Internal Audit Report on
Real Estate Billing System

County of Henrico

Proud of our progress;
Excited about our future

Internal Audit Report #228
February 22, 2013

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Audit Summary

- Scheduled Audit
- Conclusions on Audit Objectives

Objectives related to effectiveness of:	Conclusion
A. Management of Vendor Services	⚠️
B. Security Access Controls	⚠️
C. Change Controls	⚠️
D. Interface Controls	🟩
E. Processing Controls	⚠️
F. Other System Controls	⚠️

- Exception Oriented
- 5 Reportable Issues and 2 Other Observations
- Management Action Plans have been developed to address all risks identified

🟩 Sufficient   ⚠️ Needs Improvement   🔴 Insufficient – Needs Immediate Attention

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Contents

- Introduction and Background
- Scope, Objectives and Methodology
- Conclusions on Audit Objectives
- Issues and Management Action Plans
- Closing and Report Distribution

County of Henrico Internal Audit

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Introduction

- Sharon Thornton, IT Auditor III, and Sharon Wade, Auditor III, performed audit work
- Used professional auditing standards
- Examined controls & tested for selective compliance
- All exceptions given to Agency
- Reported control design issues & significant test exceptions
- Work for same Government we audit

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Background: RBS System

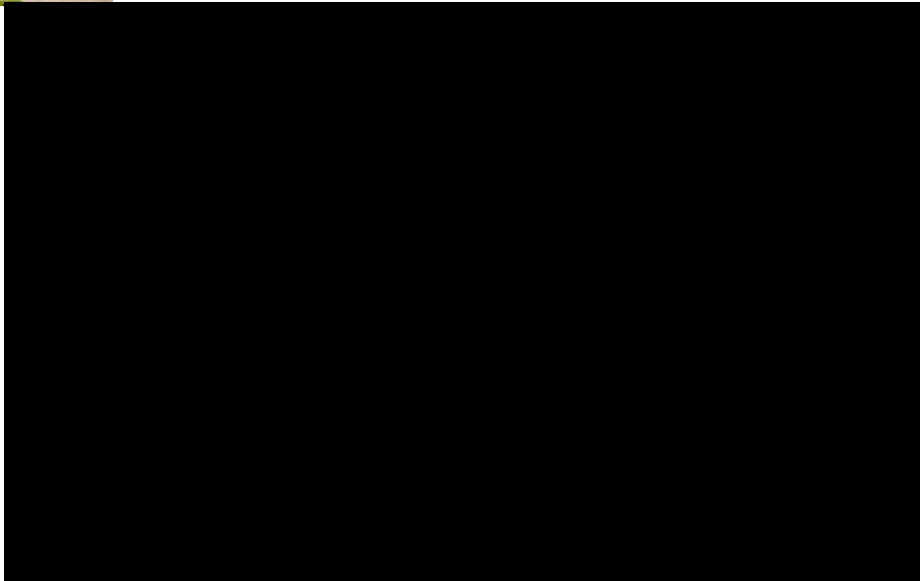The Henrico Real Estate Billing System (RBS):

- Replaced the RET System which ran on a Unix-based server that is no longer supported by the vendor.

- Implemented February 2010.

- A client /server system from PCI, LLC.

- First billing performed by this system was the delinquent Real Estate Tax billing in February 2010. This was followed by the first half Real Estate Tax billing due in June 2010.

- A second phase of implementation related to personal property and business license modules was in process during the audit.

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Background:

Background: Business Usage

Finance Departments	Responsibilities (System)
Real Estate	• Assessments (▮▮▮▮▮▮▮▮) interfaces with RBS and is reconciled by this group as of January 1 each year. • Real Estate users are responsible for maintaining real estate data and are the only ones who can adjust real estate data. • Key supplements, exonerations, rehab credits, and tax type changes into RBS.
Revenue	• Process Tax Relief (REAP Module of RBS). • Revenue users are the only ones who can adjust Tax Relief applications.
Treasury	• Billing and Payments (RBS). • Delinquent Real Estate Collection Data (RR). • Revenue Results Delinquent Real Estate Collections Specifications (REVQ). • Treasury users are the only ones that can adjust interest and penalties in RBS and RR.

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Background:
Users and Tech Support

System User Access Profile Names	Users
Henrico REAP and PPT (Revenue Users – REAP Module)	15
Real Estate Staff (Real Estate Users – ▮▮▮▮▮▮)	32
Treasury Personnel (Treasury Users)	16
TO Adjustments (Treasury Users - Interest and penalties adjustments)	9 †
TO Collections Office (Treasury Collection Users)	8
RE Public Access (Internal - inquiry only)	11 †
Department Inquiry (Accounting user)	1
PCI User (Support Technicians)	10 ≠
Total Active Users (Actually 99 users)	101

† One user is in 2 profiles
≠ One user deleted

As of 5/31/2012

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Background:
R/E Tax Rate

- The 2011 Henrico County Real Estate Tax rate is $0.87per $100.00 of assessed value.

- Tax rate remained unchanged since 2007

- Real estate taxes are billed semi-_nn__ll, with the first half payment due June 5 and the second half payment due December 5.

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Background:
R/E Statistics

As of January 1, 2012:

Parcel Count
    Taxable -   110,858
    Non-Tax -   1,632
    Total -   112,490

Total Taxable Value - $ 30,666,924,500

Commercial / Residential Split:

Commercial - $ 9,326,318,900 – 30%
Residential - $21,340,605,600 – 70%

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Background:
REAP

Real Estate Advantage Program (REAP):

- ursuant to the Henrico County Code, persons qualifying or exemption are deemed to be bearing an extraordinary real estate tax burden in relation to their income and financial worth.
- REAP is a tax exemption for
  - qualified seniors,
  - residents that are 100 percent permanently and totally disabled, and their spouses
- Maximum taxable income is $67,000
- Maximum net worth allowed is $350,000
- Maximum exemption awarded is $3,000
- Filin deadline is A ril 1st
- 2011 – 6,213 approved applications, $8,734,246 total tax relief

REAP Applications are entered into the REAP Module of RBS.

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Background:
Disabled Vets

Disabled Veterans Real Estate Tax Exemption

- Article X, Section 6-A of the Constitution of Virginia was amended to allow tax exem tion for real ro ert of a disabled veteran and his/her s ouse for tax years on or after January 1, 2011.
  - The veteran must be rated by the U.S. Department of Veterans Affairs (or its successor agency) to have a 100 percent service-related, permanent and total disability to qualify.
- Applies to the principal residence and up to a maximum of 10 acres of land upon which the dwelling is situated.
- Requires a one-time filing.
- The veteran will be required to notify the County if there is a change in their principal residence.
- Allows for the surviving spouse of a veteran, who died on or after January 1, 2011 to continue the exemption so long as he/she does not remarry and continues to occupy the principle residence.
- 2011 - 135 approved applications, $241,919 estimated total tax exemption.
  - Applications for Disabled Veterans Real Estate Tax Exemptions are entered into the VISION System as well as into RBS.

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Audit Scope

- In-Scope:
  - Finance Information Technology
  - Finance Real Estate Division
  - Finance Treasury Division
  - Real Estate Tax Billing Application
  - Delinquent Real Estate Collection Application
  - 2011 Real Estate Tax Billing and Collection Cycles
- Out-Scope:
  - All other Agencies and Departments
  - All other Financial Systems

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Internal Controls
Objectives

- Reliability and integrity of information
- Compliance with policies, procedures, laws and regulations
- Safeguarding of assets
- Effectiveness and efficiency of operations

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Internal Controls Cont'd
General Limitations of any Controls

- Errors and irregularities may go undetected
- Inherent limitations in any control structure
- Limitations include resource constraints, legislative restrictions, etc.
- Projection to future subject to risk of change in effectiveness
- Compliance may deteriorate

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Audit Methodology

1. Evaluated internal control systems through completion of questionnaires
2. Validated answers to questionnaires by sample testing and securing evidence
3. Performed walkthroughs to obtain an understanding of the system processes
4. Evaluated regulations, policies & procedures and sample test for compliance

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Conclusion on Audit Objectives

Objective	Conclusion
A. Review vendor contracts related to services to be rendered by vendor and any related service level agreements	⚠ Issue 4
B. Assess and test security access controls to database, application, and associated servers, including vendor access	⚠ Issues 1 & 6
C. Evaluate application and database change control	⚠ Issue 5
D. Assess and test interface controls including error reporting and balancing controls	🟩
E. Evaluate and test processing controls related to real estate tax billing and the processing of delinquent accounts	⚠ Issues 2 & 3
F. Evaluate and assess other system related controls	⚠ Issues 4 & 5

🟩 Sufficient   ⚠ Needs Improvement   🔴 Insufficient – Needs Immediate Attention

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Issues

1. Restrict Vendor Network Access
2. ....., Real Estate Data ....., into RBS
3. Strengthen Controls over REAP Exonerations
4. Consistently and Completely Document Issues in Tracking System
5. Document Change Control Procedures and Testing Results
6. Revise Treasury Group Permissions to Match Job Functions

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Other Observations

7. Establish Process to Validate RBS Users in 2013
8. Update REAP Procedures

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Issue 1

Restrict Vendor Network Access

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Issue 1

Criteria

Remote access to the County network, RBS, and Revenue Results Systems for vendor tech support personnel should be restricted when not in use.

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Issue 1

Condition

There are 6 vendor support personnel who can login to the network remotely by VPN with their unique network User-ID at any time. They are members of groups that provide them access to RBS and Revenue Results.

On the application side they have access to both test and production environments for the RBS and Revenue Results Systems using a shared User-ID. This shared User-ID is a member of the group used for all technical users which has the highest privileges in the system.

The shared ID was associated with some production transactions on the RBS Application Exoneration and Adjustment Reports. According to management, the vendor fixes problem transactions through direct access to the database using a script to make changes in development that are moved into production after testing.

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Issue 1

Cause

When there are problems with the system, immediate support is needed. This could be during or after business hours.

Effect

There is a risk with vendor support, who has the highest level of access permissions, being able to access the system at anytime. All have unique network User-IDs but do not have unique application User-IDs to the test and roduction s stems as well as direct access to the database. There is limited accountability for actions performed in the production system, particularly if more than one has logged onto the network at the same time.

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Issue 1

Recommendation

We recommend:

1. Unique User-IDs should be assigned to each vendor support person to provide the needed accountability for their work in the system and database.

2. Where possible now and after the support needs for Phase II of the RBS Billing System settle down, vendor access should be controlled by activating it only when there is an agreed-upon need to enter the system, and the access should be disabled once their work has been completed.

Account Deactivated   24

Issue 1

Management Action Plan

The shared user ID has been inactivated and vendor access will be controlled by activating access to network only when support is needed after phase II support needs become minimal.

By Whom: Project Manager
Planned Completion: July 2013

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Issue 2

Verify Real Estate Data Entry into RBS

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Issue 2

Criteria

Common practices highlighted in ISACA's framework, *IT Assurance Guide: Usin_ Cobit* DS11.1 Control Objective which states, "Verify that all data expected for processing are received and processed completely, accurately and in a timely manner."

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Issue 2

Condition

Real Estate staff is entering data (e.g. exonerations, rehab credits, tax type changes, supplements, etc.) into Vision and RBS. All but supplements are validated by a supervisor. Supplements are keyed and applied in RBS by the same individual who may not notice an error in the keying.

It was also learned that the keying of supplement data into Vision is not always keyed the same day into RBS and, in some situations, there can be as much as a month delay. This delay can cause differences in the amount of supplemental tax due because of a later date of calculation for the bill. Therefore, the keying into RBS cannot be compared to what was keyed into Vision.

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Issue 2

Cause

Variances in the timing of the assessment vs. billing cycles.

Effect

Not validating the data entry into RBS could potentially result in errors in the system that may ultimately impact billings to the citizens. Without controls in place to validate accuracy and timeliness, it is up to the citizen to discover errors and report them to the County. This could lead to potential bad publicity for the County.

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Issue 2

Recommendation

We recommend all data entered into RBS by Real Estate be validated for completeness, accuracy and timeliness. This can be accomplished by having a supervisor apply the transaction or by having a report that provides this data to review for validation.

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Issue 2

Management Action Plan

Real Estate is currently developing a report to identify all supplements applied to the RBS system. This report ..ill be run on a weekly basis and will generate a total assessment change and count by user. The user will manually tally supplements based on retained paperwork. The manual totals and report totals will be verified each week to ensure data has been entered into RBS accurately.

By Whom: Real Estate Division Director
Planned Completion: May 2013

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Issue 3

Strengthen Controls over REAP Exonerations

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Issue 3

Criteria

All transactions on the HC REAP Exoneration Report should be reviewed for proper authorization.

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Issue 3

Condition

System security controls are limited in restricting access to apply REAP exonerations. A report exists allowing manual review of these transactions for proper approval. However, the report is not fully reviewed.

Revenue management reviews transactions on the report for their own personnel but does not review those generated by others such as Real Estate and technical support personnel.

Transactions by technical support personnel typically result when their assistance is needed to address problems in processing exonerations or errors resulting from patches. Per management, there is no review of these transactions for accuracy.

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Issue 3

Cause

Since this is a vendor system, some of the typical security controls are lacking and customizatio.. .. ..mi.e..

Effect

Unauthorized individuals can apply exonerations and there is a breakdown in the mitigating controls due to lack of management's complete review of the exoneration report.

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Issue 3

Recommendation

We recommend:

1. Project Manager - Determine if system controls ɔan ье added to limit who can apply exonerations at the individual level within Revenue.

   Reports should also be reviewed to ensure they accurately capture exoneration activity.

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Issue 3

Recommendation Cont.

2. Management - There is a need to strengthen mitigating controls to verif̲ the accurac̲ of the transactions b̲ staff outside of Revenue.

The Director of Finance should identify and empower appropriate levels of knowledgeable management to independently review and validate exonerations applied by Real Estate, Finance IT and Information Technology.

Additionally, in order to provide a clear audit trail, records should be kept documenting when there are problems with transactions that require technical support involvement and patches requiring error corrections.

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Issue 3

Management Action Plan

1. System controls already limit who can apply REAP exonerations. We determined that further reducing access at the individual level within Revenue is not currently possible without additional cost and could impact system performance. Accordingly, we will rely on current mitigating review controls.

2. Revenue personnel are involved in the accuracy of transactions when technical support personnel are required to fix a system bug as they are the ones who requested the intervention. The REAP exoneration report will be split by responsibility. The Deputy Director of Finance will sign off on technical support resolutions and the Real Estate Division Director will sign off on assessment and tax code changes that result in system generated adjustments to REAP.

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Issue 3

Management Action Plan

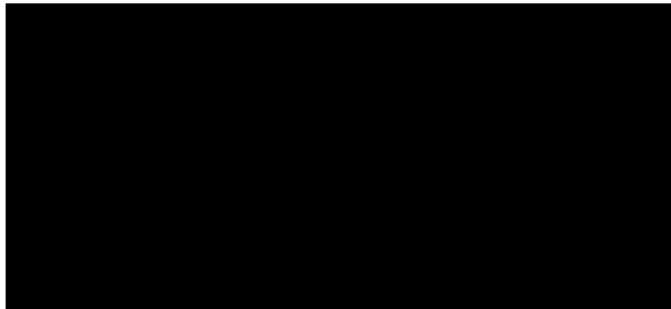Note: Real Estate personnel do not have access to the REAP application.

By Whom: Project Manager
Planned Completion: May 2013

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Issue 4

Consistently and Completely Document Issues in Tracking System

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Issue 4

Criteria

Common practices highlighted in ISACA's framework, *IT Assurance Guide: Using Cobit,* DS8.2 Control Objective which states, "Establish a function and system to allow logging and tracking of calls, incidents, service requests and information needs."

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Issue 4

Condition

Discussion with management and test work revealed the following:

1. Not all issues are documented in Finance's issue tracking system and in the vendor's incident tracking system, if applicable. Furthermore, emails which report problems are not being consistently saved.

2. A review of closed Phase I system issues as listed on Finance's tracking spreadsheet revealed that resolution dates were not always documented or, based on the notes, the resolution date indicated did not appear to be the actual date closed.

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Cause

Finance's close working relationship with the vendor on the resolution of issues has affected, in part, some of the information which gets documented related to these problems; Finance IT's heavy involvement in the project to date.

Effect

If there is turnover on the problem management teams in Finance or at the vendor, the personnel that remain could experience inefficiencies as they try to figure out the project status and what issues have/have not been addressed.

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Recommendation

We recommend that, going forward, all issues be consistently documented in the tracking systems of both Finance and the vendor. Furthermore, all related emails and other contacts should be captured in these systems and resolution dates documented for all problems logged.

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Issue 4

Management Action Plan

- All major issues will be logged along with their status and resolution in the excel project status report.
- A feasibility study into the possibility of utilizing the Information Technology Department's Red Mine system for all issues will be conducted.

By Whom: Project Manager
Planned Completion: July 2013

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Issue 5

Document Change Control Procedures and Testing Results

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Issue 5

Criteria

Common practices highlighted in ISACA's framework, *IT Assurance Guide: Using Cobit,* require that the change process be managed which includes installing and accrediting solutions and changes.

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Issue 5

Condition

Discussion with management revealed that change control procedures including testing steps performed and results obtained are not documented.

A tracking spreadsheet is maintained which documents information concerning system problems, fix descriptions, updates applied, etc. However, a review of this spreadsheet revealed that four lines of script updates lacked an indication of who authorized the updates to be applied to production, when and by whom they were installed.

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Issue 5

Cause

Heavy involvement in development project.

Effect

System issues could be compounded by:
- the potential inconsistency in the application of change control procedures
- the lack of documented testing steps and results obtained
- not properly maintaining the tracking spreadsheet with the status of the updates

Furthermore, agreed upon system expectations and outcomes may not be achieved.

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Issue 5

Recommendation

We recommend that:
- change control procedures be documented
- the testing steps performed to test the upgrade prior to moving the program into production and the testing results achieved be documented
- the tracking spreadsheet be properly maintained with all pertinent information.

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Issue 5

Management Action Plan

- Change control procedures and upgrade testing steps will be documented along with results achieved and the tracking spreadsheet will be properly maintained.
- A Red Mine feasibility study will be completed to determine if the spreadsheet approach can be replaced.
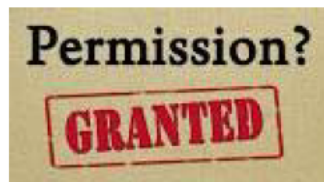
By Whom: Project Manager
Planned Completion: August 2013

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Issue 6

Revise Treasury Group Permissions to Match Job Functions

Permission?
GRANTED

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Issue 6

Criteria

Security access should be based on least privileges needed to perform job functions.

Condition

There were four Treasury Groups that had been set up in the same manner in RBS; tellers, adjusters, collectors and managers all had the same capabilities. When this issue was identified during the audit, the functions of tellers and collectors were modified to remove the ability to apply adjustments to accounts.

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Issue 6

Cause

Access was based on previous access in the Real Estate (RET) legacy system.

Effect

Until the ability to apply adjustments was removed from the two groups, all Treasury users had the same access level creating a separation of duties security weakness related to collecting and adjusting.

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Issue 6

Recommendation

We recommend that the Group access levels for the four Treasury Groups be reviewed further and revised as needed to provide the least privileges needed for the job functions of each of these groups.

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Issue 6

Management Action Plan

A complete review of the privileges needed for each of the Treasury Groups will be conducted as part of the phase II implementation.

By Whom: Treasury Division Director / Project Manager
Planned Completion: December 2013

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Other Observations

The following slides include additional observations noted during our review which were considered less critical in reaching our conclusions on our audit objectives.

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Issue 7

Establish Process to Validate RBS Users in 2013

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Issue 7

Condition

There hasn't been a validation of RBS users performed to date. There have been some adjustments to the user access after the phase II implementation. Some of these were a result of testing and questions raised during the audit. There are plans to begin a validation process in January 2013.

Recommendation

We support Finance's intentions to begin a semi-annual validation of RBS access in January 2013.

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Issue 7

Management Action Plan

A semi-annual validation of RBS users will begin.

By Whom: Project Manager / Division Directors
Planned Completion: January 2013

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Issue 8

Update REAP Procedures

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Issue 8

Condition

Currently, there are documented procedures related to processing initial REAP applications and annual certifications. While they include some documentation concerning entries to process the certifications in RBS, they have not been updated to include the entries required in RBS for the initial REAP applications.

Recommendation

Procedures should be updated for REAP applications and certification processing to include what data is to be entered into the RBS-REAP Application module. Consideration should be given to including troubleshooting tips for common errors.

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Issue 8

Management Action Plan

Procedures will be updated for REAP applications and certification processing.

By Whom: Revenue Director
Planned Completion: March 2013

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Closing

- Appreciate Agency's cooperation
- Follow up on open Action Plans will be performed as completion dates are reached

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Report Distribution

Audit Committee (Mr. Glover, Mrs. O'Bannon, County Manager)	Board of Supervisors, Non-Committee Members
Deputy County Manager for Administration	Director of Finance
Internal Audit Staff	

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