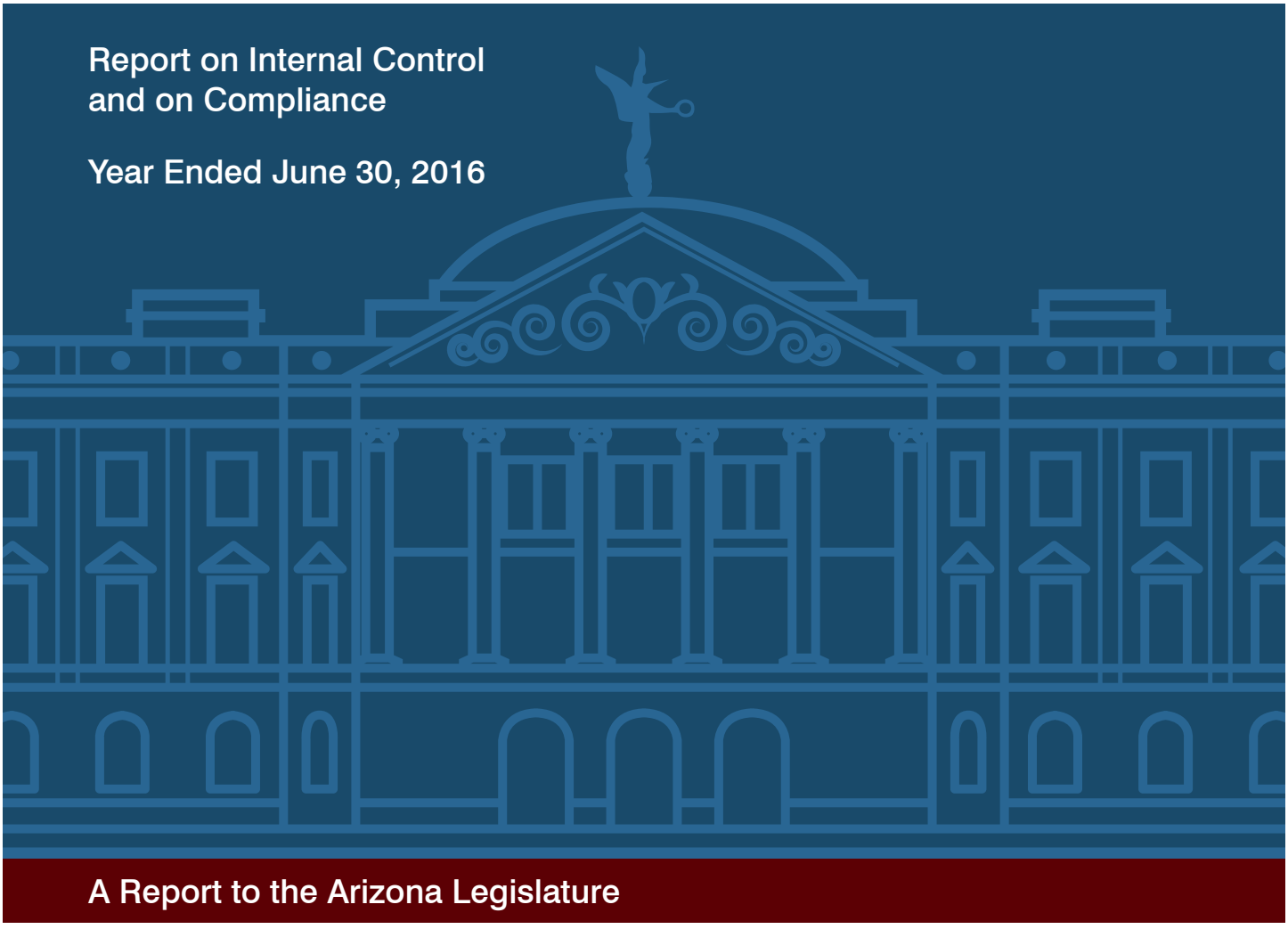
Pima County



Debra K. Davenport
Auditor General

ARIZONA Auditor General
Making a Positive Difference

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STATE OF ARIZONA
OFFICE OF THE
AUDITOR GENERAL

DEBRA K. DAVENPORT, CPA
AUDITOR GENERAL

MELANIE M. CHESNEY
DEPUTY AUDITOR GENERAL

Independent auditors' report on internal control over financial reporting and on compliance and other matters based on an audit of basic financial statements performed in accordance with *Government Auditing Standards*

Members of the Arizona State Legislature

The Board of Supervisors of
Pima County, Arizona

We have audited, in accordance with U.S. generally accepted auditing standards and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States, the financial statements of the governmental activities, business-type activities, discretely presented component unit, each major fund, and aggregate remaining fund information of Pima County as of and for the year ended June 30, 2016, and the related notes to the financial statements, which collectively comprise the County's basic financial statements, and have issued our report thereon dated December 6, 2016. Our report includes a reference to other auditors who audited the financial statements of the Stadium District, School Reserve Fund, Office of Emergency Management's Radio System, Self-Insurance Trust, Health Benefit Trust, Regional Wastewater Reclamation Department, Development Services, and Southwestern Fair Commission, as described in our report on the County's financial statements. This report includes our consideration of the results of the other auditors' testing of internal control over financial reporting and compliance and other matters that are reported on separately by those other auditors. However, this report, insofar as it relates to the results of the other auditors, is based solely on the reports of the other auditors.

Internal control over financial reporting

In planning and performing our audit of the financial statements, we considered the County's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the basic financial statements, but not for the purpose of expressing an opinion on the effectiveness of the County's internal control. Accordingly, we do not express an opinion on the effectiveness of the County's internal control.

Our consideration of internal control was for the limited purpose described in the preceding paragraph and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies, and therefore, material weaknesses or significant deficiencies may exist that were not identified. However, as described in the accompanying schedule of findings and recommendations, we identified certain deficiencies in internal control over financial reporting that we consider to be material weaknesses and significant deficiencies.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A material weakness is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the County's basic financial statements will not be prevented, or detected and corrected, on a timely basis. We consider the deficiencies described in the accompanying schedule of findings and recommendations as items 2016-01 and 2016-02 to be material weaknesses.

A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance. We consider the deficiencies described in the accompanying schedule of findings and recommendations as items 2016-03 through 2016-05 to be significant deficiencies.

Compliance and other matters

As part of obtaining reasonable assurance about whether the County's basic financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests and those of the other auditors disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Pima County response to findings

Pima County's responses to the findings identified in our audit are presented in its corrective action plan at the end of this report. The County's responses were not subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we express no opinion on them.

Purpose of this report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the County's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the County's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

Jay Zsorey, CPA
Financial Audit Director

December 6, 2016

Financial statement findings

2016-01

The County should improve its risk-assessment process to include information technology security

Criteria—The County faces risks of reporting inaccurate financial information and exposing sensitive data. An effective internal control system should include an entity-wide risk-assessment process that involves members of the County's administration and IT management to determine the risks the County faces as it seeks to achieve its objectives to report accurate financial information and protect sensitive data. An effective risk-assessment process provides a basis for developing appropriate risk responses and should include defining objectives to better identify risks and define risk tolerances; and identifying, analyzing, and responding to identified risks.

Condition and context—The County's annual risk-assessment process did not include a county-wide information technology (IT) security risk assessment over the County's IT resources, which include its systems, network, infrastructure, and data. Also, the County did not identify and classify sensitive information.

Effect—There is an increased risk that the County's administration and IT management may not effectively identify, analyze, and respond to risks that may impact IT resources.

Cause—The County has relied on an informal process to perform risk-assessment procedures that did not include IT security.

Recommendations—To help ensure the County has effective policies and procedures to identify, analyze, and respond to risks that may impact its IT resources, the County needs to implement a county-wide IT risk-assessment process. The information below provides guidance and best practices to help the County achieve this objective.

- **Conduct an IT risk-assessment process at least annually—**A risk-assessment process should include the identification of risk scenarios, including the scenarios' likelihood and magnitude; documentation and dissemination of results; review by appropriate personnel; and prioritization of risks identified for remediation. An IT risk assessment could also incorporate any unremediated threats identified as part of an entity's security vulnerability scans.

- **Identify, classify, inventory, and protect sensitive information—**Security measures should be developed to identify, classify, and inventory sensitive information and protect it, such as implementing controls to prevent unauthorized access to that information. Policies and procedures should include the security categories into which information should be classified, as well as any state statutes and federal regulations that could apply, and require disclosure to affected parties if sensitive information covered by state statutes or federal regulations is compromised.

The County's responsible officials' views and planned corrective action are in its corrective action plan included at the end of this report.

This is similar to prior-year finding 2015-01.

2016-02

The County should improve security over its information technology resources

Criteria—The selection and implementation of security controls for the County's information technology (IT) resources, which include its systems, network, infrastructure, and data, are important as they reduce the risks that arise from the loss of confidentiality, integrity, or availability of information that could adversely impact the County's operations or assets. Therefore, the County should implement internal control policies and procedures for an effective IT security process that include practices to help prevent, detect, and respond to instances of unauthorized or inappropriate access or use, manipulation, damage, or loss to its IT resources.

Condition and context—The County did not have sufficient written IT security policies and procedures over its IT resources.

Effect—There is an increased risk that the County may not prevent or detect the loss of confidentiality, integrity, or availability of systems and data.

Cause—The County was unaware its policies and procedures lacked critical elements related to IT security and did not evaluate its policies and procedures against current IT standards and best practices.

Recommendations—To help prevent, detect, and respond to instances of unauthorized or inappropriate access or use, manipulation, damage, or loss to its IT resources, the County needs to further develop its policies and procedures over IT security. The information below provides guidance and best practices to help the County achieve this objective.

- **Perform proactive logging and log monitoring—**Key user and system activity should be logged, particularly for users with administrative access privileges and remote access, along with other activities that could result in potential security incidents such as unauthorized or inappropriate access. An entity should determine what events to log, configure the system to generate logs, and decide how often to monitor these logs for indicators of potential attacks or misuse of IT resources. Finally, activity logs should be maintained where users with administrative access privileges cannot alter them.

- **Prepare and implement an incident response plan—**An incident response plan should be developed, tested, and implemented for an entity's IT resources, and staff responsible for the plan should be trained. The plan should coordinate incident-handling activities with contingency-planning activities and incorporate lessons learned from ongoing incident handling in the incident response procedures. The incident response plan should be distributed to incident response personnel and updated as necessary. Security incidents should be reported to incident response personnel so they can be tracked and documented. Policies and procedures should also follow regulatory and statutory requirements, provide a mechanism for assisting users in handling and reporting security incidents, and making disclosures to affected individuals and appropriate authorities if an incident occurs.
- **Provide training on IT security risks—**A plan should be developed to provide continuous training on IT security risks, including a security awareness training program for all employees that provides a basic understanding of information security, user actions to maintain security, and how to recognize and report potential indicators of security threats, including threats employees generate. Security awareness training should be provided to new employees and on an ongoing basis.
- **Apply patches—**Patches to IT resources should be evaluated, tested, and applied in a timely manner once the vendor makes them available.
- **Perform IT vulnerability scans**—A formal process should be developed for vulnerability scans that includes performing vulnerability scans of its IT resources on a periodic basis and utilizing tools and techniques to automate parts of the process by using standards for software flaws and improper configuration, formatting procedures to test for the presence of vulnerabilities, measuring the impact of identified vulnerabilities, and approving privileged access while scanning systems containing highly sensitive data. In addition, vulnerability scan reports and results should be analyzed and legitimate vulnerabilities remediated as appropriate, and information obtained from the vulnerability-scanning process should be shared with other departments of the entity to help eliminate similar vulnerabilities.
- **Secure unsupported software—**Establish a strategy for assessing and securing any software that the manufacturer no longer updates and supports.
- **Protect sensitive or restricted data—**Restrict access to media containing data the entity, federal regulation, or state statute identifies as sensitive or restricted. Such media should be appropriately marked indicating the distribution limitations and handling criteria for data included on the media. In addition, media should be physically controlled and secured until it can be destroyed or sanitized using sanitization mechanisms with the strength and integrity consistent with the data's security classification.
- **Develop and document a process for awarding IT vendor contracts—**A process should be developed and documented to ensure the consideration of IT risks, costs, benefits, and technical specifications prior to awarding IT vendor contracts. In addition, contracts should include specifications addressing the management, reliability, governance, and security of the entity's IT resources. Further, for cloud services, ensure service contracts address all necessary security requirements based on best practices, such as physical location of data centers. Finally, IT vendor's performance should be monitored to ensure conformance with vendor contracts.
- **Implement IT standards and best practices—**IT policies and procedures should be reviewed against current IT standards and best practices, updated where needed, and implemented entity-wide, as appropriate. Further, staff should be trained on IT policies and procedures.

The County's responsible officials' views and planned corrective action are in its corrective action plan included at the end of this report.

This finding is similar to prior-year finding 2015-01.

2016-03

The County should improve access controls over its information technology resources

Criteria—Logical access controls help to protect the County's information technology (IT) resources, which include its systems, network, infrastructure, and data, from unauthorized or inappropriate access or use, manipulation, damage, or loss. Logical access controls also help to ensure that authenticated users access only what they are authorized to. Therefore, the County should have effective internal control policies and procedures to control access to its IT resources.

Condition and context—The County did not have adequate policies and procedures or consistently implement its policies and procedures to help prevent or detect unauthorized or inappropriate access to its IT resources.

Effect—There is an increased risk that the County may not prevent or detect unauthorized or inappropriate access or use, manipulation, damage, or loss of its IT resources, including sensitive and confidential information.

Cause—The County does not have sufficient policies and procedures and lacks detailed instructions for employees to follow for granting and reviewing access to its IT resources.

Recommendations—To help prevent and detect unauthorized access or use, manipulation, damage, or loss to its IT resources, the County needs to develop and implement effective logical access policies and procedures over its IT resources. The information below provides guidance and best practices to help the County achieve this objective.

- **Review user access—**A periodic, comprehensive review should be performed of all existing employee accounts to help ensure that network access granted is needed and compatible with job responsibilities.
- **Remove terminated employees' access to its IT resources—**Employees' network and system access should immediately be removed upon their terminations.
- **Review all shared accounts—**Shared network access accounts should be reviewed and eliminated or minimized when possible.
- **Manage shared accounts—**Shared accounts should be used only when appropriate and in accordance with an established policy authorizing the use of shared accounts. In addition, account credentials should be reissued on shared accounts when a group member leaves.
- **Review contractor and other nonentity accounts access—**A periodic review should be performed on contractor and other nonentity accounts with access to an entity's IT resources to help ensure their access remains necessary and appropriate.
- **Improve network password policies—**Network password policies should be improved and ensure they address all accounts.
- **Review and monitor key activity of users—**Key activities of users and those with elevated access should be reviewed for propriety.
- **Manage employee-owned and entity-owned electronic devices connecting to the network—**The use of employee-owned and entity-owned electronic devices connecting to the network should be managed, including specifying configuration requirements and the data appropriate to access; inventorying devices; establishing controls to support wiping data; requiring security features, such as passwords, antivirus controls, file encryption, and software updates; and restricting the running of unauthorized software applications while connected to the network.

- **Manage remote access**—Security controls should be utilized for all remote access. These controls should include appropriate configuration of security settings such as configuration/connections requirements and the use of encryption to protect the confidentiality and integrity of remote sessions.

The County's responsible officials' views and planned corrective action are in its corrective action plan included at the end of this report.

This finding is similar to prior-year findings 2015-01 and 2015-02.

2016-04

The County should improve its configuration management processes over its information technology resources

Criteria—A well-defined configuration management process, including a change management process, is needed to ensure that the County's information technology (IT) resources, which include its systems, network, infrastructure, and data, are configured securely and that changes to these IT resources do not adversely affect security or operations. IT resources are typically constantly changing in response to new, enhanced, corrected, or updated hardware and software capabilities and new security threats. The County should have effective written configuration management internal control policies and procedures to track and document changes made to its IT resources.

Condition and context—The County has written policies and procedures for managing changes to its IT resources; however, they lacked critical elements. Also, the County did not have policies and procedures to ensure IT resources were configured securely.

Effect—There is an increased risk that the County's IT resources may not be configured appropriately and securely and that changes to those resources could be unauthorized or inappropriate or could have unintended results without proper documentation, authorization, review, testing, and approval prior to being applied.

Cause—The County was unaware its policies and procedures for managing changes lacked critical elements and did not evaluate its policies and procedures against current IT standards and best practices.

Recommendations—To help prevent and detect unauthorized, inappropriate, and unintended changes to its IT resources, the County needs to update its policies and procedures over its configuration management processes. The information below provides guidance and best practices to help the County achieve this objective.

- **Establish and follow change management processes—**For changes to IT resources, a change management process should be established for each type of change, including emergency changes and other changes that might not follow the normal change management process. Further, all changes should follow the applicable change management process and should be appropriately documented.
- **Perform security impact analysis**—A security impact analysis should be performed when a change is requested and prior to change implementation.
- **Document testing—**For changes, the testing procedures performed and results should be documented.

- **Manage software installed on employee computer workstations—**For software installed on employee computer workstations, policies and procedures should be developed to address what software is appropriate and the process for requesting, approving, installing, monitoring, and removing software on employee computer workstations.
- **Configure IT resources appropriately and securely—**The functionality of IT resources should be limited to ensure it is performing only essential services and maintaining appropriate and secure configurations for all systems.

The County's responsible officials' views and planned corrective action are in its corrective action plan included at the end of this report.

This finding is similar to prior-year findings 2015-01 and 2015-03.

2016-05

The County should improve its contingency planning procedures for its information technology resources

Criteria—It is critical that the County have contingency planning procedures in place to provide for the continuity of operations and to help ensure that vital information technology (IT) resources, which include its systems, network, infrastructure, and data, can be recovered in the event of a disaster, system or equipment failure, or other interruption. Contingency planning procedures include having a comprehensive, up-to-date contingency plan; taking steps to facilitate activation of the plan; and having system and data backup policies and procedures.

Condition and context—The County's contingency plan lacked certain key elements related to restoring operations in the event of a disaster or other system interruption of its IT resources. In addition, the County did not perform regularly scheduled, comprehensive tests of its contingency plan.

Effect—The County risks not being able to provide for the continuity of operations, recover vital IT systems and data, and conduct daily operations in the event of a disaster, system or equipment failure, or other interruption, which could cause inaccurate or incomplete system and data recovery.

Cause—The County has some processes in place but lacks a sufficiently documented recovery plan based on current IT standards and best practices to ensure that its disaster recovery efforts can be relied on in the event they are needed.

Recommendation—To help ensure County operations continue in the event of a disaster, system or equipment failure, or other interruption, the County needs to further develop its contingency planning procedures. The information below provides guidance and best practices to help the County achieve this objective.

- **Update the contingency plan and ensure it includes all required elements to restore operations—** Contingency plans should be updated at least annually for all critical information or when changes are made to IT resources, and updates to the plan should be communicated to key personnel. The plan should include essential business functions and associated contingency requirements, including recovery objectives and restoration priorities and metrics as determined in the entity's business-impact analysis; contingency roles and responsibilities and assigned individuals with contact information; identification of critical information assets and processes for migrating to the alternative processing site; processes for eventual system recovery and reconstitution to return the IT resources to a fully operational state and ensure all transactions have been recovered; and review and approval by appropriate personnel. The contingency plan should also be coordinated with incident-handling activities and stored in a secure location, accessible to those who need to use it, and protected from unauthorized disclosure or modification.
- **Test the contingency plan—**A process should be developed and documented to perform regularly scheduled tests of the contingency plan and document the tests performed and results. This process should include updating and testing the contingency plan at least annually or as changes necessitate, and coordinating testing with other plans of the entity such as its continuity of operations, cyber incident response, and emergency response plans. Plan testing may include actual tests, simulations, or tabletop discussions and should be comprehensive enough to evaluate whether the plan can be successfully carried out. The test results should be used to update or change the plan.
- **Train staff responsible for implementing the contingency plan—**An ongoing training schedule should be developed for staff responsible for implementing the plan that is specific to the user's assigned role and responsibilities.

The County's responsible officials' views and planned corrective action are in its corrective action plan included at the end of this report.

This finding is similar to prior-year finding 2015-04.

COUNTY RESPONSE

PIMA COUNTY
FINANCE & RISK MANAGEMENT

February 13, 2017

Ms. Debbie Davenport
Auditor General
2910 N. 44th St., Ste. 410
Phoenix, AZ 85018

Dear Ms. Davenport:

We have prepared the accompanying Corrective Action Plan as required by the standards applicable to financial audits contained in *Government Auditing Standards*. Specifically, for each finding we are providing you with the names of the contact people responsible for corrective action, the corrective action planned, and the anticipated completion date.

Keith Dommer, Director
Finance and Risk Management

Keith Dommer, Director
130 W. Congress, 6th Fl. Tucson, Arizona 85701-1317 • Phone: 520-724-8496 • Fax: 520-770-4173

Financial statement findings

2016-01

The County should improve its risk-assessment process to include information technology security
Name of contact person: Dan Hunt, Information Security Officer
Anticipated completion date: June 30, 2018

The County agrees with the finding and recommendations. The County is currently drafting procedures and will perform an IT security risk assessment as part of the overall County risk assessment process that identifies risk scenarios, including the scenarios' likelihood and magnitude; documentation and dissemination of results; review by appropriate personnel; and prioritization of risks for remediation. This process will include identifying what the County classifies as sensitive information and the steps taken to inventory and protect it.

2016-02

The County should improve security over its information technology resources
Name of contact person: Dan Hunt, Information Security Officer
Anticipated completion date: June 30, 2018

The County agrees with the finding and recommendations. ITD policies and procedures are currently being drafted to improve security over its information technology resources.

2016-03

The County should improve access controls over its information technology resources
Name of contact person: Dan Hunt, Information Security Officer
Anticipated completion date: June 30, 2018

The County agrees with the finding and recommendations. Several access control deficiencies have been remedied during the 2016-17 fiscal year, including improved password management and remote access, while others are currently in the process of being remedied. In addition, ITD procedures are currently being drafted to address this finding.

2016-04

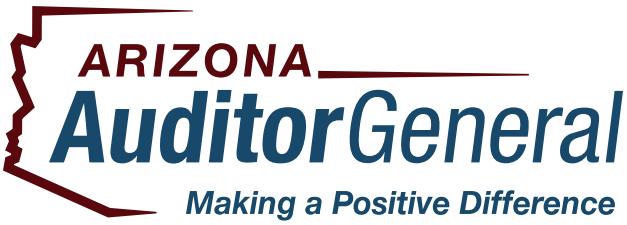
The County should improve its configuration management processes over its information technology resources
Name of contact person: Dan Hunt, Information Security Officer
Anticipated completion date: June 30, 2018

The County agrees with the finding and recommendations. ITD procedures are currently being drafted to address this finding. Several configuration management processes were already updated and implemented during the 2016-17 fiscal year, including security impact analysis, document testing, and configuration of IT resources.

2016-05

The County should improve its contingency planning procedures for its information technology resources
Name of contact person: Dan Hunt, Information Security Officer
Anticipated completion date: June 30, 2018

The County agrees with the finding and recommendations. All aspects of the contingency planning procedures will be evaluated and updated as necessary. An ITD System Contingency Planning set of procedures is currently being updated to address this finding. Once the procedure updates have been completed, they will be tested and their effectiveness will be assessed periodically.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