer Services Maintenance crews to the GIS Asset Mapping group;
- Incomplete internal policies and procedures for the GIS Asset Mapping group; and
- Inadequate communication between IT, DETS, Water Services and Sewer Services.

This audit resulted in the addition of five Management Action Items in the chart in Section III Follow Up.

5. Outside Contractor Management – Part Two

Our overall audit objective was to evaluate the effectiveness and efficiency of the operations and activities around the management of outside contractors. Specific audit objectives included:

- Ensure that all selected vendor contracts are complete, current and properly executed;
- Determine whether the delivery of contracted goods or services is properly tracked and monitored;
- Examine whether the vendor has met all terms and conditions of their contract;
- Evaluate management's oversight of contractor billing; and,
- Assess whether management's oversight of contractors is adequately documented.

We concluded that the vendor contracts we selected were complete and properly executed. However, we also conclude that Management's oversight of the delivery of the terms in the vendor contracts and the activities of outside contractors were not properly tracked and monitored in each instance.

We identified items that should be addressed in order to further strengthen the management of vendor contracts. In particular, there is a need to address the following:

- Ensure that changes to a contract's assigned COR or COTR, as well as any associated responsibilities, are only made by the General Manager, and that evidence of the approved change is retained in the contract folder;
- Ensure that the delivery of the terms in the vendor contracts and the activities of outside contractors are properly tracked and monitored to ensure contractor performance; and,
- Ensure that all invoices are properly validated for accuracy and completeness prior to approval for payment.

This audit resulted in the addition of five Management Action Items in the chart in Section III Follow Up.

6. Warehousing & Inventory

Our overall audit objectives included an evaluation of the policies, procedures, and practices in place to ensure that the Warehouse Operations is in compliance with DC Water policies and procedures and to ensure the department has the appropriate tools to monitor warehouse activity and effectively achieve its mission. Specific audit procedures performed are as follows:

- Verify that all assets are properly received into the warehouse;
- Validate that issuances, transfers and returns of assets are properly documented and approved;
- Verify that the disposal of assets is properly documented and approved;
- Determine whether assets are appropriately inventoried on a periodic basis; and,
- Assess whether the assets are adequately safeguarded within the warehouse.

After reviewing the current control environment and the proposed materials management initiatives, Internal Audit concludes that there are several control gaps and process improvement opportunities that exist within the Warehouse Operations' control environment. It should also be noted that five of the comments were also noted in the FY2012 report and continue to require remediation.

Items noted in the report that should be addressed:

- Need for segregation of duties between the receiving, recording and distribution processes;
- Need to conduct physical cycle counts of the inventory on hand;
- Need to strengthen the supervisory activity of the warehouse operations;
- Need to perform a separate count of inventory held on all trucks;
- Need to improve security measures in the warehouse facilities;
- Need to monitor the environment within the warehouse and evaluate its impact on stored items; and
- Need to move IT equipment out of the warehouse.

We recognize that, when implemented, the material management initiatives will strengthen the overall control environment and allow the Warehouse Operations to increase its productivity and efficiency. However, once the initiatives are implemented, Management will need to evaluate the skill sets and responsibilities of the staff to ensure its staff maintains the required competencies. Further, we recommend that Management implement continuous training for its staff.

This audit resulted in the addition of seven Management Action Items in the chart in Section III Follow Up.

III. Follow Up

In addition to our work performed relative to the audit projects identified in the FY2014 Internal Audit Plan, Internal Audit conducted follow-up activity relative to previously reported audit comments. The table below summarizes the issues by area of responsibility and the current status of the action plan proposed by Management.

	Chief Engineer	AGM Blue Plains	AGM Customer Care & Operations	Chief Financial Officer	General Counsel	Chief Information Officer	AGM Support Services	General Manager	Total
New Management Action Plans Since Previous Meeting	5	-	4	-	-	11	9	-	29
Management Action Plans Implementation Date Not Expired	1	8	20	-	2	1	9	-	41
Management Action Plans Implementation Date Expired	-	1	1	1	-	-	2	-	5
Total	6	9	25	1	2	12	20	-	75

Listed Below are the Details of the Management Action Plans with Expired Implementation Dates

AGM Blue Plains

1. 2013 PCS (Process Control System) Audit – The PCS system does not have formalized process documents around the activities, reviews, and data analysis utilizing PCS data are subjectively based on the user's institutional and professional knowledge of the plant activities. It was recommended that management implement formalized policies and procedures to provide PCS users with consistent practices to interpret PCS data and document the related activities. The implementation of these processes has not been completed.

AGM Customer Care & Operations

1. 2014 Emergency Management Recovery – The DC Water COOP (Continuity of Operations Plan) was not being updated on an annual basis. It was recommended that Management update the COOP plan on an annual basis, and to update the Emergency Contact information on a semi-annual basis, to assure that all information contained in the plan remain current and accurate. Management has not included an appropriate schedule for when the semi-annual review of Emergency Contact information will occur to ensure that the plan remains up to date.

Chief Financial Officer

1. 2011 Grants Operations Audit – Grant reimbursements were manually identified in Lawson and ImageNow, and all active grant balances are manually maintained and reconciled in multiple spreadsheets. It was recommended that DC Water complete the process of implementing the special grant administration Lawson module and automate the grants process. Management has automated multiple aspects of the grants system billing process but some processes continue to be processed manually.

AGM Support Services

1. 2013 P–Card Audit – The P-card reconciliation and approval processes are not automated and are paper intensive and reliant on manual controls. This results in a time consuming review and approval process as well as an increased likelihood of errors. It was recommended that Management obtain a software solution and automate the process. Management has not been successful in selecting and implementing an automated reconciliation process.

2. 2013 Fleet Management Audit – The Fleet department's Driver's Qualification Standard Operating procedure was not updated, approved and distributed to remain current. This standard operating procedure is up to date, approved and has been distributed, but Management has not hired the Certified Trainer position to assist with the adherence to the procedures.

IV. Other Topics

Special Project: Vendor Procurement

Internal Audit assisted the Chief of Staff with a review of vendor procurement, which included an examination of all files and documentation associated with a selection of vendor contracts. On August 12, 2014, we issued a Status Report to Management that outlined the work that we performed and a preliminary assessment based on the results of our review.

Fraud Hotline

To date, a total of 29 cases have been received as a result of the Fraud, Waste and Abuse hotline. Ten of the 29 cases have been received since the June 26 Audit Committee meeting. The new cases have pertained primarily to DETS and Customer Service & Operations, and are being investigated. Twenty-seven of the 29 reports have been investigated and closed, including nine of the ten cases received since the previous Audit Committee meeting.

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Emergency Management – Mitigation & Response

Internal Audit Report

June 27, 2014

INTERNAL AUDIT TEAM

Director:	Joe Freiburger
Manager:	Russell Ojers
Staff:	Jackie Kosovich

DC Water – 2014 Internal Audit
Emergency Management – Mitigation & Response

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EXECUTIVE SUMMARY

Background

The Office of Emergency Management (OEM) is responsible for establishing and maintaining effective plans to prepare for and respond to emergency situations. DC Water defines an emergency as, "any condition that could or has resulted in serious personnel injury or death, poses an environmental or health threat (probable legal or regulatory violation) or could cause substantial damage to DC Water's infrastructure or operations." The Emergency Management program at DC Water consists of four phases: Planning, Mitigation, Response, and Recovery. The Planning Phase occurs following an incident and before another incident. This phase includes the annual review of the Emergency Management plans and the incorporation of "after-action" reports and "lessons-learned" reports. The next phase is Mitigation which includes preventing future incidents and minimizing an incident's effects. The Response Phase consists of initial response and activities to stabilize the emergency. The final phase in the Emergency Management life cycle is the Recovery Phase. The Recovery Phase includes activities to continue essential operations in the event that critical equipment and facilities are unusable for a certain period of time that affects normal operations.

Internal Audit previously conducted an audit of the Recovery phase and issued a final report in May 2014.

The intent of this Internal Audit review was to focus on the activities and documentation associated with the Mitigation and Response Phases of DC Water's Emergency Management program. For the Mitigation Phase, the Office of Emergency Management participates in the District of Columbia's Hazard Mitigation Workgroup. As a member of this workgroup, DC Water is able to receive government funding for mitigation efforts. The Hazard Mitigation Workgroup works collaboratively to identify hazards and risks that impact or has potential to impact the District of Columbia and define a mitigation strategy to minimize the impact of future emergencies. The OEM does not have a standalone mitigation plan specific to DC Water risks and mitigation efforts.

For the Response Phase, the Office of Emergency Management administers two plans: the Emergency Management Plan ("EMP") and the *All-Hazards Initial Response Action Plan*. The EMP, which is in draft format, contains information on planning and readiness, roles and responsibilities, incident-specific procedures, recovery activities, and continuous improvement activities. The All-Hazards Initial Response Action Plan is the interim plan utilized until the final EMP is issued. This plan contains the on-site command hierarchy roles and responsibilities, initial response actions, incident level categories, and the incident management team members along with their contact information. Internal Audit reviewed the emergency response plans and activities for adequacy and completeness.

Objectives

Our overall audit objectives included an evaluation of the Office of Emergency Management's emergency response plans and activities. Specific audit objectives included:

- ❑ Assess the adequacy of the Emergency Management response plans and ensure compliance with applicable laws and regulations;
- ❑ Evaluate DC Water's preparedness to respond effectively and efficiently to an emergency;
- ❑ Ensure that emergency response training, drills, and exercises are adequate and performed regularly;
- ❑ Verify that emergency purchase protocols are properly documented and available for emergency funding and reimbursement; and,
- ❑ Assess the incident mitigation processes and procedures for adequacy and effectiveness.

Audit Scope and Procedures

This audit was conducted in accordance with the approved FY2014 internal audit plan. The audit was initiated in March 2014, completed in May 2014, and included an evaluation of the emergency response plans and activities. The audit procedures consisted of interviews with the appropriate parties, observations of daily operations, a review of pertinent documents and reports and testing of a sample of activity.

Summary of Work

Internal Audit concludes that while emergency response plans have been documented, several opportunities for improvement exist to assure a timely response to emergencies. Internal Audit identified instances of incomplete and inconsistent information within the emergency response plans.

Internal Audit has identified several items that should be addressed by management in order to better prepare DC Water to address potential hazards and to effectively and efficiently response to emergencies. In particular, there is a need to address the following:

- ❑ We noted a need to finalize the EMP and correct inconsistencies within the emergency response plans;
- ❑ The completion of all training courses by each required employee needs to be monitored and the requirements for emergency response training, exercises, and emergency drills needs to be captured in the EMP;
- ❑ We determined a need for the development of a DC Water specific mitigation plan and procedures; and,
- ❑ The OEM should develop, document and implement a consistent methodology for documenting after-action reports.

SC&H Consulting

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Joe Freiburger, CPA, CIA

II. DETAILED OBSERVATIONS & RECOMMENDATIONS

I. Need for Emergency Response Plan Maintenance		
Observation: Internal Audit noted that the EMP document has not been approved by the General Manager. The EMP remains in a draft status and is not complete. During our review of the EMP and the All-Hazards Initial Response Action Plan, we identified specific instances of inaccurate, incomplete and/or missing information within one or both of the plans. Detailed information was provided to the Office of Emergency Management. **Risk:** Incomplete, inaccurate, and inconsistent emergency response plans can adversely impact DC Water's ability to properly respond to an incident timely.	**Recommendation:** We recommend that the Office of Emergency Management finalize the EMP and submit the final version to the General Manager for review and approval. Additionally, we recommend that the Office of Emergency Management review and update the EMP and the All-Hazards Initial Response Action Plan to ensure that the information presented in both documents is accurate, complete, consistent, and in compliance with all regulatory requirements. **Business Owner(s):** Jonathan Reeves, Manager of the Office of Emergency Management	**Management's Action Plan** The EMP is currently being updated to ensure that it is complete and accurate. Once completed, the document will be submitted to the General Manager for signature and distributed to key stakeholders. **Implementation Date:** September 30, 2014

II. Specify Requirements and Retain Evidence for Training, Exercises, and Drills		
Observation: Internal Audit noted that there is not a process in place to validate that every employee has completed the EMP's annual training requirements. Paper copies of training session attendance sheets are retained, but they are not compared to a list of current employees to ensure that all employees have attended the training each year. Additionally, we noted the following regarding the EMP emergency drill and exercise requirements: • The EMP emergency drill requirements do not specify the emergency response drills that should be performed; • The EMP emergency drill and exercise requirements do not clearly define the frequency with which emergency response drills and exercises should be performed; and,	**Recommendation:** We recommend that the Office of Emergency Management work directly with Human Capital Management (HCM) to assure that all required EMP training courses are captured and that the successful annual completion of all training courses by each required employee is monitored. Further, we recommend that the Office of Emergency Management clearly define the requirements (i.e. type, frequency, and participation) for emergency response training, exercises, and emergency drills in the EMP. **Business Owner(s):** Jonathan Reeves, Office of Emergency Management Manager	**Management's Action Plan** The Office of Emergency Management will reach out to HCM for assistance in developing a process to document that all the training requirements for personnel designated in the EMP are recorded. OEM will also work with HCM to further define training requirements for staff designated in the EMP. **Implementation Date:** September 30, 2014

• The EMP emergency drill and exercise requirements do not specify the population of employees and/or contractors that are required to participate in each emergency response drill and exercise. **Risk:** The lack of proper incident response training, exercises, and preparedness drills, along with incomplete participation documentation, could result in employees and/or contractors that are unaware of their role in effectively responding to an incident.		

III. Develop a Formalized Mitigation Plan Specific to DC Water		
Observation: The Office of Emergency Management participates in the District of Columbia's Hazard Mitigation Workgroup. This workgroup works collaboratively to identify hazards and risks that can impact the District of Columbia and define a mitigation strategy to minimize or eliminate the impact of future disasters. Currently, the Office of Emergency Management does not have a DC Water specific mitigation plan or process that would identify potential causes of future incidents and risks that could worsen the impact of an incident at DC Water and then mitigate the risk, repair the condition, or improve the operating environment. **Risk:** Unaddressed risks or risk factors could increase the potential likelihood or impact of future emergency incidents.	**Recommendation:** Internal Audit recommends the Office of Emergency Management document and implement a standalone mitigation plan and process specific to DC Water that includes the following elements: • Periodically identify potential causes of future incidents and risks that could worsen the impact of an incident; and, • Define steps to mitigate the risk, repair the condition, and improve the operating environment. **Business Owner(s):** Jonathan Reeves, Office of Emergency Management Manager	**Management's Action Plan** The Office of Emergency management is active in the District of Columbia's mitigation plan that includes DC Water's response to ensure that we maintain critical operations. We can readily adapt work that has already been developed for the District's Plan to ensure that DC Water also has a standalone threat mitigation plan. **Implementation Date:** September 30, 2014

IV. Consistent Documentation of After Action Reports and Mitigation of Identified Action Items

Observation: Internal Audit reviewed completed After Action reports and found that the reports were not documented on a consistent basis. The After Action report requirements are not clearly identified in the EMP. We identified the following inconsistencies: • The EMP states that the Office of Emergency Management Manager determines whether an incident is significant enough to require an after action report. However, the EMP also states all incidents require an After Action report, whether in a form of a conversation or a full-scale report; and, • The EMP refers to an After Action report template in Appendix G, which does not exist. Further, we noted that there is not a process in place to ensure that the action items identified in the After Action reports are adequately tracked and included in the Mitigation phase of Emergency Management.	**Recommendation:** We recommend that the Office of Emergency Management clarify the After Action report requirements in the EMP. We also recommend developing an After Action report template to ensure that all the essential information (i.e. successes, failures, lessons learned, and action items) is captured on a consistent basis. Finally, we recommend that the Office of Emergency Management implement a process to ensure that the action items identified in the After Action reports are adequately tracked and included in the Mitigation phase of Emergency Management. **Business Owner(s):** Jonathan Reeves, Office of Emergency Management Manager	**Management's Action Plan** DC Water prepares an after action report for every major threat. However, we agree that the report requirements should be contained in the EMP. This would include a process revision to ensure that after actions reports are catalogued and tracked. **Implementation Date:** September 30, 2014

Risk: The lack of a consistent process to document After Action plans and include the action items in the Mitigation phase of Emergency Management could increase the potential likelihood or impact of future emergency incidents.		

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IT Disaster Recovery

Internal Audit Report

July 31, 2014

INTERNAL AUDIT TEAM

Director:	Joe Freiburger
Principal:	Scott Heflin
Manager:	Anthony DiGiulian

DC Water – 2014 Internal Audit
IT Disaster Recovery

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EXECUTIVE SUMMARY

Background

DC Water depends on information assets to support business processes and its mission. Protecting those assets directly supports the Company's mission to protect customers and the environment.

The Disaster Recovery Plan is a critical component of preparedness planning that supports DC Water's contingency planning efforts, mitigating risk resulting from unexpected adverse events as well as anticipated events with a low probability but high impact potential. The plan is part of a coordinated effort between departments with responsibility for creating and implementing Business Continuity Planning and Incident Response Planning. The plan is a critical security planning item for protecting assets and supporting the Authority's mission.

The increasing dependency on information assets (systems and data) at DC Water has created many potential risks that must be managed appropriately to ensure efficient and effective operations. Establishing an effective Disaster Recovery Plan to recover from a disaster and/or an unexpected event, and therefore allow for the resumption of continued 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.

The intent of this Internal Audit review was to focus on the activities and documentation associated with IT Disaster Recovery. The DC Water Information Technology Department administers one main plan for Disaster Recovery ("DC Water IT Disaster Response Plan" or "DRP"). The DRP contains information on the purpose, scope, responsibilities, and process of restoring critical systems in the event of a disaster. Internal Audit reviewed the DRP as well as any available DRP testing documents and assessed their contents for accuracy, completeness, and adequacy.

Objectives

Our overall audit objectives included an evaluation of the DC Water DRP. Specific audit objectives included:

- Evaluate the adequacy and completeness of DC Water's DRP;
- Determine whether the DRP is properly reviewed and updated in order to remain effective;
- Ensure that critical areas have been properly identified and addressed including:
  - identification of critical systems and functions
  - identification of critical resources
  - identification and prioritization of activities that are essential to DC Water operations
  - business impact analysis
  - designation of a disaster recovery site(s)
  - identification of DRP roles and responsibilities
  - definition of reasonable time requirements for recovery and availability of each critical system;
- Evaluate the adequacy and occurrence of tests, training, and exercises performed for recovery activities; and,
- Determine whether appropriate procedures have been established for recovery measures, and if the requirements of the DRP are being met.

Audit Scope and Procedures

This audit was conducted in accordance with the approved FY2014 internal audit plan. The audit was initiated in March 2014, completed in June 2014, and included an evaluation of the DC Water DRP. The audit procedures consisted of interviews with the appropriate parties, observations of daily operations, a review of pertinent documents and reports and testing of a sample of activity.

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Summary of Work

Internal Audit concludes that while an IT Disaster Recovery Plan has been documented, certain components are in need of improvement to assure the successful execution of the Recovery Phase. We identified instances of out-dated, inaccurate, and incomplete information in the DRP, as well as non-compliance to the current requirements of the plan.

We identified several items that should be addressed by management in order to better prepare DC Water to restore critical systems in the event of a disaster. In particular, there is a need to address the following:

- ❑ The DC Water DRP is not being thoroughly reviewed and updated on an at least an annual basis to reflect changes to the environment;
- ❑ The DC Water DRP does not include a formal testing methodology or testing exercise schedule requirements; and
- ❑ Documentation supporting the shut-down start-up tests performed, and the detailed results of those tests, were not captured and maintained on file. Additionally, evidence of post-exercise review and formal approval/sign-off indicating whether the tests were successful and the results satisfactory were not available.

SC&H Consulting
By:

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Joe Freiburger, CPA, CIA, CISA

II. DETAILED OBSERVATIONS & RECOMMENDATIONS

I. DRP Maintenance		
Observation: The DC Water Disaster Response Plan has not been updated since 2010 to accurately reflect changes in the environment. Furthermore, there is no evidence to support a formal review and approval of the Plan by appropriate members of DC Water management. **Risk:** An out-dated, inaccurate, and incomplete Disaster Recovery Plan can result in a delay in restoring critical systems following an unexpected disaster scenario.	**Recommendation:** Internal Audit recommends that DC Water IT management review, update, and present the finalized DC Water IT Disaster Response Plan to executive management for review and formal approval as soon as possible. An updated, accurate, and complete plan is a vital tool for personnel to reference following a disaster, and will help with the efficiency and timeliness of restoring critical systems. **Business Owner(s):** Thomas L. Kuczynski, CIO	**Management's Action Plan** The IT department has previously identified this as an opportunity and has a draft plan which includes annual review. We will coordinate the new DRP with our business partners to ensure expectations are meet. **Implementation Date:** October 2014

II. DRP Testing Methodology & Procedures		
Observation: The DC Water Disaster Recovery Plan does not include a formal testing methodology or testing exercise schedule requirements. As such, individual disaster recovery test procedures have not been developed and carried out for all identified DC Water critical systems. **Risk:** 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 some systems and IT infrastructure components required for the continuity of operations in the event of a disaster. As such, ineffective or failed recovery procedures may not be identified and corrected prior to an actual disaster scenario requiring restoration of DC Water critical systems.	**Recommendation:** We recommend that DC Water IT management update the current draft version of the DRP to include a formal testing methodology for all critical systems, including: • clearly defined tester roles and responsibilities • testing schedules that include defined periods of testing • detailed test procedures • requirements for approval Once the testing methodologies and testing exercise schedule have been defined, DC Water IT management should facilitate testing of all identified critical systems to ensure each can be recovered following an unexpected disaster scenario. **Business Owner(s):** Thomas L. Kuczynski, CIO	**Management's Action Plan** The IT department concurs with this finding. While the team has been able to implement and recover from outages affecting business systems, we recognize an area of opportunity to improve our process documentation. We will be adding specific test scenarios to the DRP. **Implementation Date:** October 2014 - complete updates to plan On or before September 2015, conduct DRP simulation

III. DRP Testing Support & Post-Exercise Review		
Observation: Limited shutdown-startup tests over DC Water's VoIP, various databases, network servers, and certain applications were performed in December 2013 in accordance with the COF Datacenter Shutdown-Startup Test Procedures document. Various test procedures and maintenance schedules were developed prior to tests performed, and the status of testing was tracked via e-mail. However, documentation supporting the specific tests performed and the detailed results of those tests were not captured and maintained on file. Additionally, there is no evidence of any post-exercise review and formal approval/sign-off indicating whether the tests were successful and the results satisfactory. **Risk:** By not formally documenting detailed results from DRP critical systems testing, DC Water management may not be able to verify that	**Recommendation:** In order to ensure disaster recovery testing is completed and results appropriately documented for all critical systems, DC Water IT management should require detailed documentation, post-exercise issue management, and formal sign-off indicating successful completion of DRP testing procedures. 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, post analysis, and approval of the results. **Business Owner(s):** Thomas L. Kuczynski, CIO	**Management's Action Plan** The IT department has developed a centralized repository for approved test scripts and results. Post exercise issue management and resolution will be embedded in our Plan of Action and Milestone (POAM) process. The Management Team will approve, create and/or update test plans and ensure roles and responsibilities are identified. **Implementation Date:** October 2014

the tests yielded successful results that are indicative of the successful recovery of critical systems required for the continuity of operations in the event of a disaster. Furthermore, DC Water management may not be able to determine if any corrective action needs to be taken for any problems or issues incurred during disaster recovery testing. Post-exercise review often does not occur in instances where detailed test procedures and results are not readily available. As such, the DRP may not be appropriately updated following test scenarios.		

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dc water is life

IT Asset Management

Internal Audit Report

September 10, 2014

INTERNAL AUDIT TEAM

Director:	Joe Freiburger
Manager:	Russell Ojers
Associate:	Dominic Usher

DC Water – 2014 Internal Audit
IT Asset Management

SC&H GROUP, LLC

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EXECUTIVE SUMMARY

Background

As a major utility, 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 its role in supporting day-to-day operations from multiple computer systems, platforms and applications, the DC Water IT Department is responsible for deploying technology to reduce complexity, 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 DC Water IT Department supports the organization through its management of approximately 3,000 IT Service Center ("ITSC")-supported assets. These assets include items such as desktop computers, laptops, monitors, printers and handheld tablets. The IT Department also manages and maintains approximately 500 IT Network assets, such as servers, storage devices and universal power supplies. The complete and accurate identification, tracking and safeguarding of these IT assets is critical to the success of the DC Water's IT Department in supporting the mission and goals of the organization.

The IT Department has previously contracted with two outside vendors in order to obtain an accurate listing of all IT assets, as well as detailed descriptions of their location, and also to identify IT assets that are no longer deployed on-site. Once an accurate list was provided, IT implemented a new IT asset management database, named PASSPORT. The implementation of the new PASSPORT IT asset management database occurred in April, 2014. Along with the new asset management database, the IT Department also revised their internal procedures to include activities designed to assure the safeguarding and tracking of IT Assets. The revised procedures included periodic inventory checks to verify deployed assets, and the addition of two-art asset tags that allow for the cataloguing and tracking of IT assets.

Objectives

The purpose of our review of the IT Asset Management process was to validate the effectiveness of the implementation and use of the PASSPORT IT asset management database, as well as the additional internal controls that were implemented and/or revised since the last full physical audit completed in December, 2013.

Our overall audit objective was to evaluate the effectiveness and efficiency of the IT asset management program. Specific audit objectives included:

- To verify that an accurate inventory listing of IT assets was being maintained;
- To verify the adequacy of the process with respect to properly receiving all IT;
- To validate whether issuances, transfers and returns of IT assets are properly documented and approved;
- To verify that the disposal of IT assets is properly documented and approved;
- To determine whether IT assets are appropriately physically inventoried on a periodic basis; and,
- To assess whether IT assets are adequately safeguarded.

Audit Scope and Procedures

This audit was conducted based on the approved FY2014 internal audit plan. The audit was initiated in June, 2014 and completed in August, 2014. The audit included an examination of the overall effectiveness of the IT Departments' implementation of a new IT asset management inventory system, and the adequacy of the related controls. The audit also included an evaluation of the processes and procedures of the IT Department around the management of IT desktop and network assets. The audit process included interviews with appropriate members of the Information Technology department and applicable personnel within other departments; a review of selected documents and reports, and observations of relevant activities.

Summary of Work

We have concluded that the IT department has begun to make the changes necessary to ensure that an accurate record of their assets is available; however, opportunities to improve the controls and processes around the management and safeguarding of the IT assets remains.

We have identified several items that should be addressed by management in order to further strengthen the IT Department's management of IT assets. In particular, there is a need to address the following:

- Segregate the IT asset management duties that are currently being performed by the ITSC Manager;
- Review available IT asset management database reporting, and implement a process to reconcile each asset-related ITSC service ticket to a completed property pass on a periodic basis;
- Revise the current method of conducting ad hoc and quarterly IT asset inventory physical counts to ensure that blind counts are used as a way to validate the location of IT assets deployed to end users in the field;
- Ensure that all ITSC service tickets and completed property passes are properly retained;

- Ensure that access to DC Water IT assets is limited to the appropriate authorized individuals;
- Develop and implement a comprehensive training program and corresponding end-user manual to assure that IT personnel are appropriately trained to utilize the IT asset management system; and,
- Update and improve the IT asset management procedure documents to ensure they provide adequate detail for each of the procedures outlined.

SC&H Consulting

By:

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II. DETAILED OBSERVATIONS & RECOMMENDATIONS

I. Segregation of Duties		
Observation: We noted a lack of adequate segregation of duties in regards to the activities performed related to IT asset management. Through interviews with Management and the performance of a detailed walkthrough, we identified that the Information Technology Solution Center (ITSC) Manager has the following accesses and responsibilities: • Ordering IT assets; • Receiving IT assets; • Tagging IT assets; • Entering new IT assets into the IT asset management system; • Issuing IT assets; • Performing inventory counts; • Disposing of IT assets; and, • Approving IT asset invoices for payment. **Risk:** Failure to properly separate these duties could result in the misappropriation of DC Water IT assets.	**Recommendation:** We recommend that IT Department management segregate the IT asset management duties that are currently being performed by the ITSC Manager. Additionally, IT Department management should ensure that some steps in the IT Asset Management process are performed by individuals that do not have physical access to the IT assets. The steps to be segregated from the IT assets should include: • Ordering IT assets; • Entering new IT assets into the IT asset management system; • Disposing of IT assets; and, • Approving IT assets for payment. Further, IT Department management should specify the positions that should be responsible for each of the various functions in detailed, updated SOP documents and ensure that employees' responsibilities are appropriately segregated.	**Management's Action Plan:** Management agrees that separation of duties is an effective control for managing assets. A number of options exist for achieving this goal, as it relates to IT assets, including creating an independent Asset Management role in either IT or Accounting or utilizing the Materials Management process to receive and manage new and deposed assets. Until DC Water management can evaluate these alternatives and select an approach, the following functions will be performed by the IT Logistics staff. Tagging IT assets Entering new IT assets into the IT asset management system Approving IT asset invoices for payment. Procurement will be responsible for verifying the "to be disposed" assets and will coordinate the PDA process. **Implementation Date:** October 1, 2014

Improper segregation of duties could also result in DC Water paying for IT assets that were not received by the organization.		
Observation: We noted that packing slips received when IT assets are delivered are not being signed by the IT/DC Water employee who physically receives them. Packing slips are attached to the package and are used to validate that the items received by the recipient match the items that were originally shipped by the vendor. The ITSC scans the packing slips and saves them electronically, but they are not being utilized to perform a three-way match with the Purchase Order and the Invoice, or for any other purpose. **Risk:** Failure to obtain and retain appropriate evidence identifying the personnel receiving IT assets could result in a lack of appropriate segregation of duties. Lack of appropriate segregation of duties could result in the potential misappropriation of DC Water IT assets.	**Recommendation:** We recommend that IT Department management assure that packing slips are signed by the IT/DC Water employee who physically receives the package. A signed digital copy of the packing slip should be retained and should also be forwarded to someone independent of the IT asset receiving process for use in a three-way match where the purchase order, invoice and packing slip are agreed to each other prior to approving payment for the order.	**Management's Action Plan:** Although IT has not signed packing slips the slips are maintained, As part of the changes to separate duties IT will also require that the individual receiving assets signs the packing slip and sends it to the individual who will enter the items into inventory. The packing slip will be validated against the PO and the PO and packing slip against the invoice prior to payment. IT will sign and date packing slips and retain a digital copy. **Implementation Date:** October 1, 2014

II. Monitoring and Reporting		
Observation: We noted that IT Department management is not currently reviewing available PASSPORT reporting that could potentially detect unauthorized movements of IT assets within the IT asset management system. The PASSPORT IT asset management system includes the capability to produce reports that identify all movements of assets within PASSPORT during a specified period of time, as well as all equipment that was placed into a "disposed' status. The reports that are available also include the identity of the user that entered each movement. This would allow IT Department management to compare all IT asset movements within the asset management system to corresponding Property Passes, or to approved property disposal forms, in order to identify unauthorized movements of IT assets within the IT asset management system.	**Recommendation:** We recommend that IT Department management review available PASSPORT IT asset management system reporting on a periodic basis. • A report of asset movement within the asset management system should be compared to the completed ITSC tickets and signed property passes to assure that all movements were authorized, and that all ITSC tickets were correctly completed. • A report of all IT assets moved into "disposed" status in the IT asset management system should be compared to approved property disposal forms to assure that all IT assets approved for disposal were properly moved out of the IT asset management's active inventory, and that no assets were moved into the disposal status without proper authorization.	**Management's Action Plan:** IT management will review all moves on a monthly basis to ensure appropriateness of any changes in locations of IT assets. The final recommendation can only be accomplished by someone outside of IT. IT will forward copies of the moved asset list to Accounting & Finance for review and filing. **Implementation Date:** October 1, 2014

Risk: Failure to appropriately monitor the movement of IT assets within the PASSPORT IT asset management system could result in unauthorized movement of assets and equipment, and the potential misappropriation of DC Water IT assets.	Additionally, we recommend that these reports are reviewed by someone that does not have access to the IT asset inventory or to the IT assets, to assure proper segregation. The reports should then be appropriately retained.	
Observation: We noted that there is not currently a process in place to agree the ITSC service tickets opened to initiate the movement of an IT asset with the corresponding, completed property pass. This reconciliation would allow IT Department management to ensure that all requests for adds/changes/deletes of IT assets correspond to a completed property pass, and that all completed property passes correspond to a record of the request, entered as an ITSC service ticket. **Risk:** Failure to appropriately monitor the movement of IT assets within the PASSPORT IT asset management system could result in unauthorized movement if IT assets and equipment, and potentially the misappropriation of DC Water IT assets.	**Recommendation:** We recommend that IT Department management design and implement a process to reconcile the ITSC service tickets to the corresponding, completed property passes on a recurring basis.	**Management's Action Plan:** IT records the ITSC ticket number on all property passes for reference and reconciliation. The ticket number will be entered into the Asset database. In addition, a copy of the property pass will be attached to each ticket. **Implementation Date:** October 1, 2014

III. Inventory Counts		
Observation: Ad hoc and quarterly IT asset inventory counts are not "blind" counts. Instead, the employees responsible for counting are given lists of assets from the PASSPORT IT asset management system that are supposed to be present at each location. The employees are then asked to verify whether each IT asset was found. The employees note whether each listed asset is present, and return the count sheets. If there are listed assets that are not accounted for, the IT department will follow up with the employee and RPO. Additionally, the count sheets used in the ad hoc and quarterly IT asset inventory counts are not retained on a consistent basis. **Risk:** Ineffective inventory count procedures could result in the misappropriation of IT assets, as well as diminished accuracy of the IT asset inventory record.	**Recommendation** We recommend that IT Department management revise the current method of conducting ad hoc and quarterly IT asset inventory counts to ensure that blind counts are used as a way to validate the location of IT assets deployed to end users in the field. Under this method, IT personnel responsible for conducting the counts are given a location(s), or a user(s) and asked to note every IT asset that they locate. The list produced by the IT personnel is then compared to the record of assets assigned to that specific location(s) or user(s). Any discrepancies are then investigated and resolved by a second employee. All IT assets that cannot be located are escalated to IT Department management, as well as the management of the department in which the IT assets are assigned. Additionally, we recommend that Management retain evidence of ad hoc and quarterly IT asset inventory counts after the counts are completed.	**Management's Action Plan:** IT does not believe that conducting blind counts as part of its random check of assigned assets increases the likelihood that discrepancies will be found at the individual assigned user level. However blind counts of unassigned assets can be an effective way to ensure that inventory is accurate. As a result IT will conduct periodic blind counts of all assets in inventory. **Implementation Date:** January 1, 2015. An annual physical inventory, by an independent 3rd party is scheduled to start in October 2014.

IV. Data Consistency and Completeness		
Observation: We noted that the ITSC retains electronic copies of documentation such as packing slips, resolved ITSC service tickets, and Property Passes (which provide evidence of the receipt or movement of IT assets); however, the department does not have a consistent methodology in place to name and organize these documents so that specific documents can be readily located, when needed. Rather, these files retain the automatically generated file name they are assigned when the original documents are scanned and saved, and they are saved in large, general, electronic folders. During our detailed walkthrough, we selected an IT asset and requested the completed property pass as evidence of the effectiveness of the control. The ITSC Manager was unable to locate the saved copy of the completed property pass. We also noted that IT tickets are not generated for the deployment of IT Network assets on a consistent basis.	**Recommendation:** We recommend that IT Department management ensure that property passes, ITSC tickets and other retained documents are adequately named and organized so that specific documents can be readily located, when needed. Further, IT Department management should ensure that all ITSC service tickets and completed property passes are properly generated, completed and retained. The implementation of these recommendations would facilitate the reviews recommended in **II. Monitoring and Reporting**, above.	**Management's Action Plan:** IT concurs. **Implementation Date:** IT has already implemented these recommendations.

IT should ensure that tickets are always generated for the movement of IT assets, so that there is a record of the request to move assets that can be retained as evidence of the movement, and reviewed by management for appropriateness. **Risk:** Failure to establish, name, organize and retain appropriate records around the movement of IT assets could result in their misappropriation.		
V. Safeguarding of IT Assets		
Observation: We noted that some IT assets are currently being stored in the Blue Plains warehouse. Specifically, we noted some desktop computers, monitors and uninterruptable power supply (UPS) units that are being stored on the second floor loft area of the warehouse. IT assets should not be stored in any areas where non-IT personnel would have access to the assets.	**Recommendation:** We recommend that Management ensure that access to DC Water IT assets is limited to the authorized IT personnel. We further recommend that IT assets are adequately safeguarded against theft, as well as against detrimental effects of environmental conditions.	**Management's Action Plan:** The situations described in the observation was temporary and forced upon IT when the old warehouse was closed for renovation. IT was forced to move everything from the old location in 4 days and moved the majority of the existing inventory into 2 secured locations in COF and the IT building. The equipment identified in the observation was move to the new BP warehouse because there was no other location to move it to at the time. As a result no action is required on this recommendation.

Additionally, through a separate review we have identified that the Blue Plains warehouse does not have the appropriate security measures to prevent or detect improper activities including theft. Further, the Blue Plains warehouse is not climate controlled, and IT assets stored in the warehouse could be adversely impacted by changes in the environment. Please refer to the *Warehouse and Materials Management* audit report for additional information regarding the observations around the physical security of the Blue Plains warehouse. **Risk:** Failure to appropriately protect IT assets could result in the misappropriation of DC Water IT assets.		**Implementation Date:** N/A

VI. Training		
Observation: We noted that while the IT department has implemented the new PASSPORT IT asset management system, the ITSC and Network personnel assigned to use it are not proficient in all aspects of the new system. We further noted that IT Department management does not maintain training materials for the PASSPORT IT asset management system. **Risk:** Inadequate training of IT personnel on the new PASSPORT IT asset management system could result in an inaccurate record of IT assets, and could also increase the likelihood that IT assets are misappropriated.	**Recommendation:** We recommend that IT Department management develop and implement a comprehensive training program and corresponding end-user manual to assure that IT personnel are appropriately trained to utilize the IT asset management system. The training manual should include detailed procedures for all asset management functionalities utilized by the IT department. This will allow all ITSC and Network personnel to use the PASSPORT IT asset management system competently and should facilitate the segregation of duties among a larger group of ITSC staff.	**Management's Action Plan:** Training is provided by the application provider as part of our scope of services. All relevant personnel have completed training. IT will ensure that all new personnel requiring training complete the necessary training before being given access to the system. **Implementation Date:** Complete

VII. Standard Operating Procedures		
Observation: We noted that the IT asset management procedure documents created and/or updated by IT Department management do not provide an adequate level of information or detail. IT management has developed the "Hardware Inventory Standard Operating Procedures" for the procedures around the new PASSPORT IT asset management system; however, the procedures appear to be described at a high level and lack detailed step-by-step instructions that would allow reliance on the document for the re-performance of the described steps, if needed. **Risk:** Failure to maintain detailed, comprehensive procedure documents around the PASSPORT IT asset management system could result in process inconsistencies and/or inaccuracies – especially in the event of employee turnover.	**Recommendation:** We recommend that IT Department management update and improve the PASSPORT IT asset management procedure documents to ensure that they provide adequate detail for each of the procedures outlined. The purpose of the document is to allow someone else to be able to perform the procedures described, so the department is able to maintain a continuity of operations in the event of employee turnover or the reassignment of duties. The ITSC and Network groups in the IT department should create process documents outlining each of the procedures related to the use of the PASSPORT IT asset management system, as it applies to their specific assets, including:	**Management's Action Plan:** IT will update its process and procedures manual to include detailed process flows for all aspects of the Asset Management process. **Implementation Date:** January 1, 2015

	• Receiving IT assets from outside vendors; • Entering the assets into the IT asset management system; • Tagging new assets; • Issuing IT assets to end users; • Transferring IT assets from one employee to another; • Collecting IT assets from the field; and, • Disposing of IT assets. Process documents should identify the IT/DC Water positions responsible for performing the steps associated with each process, and should adequately define the necessary steps needed to complete each process – including the acquisition of proper approvals and the retention of appropriate documents.	

Geographic Information Systems
Internal Audit Report

June 23, 2014

Internal Audit Team

Director: Joe Freiburger

Manager: Rebecca Jordan

Associate: Kaitlin O'Hara

SC&H GROUP, LLC

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EXECUTIVE SUMMARRY

Background

Geographic Information Systems (GIS) are utilized by Water and Wastewater authorities to capture, store, manage, analyze, and present geographically referenced information. The GIS keeps track of distribution, collection, and drainage networks by mapping underground features such as water and sewer mains and valves and some above ground features such as fire hydrants and manholes. By capturing and storing the various details of the infrastructure assets, users of the GIS have the ability to see the asset's spatial location and its distinct attributes (e.g. a pipe's material, length, diameter, and age). DC Water currently utilizes one of the leading GIS software platforms, ESRI. Within DC Water, there are two groups with responsibility for the GIS; Information Technology, which is responsible for maintenance of the software and development of the various GIS applications; and GIS Asset Mapping (within the Department of Engineering and Technical Services (DETS)), which is responsible for building the information stored in the GIS system. Information within the GIS is used by various departments to make decisions, such as Water and Sewer Services maintenance crews, Permit Operations, and the Design and Planning branches of DETS.

DC Water's GIS efforts began in 2008 with the digitization of existing counter maps which was outsourced and performed by consultants. Some of the counter maps were outdated and therefore inaccurate. Also, the various counter maps used contained different levels of detail and scale resulting in inconsistent data and an incomplete network. The transfer process utilized resulted in spatial and attribute inaccuracies, with assets located multiple feet away from their actual locations in the GIS. Information Technology (IT) did the initial review to ensure the pipes were all connected; however, at completion of that effort the database was not considered accurate or complete. The majority of features within the GIS are set to the information source and location precision of "Counter Maps - DETS", representing the edits resulted from digitization of the counter maps. IT was responsible for the maintenance, updates, and quality control of the GIS until the GIS Asset Mapping group was created within the Design branch of DETS in 2011. The transition of control took place over the next two years, whereas now the GIS Asset Mapping group has the task of creating, updating, maintaining, and quality control of the information within the GIS and IT is responsible for the GIS infrastructure, software maintenance and creation of applications.

Updating the features of the GIS is a meticulous process, which requires multiple fields to be filled out for each feature that is only made easier through the quality of data received by the GIS Asset Mapping group. Since the group's inception, they have developed internal procedures to ensure consistent updates by creating Database Design Dictionaries for both the Water and Sewer systems which details the required fields for each feature, what distinct characteristics should be input, and to accurately update the individual fields within the GIS. Two key fields, information source and location precision, are key to analyzing the quality of information within

the GIS. While making edits to the GIS, the GIS Asset Mapping group updates the accuracy based on information sources that are more current and reliable than the counter maps, such as "Records-As-builts", "Records - plans," "Inspections," or "Field." They also update the location precision from counter maps to a more exact location, such as "Records - As-builts," "Records - Plans," or "Field Survey." The more features in the GIS that are updated from the information source and location precision of "Counter Maps", the more accurate and reliable the information within the GIS will be.

The focus of this internal audit was on understanding the history, purpose, goals and objectives of the GIS, and on the daily operations of the GIS Asset Mapping group; thus offering commentary on its effectiveness. The responsibilities of the other Departments and their role in the GIS process have not been clearly defined, however, addressing these relationships is important to the success of the overall GIS as will be explained. Currently, the GIS Asset Mapping group is responsible for creating, updating, and maintaining the information within the GIS to record changes to or correct discrepancies noted in the existing data. They are alerted of these changes through four main types of design and as-built information:

1. Construction projects to be performed by DC Water contractors
2. Construction projects to be performed by District Department of Transportation (DDOT) contractors
3. Construction projects to be performed by residential and commercial developers
4. Maintenance and repair projects performed by Water and Sewer Services crews

While there is a process to capture the various construction projects being planned and built throughout the District, there is no standard process to capture changes made by or discrepancies noted by the Water and Sewer Services maintenance crews. Further, since the GIS Asset Mapping group is depending on various external resources for information (e.g. DDOT, developers) it is difficult to get the information in a timely or consistent manner.

Documentation comes into the GIS Asset Mapping group through electronic or hard-copy documents and comes in various formats such as planning documents, as-builts, sketches, final inspection forms, and discrepancy reports. Proposed features are entered as dashed lines using different colors than projects that are completed so that viewers can be aware of upcoming/ ongoing projects. When documentation is received, it is logged into an internally developed Access database and assigned to a GIS technician. The technician may be able to enter the update or change or they may have to do additional research to determine the accuracy of the documentation received or conversely, the accuracy of the existing information in the GIS. In some cases, a request is made to the Survey group of DETS to verify the accuracy and location precision of certain features in the field. Upon receipt of the updated survey documentation, the technician can complete their edits. Once the update is made to the GIS, the GIS supervisor is responsible for quality control process ensuring the edit is logical, accurate and complete before the change is posted to the version of the GIS that is viewable by users.

The access database is utilized to track each assignment and can also be used to report on the number of GIS projects that are open (backlog), assigned, or completed in a time frame. The current backlog is divided into two sections; changes that occurred prior to January 1, 2011 (i.e., the formation of the GIS Asset Mapping group) and changes that occurred after January 1, 2011. Changes that have occurred since January 1, 2011 are considered priority over changes that occurred prior to that date. Further, each of those categories are broken down into two sub-categories; "As-built" edits representing final, completed projects, and "Design" edits representing plans that were submitted to DC Water or projects that are not yet completed. As-builts are deemed higher priority as these represent the current state of the infrastructure; while design edits could be at various stages in the project or could have been abandoned.

Internal Audit was made aware of a report issued by consultants, EMA, that was issued in July 2012 titled "Current IT Situation in Support of the Asset Management Program." This outlined various gaps in the current asset management program including the GIS that need to be addressed. Since the issuing of that report, many initiatives have been launched, including the recent hiring of CH2M Hill to spearhead changes to the asset management program, the continued roll-out of mobile technology to field crews, and the upcoming GeoWorx sync for Maximo which will allow bidirectional syncing between ESRI GIS and Maximo.

Objectives

The overall audit objective was to evaluate the effectiveness and efficiency of the operations and activities surrounding the GIS as well as to ensure compliance with industry best practices. Specific audit objectives were:

- To ensure that GIS processes are in compliance with established DC Water Policies and Procedures, as well as applicable laws, regulations, and industry best practices/standards;
- To ensure the data associated with the GIS are updated timely, accurately, and consistently;
- To ensure that GIS activity is done in a manner to effectively support DC Water strategic goals and objectives and to examine the adequacy of system attributes and outputs;
- To ensure communication between departments and users of the GIS is effective and efficient and that an appropriate training program exists; and
- To ensure that GIS projects are appropriately monitored and managed and that a sufficient quality control of GIS projects is in place.

Audit Scope and Procedures

This audit was conducted as a part of the approved FY2014 internal audit plan. The audit was initiated in April 2014 and completed in June 2014. While Internal Audit had initial meetings with IT, the focus of our audit was on the GIS Asset Mapping group. A subsequent internal audit of the IT processes will begin in August 2014. The audit included an evaluation of the physical controls, as well as the processes and procedures of the GIS Asset Mapping group. The audit process included interviews with the GIS Asset Mapping Group, as well as appropriate

personnel of the Information Technology (IT) group, the Engineering department, and Consumer Services. The audit process also included substantive testing of a sample of updates made in the GIS. Emphasis was placed on the identification of risks that could adversely affect the GIS system and the efficient performance of activities surrounding use and update of the GIS.

Summary of Work

Internal audit concludes that the GIS Asset Mapping group updates the GIS accurately and efficiently when the appropriate information is provided to their group in a timely manner. Further, Internal Audit concludes that the internal controls surrounding the operational aspects of the GIS Asset Mapping group are effective. However, we noted that overall, the GIS is ineffective and underutilized due to the inaccuracies within the GIS. The inaccuracies in the Counter Maps were carried over to the GIS, and since the conversion known errors have not been communicated to the GIS Asset Mapping group consistently or timely. This has resulted in the people and groups who need to use the GIS to mistrust its information and therefore not utilize it. For the GIS to truly be effective, information quality needs to be substantially improved at a faster pace.

On a macro level, time and monetary resources have been allocated to this system without specific goals, objectives, or a strategy/long-term plan being set by DC Water Management. Further, there has been insufficient analysis of success or failure of initiatives and investments made. On a micro level, since the inception of the GIS Asset Mapping group, they have developed a process, a tracking database, detailed instructions for editing both water and sewer features, and quality control measures to ensure edits made to the GIS are accurate and timely in regards to when they were received. Since the group is reliant on other groups internal and external to DC Water for information, they can only input the information that is made available to them. While they are successful in editing current changes to the infrastructure, the strategy to correct the inaccuracies in the existing infrastructure is limited to correction of errors discovered during the normal course of work. With DC Water's increased focus on Asset Management, DC Water Management needs to decide what the goals and objectives of the GIS will be, and what continued investment there will be in enhancing the data integrity of the information stored within the GIS to increase user's confidence.

The GIS Asset Mapping group effectively tracks and updates infrastructure asset changes that they are made aware of in the GIS. Further, the GIS Asset Mapping group has adequate controls in place to ensure updates made to the GIS are timely and accurate upon their receipt of final documentation.

Furthermore, Internal Audit has identified some areas that should be addressed by DC Water management in order to further strengthen DC Water's GIS Asset Mapping group's operational processes. In particular, there is a need to address the following:

- Lack of enterprise-wide goals, objectives and strategies for the GIS at DC Water;
- Inconsistent flow of information to the GIS Asset Mapping group;
- Undefined procedure for flow of information from Water and Sewer Services Maintenance crews to the GIS Asset Mapping group;
- Incomplete internal policies and procedures for the GIS Asset Mapping group; and
- Inadequate communication between IT, DETS, Water Services and Sewer Services.

SC&H Consulting

By:

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Joe Freiburger, CPA , CIA

III. DETAILED OBSERVATIONS AND RECOMMENDATIONS

I. Goals, Objectives, and Strategy of GIS		
Observation: Goals, objectives and strategies for improving the accuracy of GIS information exist at the GIS Asset Mapping group level. However, an enterprise-wide strategic plan related to the GIS at DC Water does not currently exist. Further, the responsibilities of the other Departments and their role in the GIS process have not been clearly defined by DC Water Management and addressing these relationships is important to the success of the overall GIS as will be explained. The GIS Asset Mapping group is updating changes as they are received, focusing on projects that were completed or edits that were discovered since January 1, 2011 (i.e. the formation of the GIS Asset Mapping group). Projects completed prior to January 1, 2011 are maintained in a backlog until the current projects are completed. While the GIS Asset Mapping group is able to efficiently handle the current flow of information, the overall accuracy of the	**Recommendation:** DC Water Management should document a strategic plan for the GIS including a plan to increase the overall accuracy of the information maintained within the database. Further, the roles and responsibilities of the other Departments needs to be defined and documented. To effectively and efficiently capture information to increase the accuracy of information within the GIS, DC Water Management should consider hiring additional survey teams with the goal of surveying the entire District over a three to five year period. Without a significant investment in the integrity of data, information within the GIS will not be reliable or relevant to users and reporting out of the GIS will continue to be inaccurate and ineffective.	**Management's Action Plan:** TBD… **Implementation Date:** MM/DD/201Y

data in the GIS is not increasing substantially to increase user's confidence. **Risk:** Without a strategy and goals to increase the overall accuracy in the GIS, DC Water will not be able to utilize the GIS for its purpose or to its potential. Further, continuing to house inaccurate data in the system could result in ineffective planning and reporting, and could adversely affect decision-making.		
II. Improve Flow of Information within DETS		
Observation: The GIS Asset Mapping group has a procedure to capture changes that are being made to the infrastructure within the District from various groups in Engineering such as Construction and Permits. However, the information is often not received timely or completely, and could be received in various formats. Currently, the GIS Asset Mapping group is working with any information they are able to receive, but would	**Recommendations:** Once the roles and responsibilities of the groups and departments outside of the GIS Asset Mapping group are defined and documented, the Asset Mapping group should define key contacts for each group or department. Then, the GIS Asset Mapping group should assist in developing and documenting distinct processes and procedures for each flow of information.	

be able to increase accuracy more timely and efficiently if the workflow of information improved. **Risk:** Inaccurate data and untimely edits in the GIS could result in users lack of confidence in the resulting information represented in the GIS. Further, inconsistency in the format received could result in the inability to effectively update the system accurately and to allocate necessary resources to ensure edits can be made timely.	Additionally, they should develop templates or forms for each classification of GIS edits to ensure information is consistently captured in a format that is easy to use. Further, to ensure plans and as-builts are received as quickly as possible; timelines should be established and agreed upon with key process owners.	
III. Procedure for GIS Edits related to Water and Sewer Maintenance		
Observation: There is no established policy in place that documents how to gather information from both Water Services and Sewer Services. Each group periodically discovers discrepancies or makes changes to attributes of the water and sewer distribution systems while performing their maintenance and repair work. For discrepancies noted during repair work, there is currently a form on the intranet, the GIS	**Recommendation:** The GIS Asset Mapping group should provide assistance to create the procedures that would be most efficient and effective for the Water and Sewer Services maintenance crews to communicate both discrepancies noted and changes made to system attributes. The draft procedure should be approved by all affected departments, including key contacts from both Water and Sewer Services.	**Management's Action Plan:** TBD… **Implementation Date:** MM/DD/201Y

Discrepancy Reporting, that allows users to report whether "Information is Missing in GIS" or if "Information in GIS is incorrect" in the water and sewer systems. However, the existence and use of the form has not been formally communicated and the accompanying procedure has not been developed. For changes made to attributes in the water and sewer systems, there is no procedure or form to communicate these changes to the GIS Asset Mapping group. **Risk:** Without an effective mechanism to capture information discrepancies in the water and sewer systems, the accuracy and integrity of the data within the GIS continues to be inaccurate and will continue to affect the maintenance crews ability respond effectively and efficiently to customer calls thereby reducing productivity and increasing costs.	{Note: *The following recommendations relate specifically to Water and Sewer Services. Management should work with Water and Sewer Services to ensure these changes are implemented to ensure the success of the GIS.*} To ensure all relevant changes are captured and communicated to the GIS Asset Mapping group, both Water and Sewer Services should develop a report on a weekly basis that captures changes made in the water and sewer distribution systems. The report should be customized to show only the work orders that would be relevant to the GIS Asset Mapping group. It should be noted that Maximo inputs may need to enhanced in order to meet the information needs of the GIS Asset Mapping group. The GIS Asset Mapping group should identify, document, and communicate the required inputs and attachments that will be beneficial to their operations. Further, to ensure the success of this	

	procedure, buy-in must be obtained from all affected parties from Management to Foremen to Workers. A culture change needs to be enforced requiring workers to check the GIS - not their counter maps - before commencing fieldwork so they can see what is currently documented in the GIS so they can report discrepancies noted in the field. Additionally, a contact(s) in each department (Water Services and Sewer Services) should be identified if the GIS Asset Mapping group has any questions related to the Maximo Report.	
IV. Internal Department Policies and Procedures		
Observation: The GIS Asset Mapping group has detailed procedures for how to complete the various fields of the GIS known as the Database Design Dictionary for Water and Sewer. They also have detailed procedures for certain operational processes. However, Internal Audit noted certain key processes did not exist or were not finalized including:	**Recommendation:** We recommend that Management implement formalized policies and procedures to ensure consistency with and adherence to established processes. These policies and procedures should focus on key business practices and functions that are fundamental to the group's successful operation including areas such as roles and responsibilities (including backups	**Management's Action Plan and Implementation Date:**

• Departmental roles and responsibilities (including segregation of duties and backups) • Maintenance of the Access database • Quality Control measures of edits • Prioritization of incoming edits **Risk:** The lack of formalized policies and procedures may prevent Management from establishing appropriate internal controls and may allow for inconsistent practices across the department, or adversely affect the timely communication of changes to established policies and procedures.	and key segregation of duties), maintenance of the Access database, quality control, and prioritization of incoming documents. These policies should be approved by Management and distributed to all departmental staff and updated at least annually.	
V. Communication		
Observation: The GIS Asset Mapping group is not always included in key business decisions or initiatives that directly involve their daily operations. For example, applications are created by IT to serve a direct purpose, such as the valve app for Water Services or the catch basin app for Sewer Services. However, with input from GIS Asset Mapping group, the applications could serve a dual purpose such as providing key information	**Recommendation:** A committee should be created by DC Water management to ensure an open flow of information between all relevant parties. Supervisory members of Water Services and Sewer Services should be included as well as key contacts within Engineering, such as Permits and Construction, and Information Technology. The committee chair would be responsible for scheduling at least quarterly	

about attributes and locations of valves or catch basins. Further, there appears to be a perception that the GIS Asset Mapping group does not make timely or accurate changes to the GIS. However, results of Internal Audit testwork showed that the GIS Asset Mapping group in both responsive and meticulous in their updates to the GIS. **Risk:** Lack of communication could adversely affect the GIS Asset Mapping group's ability to efficiently and effectively edit information within the GIS.	meetings with the participation of GIS Asset Mapping and developing the agenda for each meeting to ensure key initiatives are discussed and allowing open communication between departments to alert GIS Asset Mapping of any upcoming or completed projects. This would also be a forum for GIS to alert users of their business practices and performance measures. Further, as the Asset Management initiative continues to expand, GIS Asset Mapping should be involved to ensure GIS ideas and concerns are appropriately considered. The GIS Asset Management group should be informed and consulted on manners affecting the water and sewer distribution systems including the overall DC Water Asset Management initiative to ensure efficient and effective communications.	

Outside Contractor Management – Part 2

Internal Audit Report

July 22, 2014

INTERNAL AUDIT TEAM

Director:	Joe Freiburger
Manager:	Russell Ojers
Associate:	Dominic Usher

DC Water – 2014 Internal Audit
Outside Contractor Management – Part 2

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EXECUTIVE SUMMARY

Background

DC Water engages the services of a variety of outside vendors and procures their services through a contractual arrangement. The Procurement Department of DC Water has established guidelines for entering into agreements with outside firms. While DC Water's Board of Directors has the ultimate responsibility for the enforcement and implementation of Procurement Regulations, the General Manager is the Chief Contracting Officer for DC Water. The General Manager is authorized to enter into, administer, terminate and otherwise manage contracts for outside contractors. Additionally, the Director of Procurement is delegated administrative authority to administer the procurement of all goods and services contracts. The authority to administer specific aspects of the contracts, monitor contract terms and ensure the contracts are carried out appropriately is delegated by the General Manager to Contracting Officer's Representatives ("CORs") or Contracting Officer's Technical Representatives ("COTRs"). The General Manager, with the assistance of the CORs and COTRs, is responsible for the management of 134 goods and services contracts totaling approximately $446 million.

The key role of the COR and COTR is to observe, document, and communicate contractor performance to both the contracting officer and the contractor. They are authorized in writing by the General Manager to perform specific technical and/or administrative functions under the contract. The specific tasks and responsibilities of each COR or COTR vary according to the nature and scope of each contract. The responsibilities of the COR or COTR may include: administrative functions, labor related functions, inspection of work performance, identifying the need for any changes to the contract, processing payments and acquiring any essential documentation from the contractor. DC Water provides training and guidance for these individuals to assist them in appropriately carrying out their duties.

Objectives

Our overall audit objective was to evaluate the effectiveness and efficiency of the operations and activities around the management of outside contractors. Specific audit objectives included:

- ❑ Ensure that all selected vendor contracts are complete, current and properly executed;
- ❑ Determine whether the delivery of contracted goods or services is properly tracked and monitored;
- ❑ Examine whether the vendor has met all terms and conditions of their contract;
- ❑ Evaluate management's oversight of contractor billing; and,
- ❑ Assess whether management's oversight of contractors is adequately documented.

Audit Scope and Procedures

This audit was conducted based on the approved FY2014 internal audit plan. The audit was initiated in April, 2014 and completed in May, 2014. The audit included an evaluation of the processes and procedures involved in the management of outside contractors. The audit also included an examination of the contract folders for a sample of vendor contracts to ensure proper document retention, and a review of the invoice validation and approval processes for a sample of outside contractors. The audit procedures consisted of interviews with the appropriate parties, observations of daily operations, a review of pertinent documents and reports, and testing of a sample of contracts and invoices. We selected the following six vendor contracts for our review, which represents different departments, and a total dollar value of approximately $9.2 million:

Department	Vendor Name	Contract Number	Value of Contract
Risk Management	WAS-12-027-AA-SS	Aon Risk Services	$1,893,040
Information Technology	14-PR-DIT-08	Peak Technology Solutions	$628,640
Information Technology	WAS-12-018-AA-MB	Morcom International	$1,140,329
Facilities	WAS-11-059-AA-RA	Collins Elevator Service, Inc.	$648,835
Facilities	WAS-10-010-AA-CE	Topflite Building Services, Inc.	$2,969,118
Procurement	WAS-10-047-AA-JH	Alpine Trading Company	$1,949,019

Summary of Work

Internal Audit concludes that the vendor contracts we selected were complete and properly executed. However, we also conclude that Management's oversight of the delivery of the terms in the vendor contracts and the activities of outside contractors were not properly tracked and monitored in each instance.

We identified items that should be addressed in order to further strengthen the management of vendor contracts.

In particular, there is a need to address the following:

- ❑ Ensure that changes to a contract's assigned COR or COTR, as well as any associated responsibilities, are only made by the General Manager, and that evidence of the approved change is retained in the contract folder;

- Ensure that the delivery of the terms in the vendor contracts and the activities of outside contractors are properly tracked and monitored to ensure contractor performance; and,

- Ensure that all invoices are properly validated for accuracy and completeness prior to approval for payment.

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II. DETAILED OBSERVATIONS & RECOMMENDATIONS

I. Delegation of Authority to CORs and COTRs – Peak Technology		
Observation: In the Contracting Officer's Representative Course Manual, it states in Chapter One, Page 1-4, that "COR's may not redelegate their authority to others. If another individual besides the COR, such as a task monitor or quality assurance evaluator, will be responsible for administering any part of the contract, only the contracting officer can delegate authority to that individual". DC Water has contracted Peak Technology to provide IT professionals to meet the operating and project needs of the Department of Information Technology. We noted that DC Water maintains two full-time contractors under the Peak Technology contract. One of two contractors is being entirely managed and monitored by a Distribution and Conveyance employee that has not been delegated authority as a COR/COTR. The contractor performs the work assigned to him within the Distribution and Conveyance department and then completes a weekly timesheet with the hours worked.	**Recommendation:** We recommend that the authority of a COR/COTR be delegated to the Distribution and Conveyance Manager who manages the activities of the SCADA Analyst. The contractor does not work directly with the IT Department and is located at the Bryant Street location, which makes it difficult to oversee the SCADA Analyst's activities.	**Management's Action Plan:** IT will notify Procurement to process the necessary paperwork to delegate the authority to the Distribution and Conveyance Manager. **Implementation Date:** July 2014

The timesheet is subsequently approved by a DC Water Manager other than the COR/COTR. **Risk:** Reassigning the role of COR or COTR, or any of the associated responsibilities, without the approval of the General Manager (as Contracting Officer) may result in inadequate oversight and improper management of DC Water vendor contracts.		
II. Ensure that all contractor employees are adequately monitored – Peak Technology		
Observation: Internal Audit reviewed the process to monitor worked performed by the contractor, Peak Technology. We noted that one of two contractors under the Peak Technology contract is not being appropriately monitored. There is currently not a process in place to properly document the assignment and completion of tasks assigned to contractor. For the Peak employee working as a Supervisory Control and Data Acquisition Analyst (SCADA Analyst), tasks are assigned informally through meetings, emails or over the phone.	**Recommendation:** We recommend that Management implement a process to appropriately document tasks assigned to the contractor. The process should ensure that all relevant information pertaining to the assignment is captured. Management should create a record of the work performed, who assigned the task, Start Date/Time, End Date/Time and ensure that information is captured in a way that allows for appropriate evaluation of contractor performance.	**Management's Action Plan:** IT is in the process of establishing a Project Management Office and has hired a Manager of the PMO to monitor and report on the status of all projects. IT has also published a Project Management Guide which outlines the requirements for project planning, scheduling, tracking and reporting. IT recently acquired EPM Live for project management and once fully implemented all projects will be tracked using the new tool. EPM live is integrated with Tenrox IT contractor time tracking tool.

There is no process in place to document assignments given to the contractor or whether the assignments were completed appropriately. **Risk:** Without the proper documentation of the work performed, DC Water could potentially pay for services that were not rendered.		Specific contractor tasks will be tracked using a combination of the IT Helpdeck tickets (break-fix), Activity Tracker, which will be updated to include planned and actual time (non-project work) and EPM Live to ensure only hours worked are billed and paid. IT will work with business led IT resources to leverage as much of the existing tracking capabilities as possible. **Implementation Date:** IT expects to have these tools full implemented and the entire staff trained and using them by February 2015.

III. Invoice Validation – Peak Technology		
Observation: Internal Audit noted that labor charges included on the invoices from Peak Technology Solutions are not properly validated using adequate source documents in order to verify actual hours worked: o The IT department uses the Information Technology Solution Center (ITSC) ticket system to validate the hours worked for the Web Developer staffed through Peak. This system is not designed to track actual hours worked by the contractor but rather time taken to complete the ticket. Multiple tickets can be open and assigned to the contractor at one time, which makes Management unable to track actual hours worked by the contractor; and, o Peak Invoices for the SCADA Analyst are not validated against any source documents to verify actual hours worked. There is no process in place to document the hours worked by the SCADA analyst, the assignments given to the Analyst and/or the time taken to complete each of the assignments.	**Recommendation:** We recommend that the IT Department implement a more refined process to properly track employee tasks and assignments to ensure that DC Water is accurately billed for time and work performed. Management should ensure that this process be implemented for all related IT contractors including the SCADA Analyst under the Peak contract.	**Management's Action Plan:** See response to Recommendation II. Once EPM Live is fully implemented and Activity Tracker has been changed to include planned and actual work effort at the activity level DC Water IT will have the necessary tools to accurately reconcile work performed against time billed. **Implementation Date:** IT expects to have these tools full implemented and the entire staff trained and using them by February 2015.

Risk: DC Water could pay for time and services that were not provided unless a more comprehensive review is performed of actual hours worked.		
IV. Proper Management and Monitoring of Contractor Performance – Topflite Building Services		
Observation: We noted that the current process to monitor the activities of the contractor, Topflite, is ineffective. Topflite Building Services was contracted by DC Water to provide the management, labor, materials, supplies, equipment and supervision necessary to provide janitorial services. In the Topflite contract, it states under the section Reports, Schedules and Reports, Page 3, that "Reports on all cleaning requirements performed once every thirty (30) days or less frequently must be submitted to the Contract Administrator within five (5) days after completion of the cleaning tasks." These reports have not been consistently provided to Management to document contractor performance.	**Recommendation:** We recommend that Management require the contractor, Topflite, to maintain and provide records of all work performed to assure adherence to contract requirements.	**Management's Action Plan:** DC Water agrees with the auditors' recommendation and will require Topflite Building Services to maintain and to provide records of all work performed to assure adherence to contract requirements. Records shall be presented timely, so that the COTR can validate work performed, and Report to Contract Administrator. Procurement will issue a letter to Topflight Building Services no later than July 14, 2014 requesting their compliance with the contract requirements. **Implementation Date:** July 14, 2014

Management monitors contractor performance of regularly occurring tasks through periodic, as well as random, "spot checks" of DC Water facilities and as a result of complaints of non-performance by DC Water employees. During the facility spot checks, Management identifies obvious incidents of non-performance and then alerts the contractor to resolve the issue. For issues that are not resolved timely, Management should deduct the costs associated with that issue from the monthly invoice. **Risk:** Without the proper documentation of the work performed, DC Water could potentially pay for services that were not rendered.		

V. Invoice Validation – Topflite Building Services		
Observation: We noted that charges included on the invoices from the contractor, Topflite Building Services, are not properly validated prior to payment. Management does not have source documents to verify the work performed by the contractor is what DC Water is being charged for on the invoice. **Risk:** DC Water could pay for services that were not provided unless a more comprehensive review is performed.	**Recommendation:** We recommend that Management implement a process to validate Topflite invoices prior to payment. Additionally, we recommend Management implement a process to consistently review records and document all instances of non-compliance to ensure contractor performance and justify appropriate chargebacks against vendor invoices.	**Management's Action Plan:** Management will implement a process to validate Topflite invoices prior to payment. The process will require Topflite Building Services to maintain and to provide records of all work performed to assure adherence to contract requirements; and, include a review of records and documentation of all instances of non-compliance to justify appropriate charge backs against vendor invoices. Records shall be presented timely, so that COTR can validate work performed, and report to Contract Administrator any non-performance that should be deducted from monthly invoice. **Implementation Date:** July 14, 2014

SC&H GROUP, LLC

dc water is life

Warehousing and Inventory

Internal Audit Report

September 15, 2014

INTERNAL AUDIT TEAM

Manager: Darren Markward

Director: Joe Freiburger

DC Water – 2014 Internal Audit
Warehousing and Inventory

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EXECUTIVE SUMMARY

Background

Warehouse Operations is responsible supporting the activities of DC Water by managing the receipt, issuance, and storage of goods at the Blue Plains and Bryant Street warehouses, performing inventory reconciliations, conducting annual physical inventory reviews, and managing the disposal of excess and obsolete inventory.

Internal Audit conducted an audit of the warehouse and inventory process in FY2012 and identified various weaknesses and provided recommendations. DC Water began implementing a materials management initiative concurrently with the FY2012 audit.

In FY2014, a new warehouse facility was opened and DC Water continued the implementation of the materials management initiative that will re-engineer and streamline the current processes of materials handling. As the materials management initiative continues to progress and becomes more intricate, Management from all interested departments (e.g., Engineering, Logistics, Procurement, Finance, and Maintenance) will need to maintain better lines of communication to encourage the free and accessible flow of information regarding the project's status, trajectory, and changes.

Objectives

Our overall audit objectives included an evaluation of the policies, procedures, and practices in place to ensure that the Warehouse Operations is in compliance with DC Water policies and procedures and to ensure the department has the appropriate tools to monitor warehouse activity and effectively achieve its mission. Specific audit procedures performed are as follows:

- ❑ Verify that all assets are properly received into the warehouse;
- ❑ Validate that issuances, transfers and returns of assets are properly documented and approved;
- ❑ Verify that the disposal of assets is properly documented and approved;
- ❑ Determine whether assets are appropriately inventoried on a periodic basis; and,
- ❑ Assess whether the assets are adequately safeguarded within the warehouse.

Audit Scope and Procedures

This audit was conducted based on the approved FY2014 internal audit plan. The audit was initiated in June 2014, completed in July 2014 and included an evaluation of activities of the Warehouse Operations during the period of October 2013 – June 2014.

Summary of Work

After reviewing the current control environment and the proposed materials management initiatives, Internal Audit concludes that there are several control gaps and process improvement opportunities that exist within the Warehouse Operations' control environment.

For instance, our testing indicated that there is no segregation of duties between physically handling of goods and recording the activity in the system. Additionally, we determined that there are several process improvement areas, such as implementing formalized supervisory reviews, implementing pre-count training prior to conducting cycle counts, and utilizing all of Lawson's functionalities, that would strengthen the department's control environment.

Finally, physical inventory security is inefficient and inadequate at both locations.

Further details regarding these topics are noted in the following section - - - Detailed Observations &Recommendations. It should also be noted that five of the comments were also noted in the FY2012 report and continue to require remediation.

Internal Audit recognizes that, when implemented, the material management initiatives will strengthen the overall control environment and allow the Warehouse Operations to increase its productivity and efficiency. However, once the initiatives are implemented, Management will need to evaluate the skill sets and responsibilities of the staff to ensure its staff maintains the required competencies. Further, we recommend that Management implement continuous training for its staff.

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II. DETAILED OBSERVATIONS & RECOMMENDATIONS

I. Segregation of Duties		
Observation: There is no segregation of duties between physical handling of the goods and recording the activity in the system for warehouse workers at Blue Plains or Bryant Street. Currently, all workers physically receive and issue goods, as well as record the activity in Lawson. **Risk:** If the duties are not properly separated, a control weakness can result in inappropriate or unauthorized receipt or issuance of parts going undetected due to improper transactions being recorded in the inventory records.	**Recommendation:** We recommend that Management separate the duties of physically receiving and issuing items from the recording the receipt and issuances in Lawson.	**Management's Action Plan:** Our employees are trained in all of the warehousing tasks so that if a backlog occurs in any one area all personnel can be used to diffuse the backlog. All transactions are logged in the system with the user's id, so any improper transactions can be traced to the employee. The future plan is to implement RF technology that will allow for proper controlling of receipts and issuance of parts. When the technology is implemented the physical receipt and issuance functions will be separated. Until then we will implement a manual process to separate the functions. Our goal is to implement first quarter FY15. **Implementation Date:** December 31, 2014

II. Physical Inventory Review		
Observation: The process for the physical inventory review is not adequate or efficient, potentially resulting in an improper inventory valuation. A full physical inventory review is conducted by two inventory specialist once each year at the Blue Plains and Bryant Street facilities. Also, cycle counts are currently not being performed at Blue Plains by either the warehouse staff or the finance department. We also noted that discrepancies between cycle counts and the General Ledger (GL) are updated by warehouse personnel without notifying the Finance Department. The current process states that when discrepancies arise from counts, a separate counter will confirm, and the correct figure will be entered into Lawson by the Warehouse Supervisor. This entry automatically updates the balance in the GL. **Risk:** Performing a physical inventory review over an extended period of time with inadequate staffing and count sheets, while receiving and issuing items, may cause inaccuracies in the physical inventory counts, which could result in the over-	**Recommendation:** We recommend that Management begin performing cycle counts in the Blue Plains warehouse to ensure greater accuracy in counts. Further, Management should reassess its staffing resources, potentially adding more resources in order to expedite the timing to complete the annual count process, and implement counts using either bar codes readers or count cards. We also recommend that approvals be built into Lawson, so that discrepancies that exceed a specified threshold need to be researched and explained prior to updating the GL. The Finance Department should be made aware of all entries made to the GL as well.	**Management's Action Plan**: Currently doing a physical inventory in the Lawson System. We have added temporary employees and additional equipment to expedite the process. We no longer have an inventory specialist on staff. The Material Handlers are responsible for the physical counts. Cycle counts will begin in the Lawson system at the conclusion of the Physical Inventory—October 2014. The Lawson System has the capability to freeze warehouse zones which prevents transactions from occurring in the count area. This capability allows us to perform the physical over an extended period of time. **Implementation Date:** October 31, 2014

or understatements of the inventory valuation on the financial statements.		
III. Supervisory Reviews		
Observation: There are no formalized supervisory reviews of warehouse activity. It does not appear that Management utilizes the various activity reports in Lawson to review users' activity (changes made in the system). Additionally, we noted that there are additional reports that can be generated in Lawson that Management and Warehouse personnel could utilize, but are not currently employing. **Risk:** By not implementing formalized supervisory reviews, Management is not able to review its employees' work to ensure accuracy and completeness.	**Recommendation:** We recommend that Management review the audit logs and other reports available in Lawson on a weekly basis. Additionally, Management should review the supporting documentation (e.g., purchase orders for receipts, material requests forms for issuances, and inter- and intradepartmental transfer documentation) for all transaction reports within the monthly inventory package prior to supplying the supporting documentation to Finance. Additionally, Management should implement regular training to refresh or improve upon skills and capabilities with system functions relating to all warehouse activities, such as receiving, issuing, and reporting. Increased training that enables personnel to fully utilize Lawson's functionalities can improve process efficiencies and system accuracies.	**Management's Action Plan:** The month is closed electronically via the Lawson System. Audit logs and other reports will be reviewed weekly. Cycle Counts by definition will reveal transactional errors and this will begin in Oct 2014. Lawson does not have KPI or productivity reporting capability tailored for warehouse operations. With the implementation of the new Lawson System all Warehouse personnel have been trained by the resident Lawson SME. The Material Handlers have sharpened those learned skills thru repetition. We will continue to offer new and refresher training beginning first quarter FY2014. Special training will be offered as we modify the Lawson system. **Implementation Date:** October 31, 2014

IV. Tracking Shop Stock Inventory		
Observation: Based on a review of procedures and discussion with warehouse personnel, there are no independent cycle counts to track items stored in the technicians' shop and trucks. The various technicians (e.g., mechanical, electrical, etc.) maintain a shop stock, comprised of frequently used items (60 items per truck and 50 items per warehouse). The technician or driver is responsible for counting items at the end of the week and entering this number into Lawson. The technicians and drivers then restock their warehouse or truck to the allotted amounts on Monday. **Risk:** If the duties are not properly separated, a control weakness can result in inappropriate or unauthorized receipt or issuance of parts going undetected due to improper transactions being recorded in the inventory records.	**Recommendation:** We recommend that Management update the procedures to require a separate employee to perform weekly cycle counts of the warehouses and trucks. Lawson should calculate the reorder amount for the items that should be issued by appropriate warehouse personnel.	**Management's Action Plan:** Materials Management will work with the Shop Foreman and his technicians to update procedures for the weekly cycle count of his stock. This will be done first/second quarter FY2015. **Implementation Date:** March 31, 2015

V. Security		
Observation: The warehouses do not have adequate security measures to prevent or detect improper activities including theft. Neither warehouse has functioning security cameras installed in strategic locations. We noted that the goods in both warehouses (e.g., shop vacuums, shovels, fans, etc.) could be appealing to individuals for personal use. Further, it appears that the Blue Plains warehouse does not have security measures in place (e.g., security cameras) to restrict after-hours access. In addition, during summer months, all bay doors remain open at the Blue Plains warehouse. **Risk:** Failing to adequately protect warehouse inventory could result in the misappropriations or theft of DC Water assets.	**Recommendation:** We recommend that Management work with the security office to address its needs for increased security measures to ensure all actions have been taken to prevent and detect unauthorized access to inventory stored in both warehouses 24 hours a day.	**Management's Action Plan:** The warehouses are secured after hours and a procedure and call tree is established if operations have a need for material during off hours. Due to environmental conditions in the summer months the bay doors are opened at BP1 to provide the staff with air movement. All small parts are housed in the VLM's which are basically theft proof and the racked parts require equipment to retrieve. The 1st level of the racks are vulnerable; but can be observed from the Materials Handlers desk which is manned during working hours. Plans for security devices have been completed for all warehouse facilities and work is underway at Bryant Street. Final Purchase Order documents for the Blue Plains warehouse security items are in Procurement and expected shortly. Work at Blue Plains is expected to begin in Sept 2014 with completion of ALL warehouse security device installations by December 2014. **Implementation Date:** December 31, 2014

VI. Environmental Conditions		
Observation: There is no formal process to evaluate the effects of environmental changes on the inventory. The Blue Plains and Bryant Street warehouses are not climate controlled, and certain parts stored in the warehouses are subject to the changes in the environment. Further, the warehouse workers at both locations informally review parts for detrimental effects of environmental changes. **Risk:** Exposure from environmental changes can adversely affect the parts, potentially causing the parts to become not suitable for use.	**Recommendation:** We recommend that Management implement formalized procedures to proactively monitor the inventory for the effects of environmental changes (e.g., rust, oxidation of rubber components, build-up of dust, lubrication failure through contamination, migration and evaporation). Further, Management should work with the operating departments to assess the effects of the environmental changes on the inventory on a quarterly basis.	**Management's Action Plan:** Management will work with DMS and DWS to formalize procedures to proactively monitor the inventory for the effects of environmental changes. However, our warehouse by the nature of the business is a just-in-case storage facility. We stock parts for emergency, corrective and preventive maintenance. Due to operational redundancy and our preventive maintenance program many of our parts are housed for an extended period of time. We have a PDA Program (Parts Disposal Authorization) to turn unused and obsolete parts. --Second quarter FY2015 **Implementation Date:** March 31, 2015

VII. IT Inventory		
Observation: IT Equipment is currently being stored in the warehouse; however, the warehouse staff is not responsible for tracking or valuing this inventory. Those responsibilities lie with a different department resulting in a loss of storage space for storage of operational inventory. **Risk:** Storing items that are not being monitored or valued by warehouse personnel can result in misappropriations or theft of DC Water IT assets.	**Recommendation:** We recommend that Management implement formalized procedures to store and value the IT inventory by either the warehouse staff or IT Department.	**Management's Action Plan:** The IT equipment in the warehouse at the time of the audit was housed there temporarily. IT has an inventory of the equipment. For a copy, please contact the CIO. At the time of this reporting one skid of IT-related material remains in the warehouse. It will be removed shortly. **Implementation Date:** October 31, 2014

SC&H Internal Audit

Five-Year Summary

September 2014

Accomplishments

SC&H began as DC Water's fully-outsourced internal audit service provider in the fall of 2009.

SOME OF THE EARLY HIGHLIGHTS:

- Completed an enterprise–wide risk assessment process.
- Developed a risk-based internal audit plan to include planned audits, special projects and follow-up activity.
- Prepared a framework for conducting all internal audit work including a standardized structure for the final written reports.
- Developed a monthly status report format designed to inform management of progress made in accordance with the plan.

Accomplishments

HIGHLIGHTS:

- Developed a formal follow-up process to effectively track all previously reported internal audit comments. Collected and reported on this information in our system called the Management Action Plan (MAP) report.
- Conducted ad-hoc and special projects; consulted with management as needed.
- Discussed all key issues with members of senior management.
- Coordinated schedules and shared information with DC Water's external audit team.
- Prepared status reports and presented pertinent information to the Audit Committee of the Board.

Accomplishments

FURTHER HIGHLIGHTS:

- Each year updated and refreshed the risk assessment results and prepared a new risk-based internal audit plan.
- Completed 11 to 15 planned audits each year.
- Conducted follow-up activity each quarter.
- Worked closely with the management team to structure the DC Water Fraud Hotline process.
- Participated in the development and presentation of fraud & ethics training material to a substantial portion of the DC Water work force.
- Took the lead role and continued to be the primary point of contact for the Fraud Hotline.
- Investigated issues reported through the hotline and, as needed, coordinated with the General Counsel.
- Continued with the status reporting.

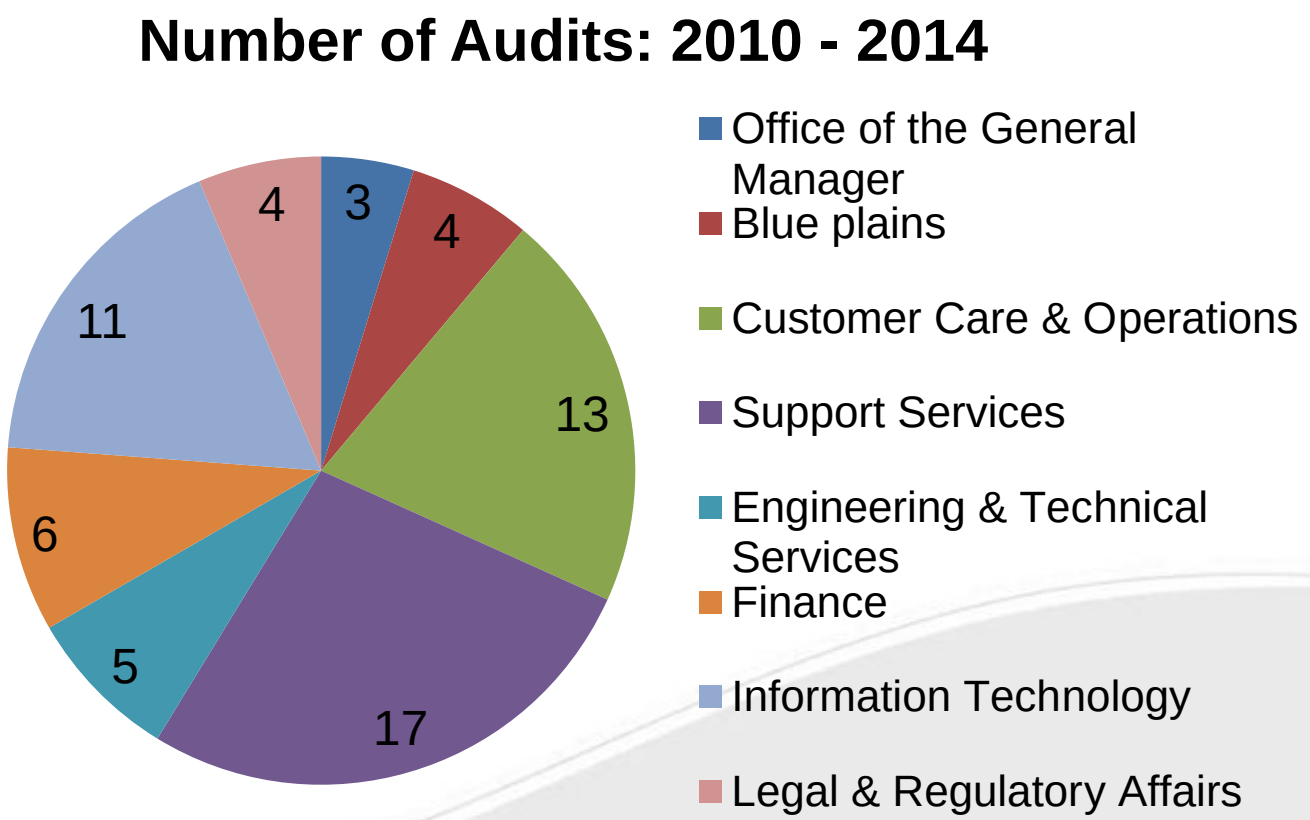
Accomplishments

FURTHER HIGHLIGHTS:

- Delivered orientation sessions to the Audit Committee to prepare them for their responsibilities.
- Became members of the American Water Works Association – enhancing our knowledge and understanding.
- Invested our time to learn first hand your operations – SC&H toured the Clean Rivers tunnel to understand the project to enhance our assessments and reports.
- Closely monitored the budget – always completed planned projects on-time & on-budget– we are watchful stewards of DC Waters dollars.
- Transcended our role as an outsourced vendor – SC&H is a trusted advisor.

Internal Audits – An Overview

We successfully completed 63 planned audits during our time as your internal auditors. Below is an illustration of how those 63 audits have been distributed across the Authority:



Areas Reviewed

EXAMPLES OF AREAS REVIEWED:

- P-Card Operations
- Regulatory Compliance
- Fleet Management
- Investments & Cash Management
- Capital Project Prioritization
- IT Network Security
- Telecommunications
- Water Services - Distribution
- Human Capital Management
- Maintenance Services
- Chemicals Purchasing
- Billing Operations
- Investments & Cash Management
- Cashiering- remote site
- Grant Operations
- Emergency Plant Maintenance
- Biosolids Operations
- Warehouse & Inventory

Special Projects

Throughout the tenure, we have been requested by Management for assistance by reviewing processes, departments to identify obstacles and provide suggestions on how to initiate improvement. A few examples of areas reviewed include:

- Assisted DC Water in the completion of your IT and Fleet asset inventory – helping you meet requirements and providing a report on how to fix the problem going forward
- WSSC Special Project
- HCM - Recruiting
- Procurement – Contract Review

Management Action Plan - Remediation

We have tracked the Management Action Plans (MAP) associated with each of the observations that we've noted through our audits – assuring that they're implemented by the business owners, as intended.

- As of the end of August, there have been a total of 265 total Management Action items that we have tracked through our MAP database.

- There are currently 75 open MAP items. This means that over the course of the five years that we've been helping DC Water, we have been responsible for *190* different improvements to the Authority's control environment and business operations.

Fraud Hotline

SC&H began managing a Fraud, Waste and Abuse Hotline on behalf of DC Water starting in March 2013.

- We assisted in the Fraud Hotline's awareness training program.
- To date, we have received a total of 29 allegations through the Fraud Hotline. Of those, we have resolved 27 of the allegations, and three allegations are still pending resolution.
- The nature of the allegations that we received included:
  - HCM Policy Violations
  - Customer Service Issues
  - Misuse of DC Water Assets
  - Gambling
  - Conflicts of Interest
- Our investigation and resolution of these allegations has resulted in individuals being held accountable for their decisions and actions that have gone against the best interests of the Authority.

Unique Perspectives

The SC&H Team has first hand understanding of DC Water's Relationships:

- Internally between Management and Labor and their interdependencies.
- Internal interaction among the different departments of the Authority.
- Externally between DC Water and its customers, other District agencies, and Federal agencies that provide oversight to the Authority.

Developed depth of knowledge of operations and inter-departmental dependencies.

SC&H understands DC Water's history, challenges and plans for the future.

Considerations for DC Water

DC Water, not unlike its peers in the industry, faces significant issues going forward. Some of the more substantial topics to be addressed include:

- State of water and sewer infrastructure.
- Public understanding of the value of water services.
- Sufficient financial resources to address capital improvements.
- Meeting regulatory concerns. (pollutant discharges; disinfection by-products; combined sewer overflows)
- Acquiring and retaining a talented work force
- Increased risk profile (Emergency management; safety; security)

Looking Ahead

Early on emphasis was placed on strengthening internal controls. Improvements have been made, although certain areas still need attention. We shifted toward analyzing processes to identify methods for improving effectiveness and efficiency.

MOVING FORWARD, SUGGESTED AREAS OF INTERNAL AUDIT EMPHASIS INCLUDE:

- Increased use of data analytics – allowing for evaluations of large data populations; identification of trends and predictive capability.
- Looking forward to emerging risks and being involved in pre-implementation of all key projects.
- Concentration on more narrow, technically focused audit projects.
- Continued responsiveness to address special needs and requests from the Management team.
- Emphasis on analyzing the achievement of DC Water's strategic objectives and alignment of the Governance processes.