COUNTY OF ORANGE
INTERNAL AUDIT DEPARTMENT

OFFICE OF THE DIRECTOR

Integrity
Objectivity
Independence

PETER HUGHES
Ph.D. MBA, CPA, CIA, CFE, CITP
DIRECTOR

MAILING ADDRESS:
400 CIVIC CENTER DRIVE WEST
BUILDING 12, ROOM 232
SANTA ANA, CA 92701

TELEPHONE: (714) 834-5475
FAX: (714) 834-2880
EMAIL: peter.hughes@ocgov.com
WEBSITE: www.oc.ca.gov/audit/

Audit No. 2327

July 6, 2004

TO: Janice V. Goss, Director
Integrated Waste Management Department

SUBJECT: Limited Review of Controls and Implementation of the IWMD's Landfill Fee Collection and Accounts Receivable Systems

We have performed a limited review of the Integrated Waste Management Department's (IWMD) new landfill fee collection and accounts receivable systems deployed on January 12, 2004. Below are the results of our limited review.

BACKGROUND

IWMD operates and manages the County's landfill waste disposal system, including three active landfills. IWMD's primary source of revenue comes from disposal fees at the landfills.

In 2001, IWMD contracted a third-party consulting firm, Bryan A. Stirrat & Associates, to prepare a Landfill Information System Technology Study (LISTS) Master Plan (Plan) that would address the department's future information technology needs. Phase one of the Plan required the existing integrated landfill fee collection and accounts receivable system (SWABBIE) be replaced by a more contemporary solution. Two software vendors, Paradigm Software and The Aston Group, were selected to implement and provide the new systems, related training, documentation, system warranty, and support. Once the software vendors were selected, IWMD notified the Internal Audit Department of the pending system implementation in accordance with the *County of Orange Accounting Manual,* procedure S-1.

After evaluation, IWMD selected Weighstation/Compuweigh for its landfill fee collection system, a system designed specifically for use at landfills. For the accounts receivable system, IWMD selected the accounts receivable module of Microsoft's Great Plains accounting software. The system tracks customer account information, balances due from customers, and generates related billing statements. It is only used by the IWMD Accounting Unit. The landfill fee collection and accounts receivable systems will interface with each other via use of MSMQ (Microsoft Message Queuing). Both systems were deployed into production on January 12, 2004.

OBJECTIVES, SCOPE, AND METHODOLOGY

The primary purpose of our review was to determine whether appropriate controls were present in IWMD's new landfill fee collection and accounts receivable systems in the areas of access controls, system audit logs, and other system controls as specified in IWMD's system requirements documentation. Additionally, we reviewed the last phase (implementation) of the system development life cycle (SDLC) for these new systems. There are five phases to a traditional SDLC: (1) feasibility, (2) requirements

definition, (3) design, (4) development, and (5) implementation. The implementation phase is where the actual operation of the new system is established including completion of system documentation, training of end users and I/S personnel, final user acceptance testing, and conversion of system data.

Our review consisted primarily of inquiry, observation, and limited testing of the internal controls. To accomplish our objectives, we conferred with project management, examined system documentation, attended end user training, and performed limited hands-on system testing.

During our review, we collaborated with IWMD Information Systems and Accounting personnel to identify system control issues. As such, our cooperative effort was an ongoing process wherein we conferred with IWMD periodically to discuss control issues as identified during the implementation phase. The rationale for this is implementing internal control changes during software development is often times more cost effective than after the software is deployed.

As our review was limited in nature, we did not perform a comprehensive application review of the fee collection and accounts receivable systems, nor did we perform any testing of the following: system data integrity, vendor contractual compliance, IWMD's organizational general computer controls, or other components of the SDLC.

SUMMARY

During our limited review, we identified approximately 22 items for improvement. IWMD implemented the majority of the items prior to the systems' implementation on January 12, 2004. As of January 12, 2004, the remaining issues requiring action are summarized in the seven items below.

In addition to our observations, we would like to acknowledge that IWMD Information Systems personnel orchestrated considerable involvement of the end user community, namely Accounting Unit personnel and Fee Station Attendants, in the development of the new systems. The degree of cooperation and involvement by these groups is commendable.

FINDINGS, RECOMMENDATIONS, AND MANAGEMENT RESPONSES

1. User Account Privileges

   Certain users were granted incompatible system privileges as follows:

   A. Accounting: The IWMD Accounting Unit records payments received and adjustments to accounts receivable and sales. These transactions are entered into batches that are subsequently posted to the accounts receivable system. We noted the following:

   - The Audit Clerk (supervisory position) and Accounting Supervisor can both enter (record) and authorize (approve) sales and accounts receivables transactions. IWMD Accounting indicated these privileges are necessary for back up due to the small size of the Accounting Unit.
   - The deposit clerk (non-supervisory) can record and authorize sales transactions.

   At a minimum, non-supervisory staff should not be able to record and authorize a sales transaction.

Recommendation No. 1A: At a minimum, we recommend that IWMD change the accounts receivable system privileges so that non-supervisory Accounting staff cannot both record and authorize transactions.

IWMD Response: Concur. IWMD will explore the possibility of developing a system profile to restrict non-supervisory Accounting staff's access from being able to both record and authorize transactions. In the meantime, we have initiated a mitigating control where the Accounting Supervisor reviews and approves all transactions.

B. Information Systems: Information Systems (I/S) staff have full privileges in both systems as they can:

- Authorize and record both receivables and sales transactions in the accounts receivable system.
- Add, edit, or delete master file entries and transactions in the landfill fee collection system.

IWMD explained these privileges would be reduced within six months after the systems' implementation date. These privileges were granted in the event I/S staff needed to intervene on unexpected issues arising after the systems' implementation.

Recommendation No. 1B: We recommend that IWMD reduce the landfill fee collection and accounts receivable systems' privileges granted to the Information Systems staff in accordance with proper duties segregation practices.

IWMD Response: Concur. For the first six months of operation on the new system, 2-Information Systems persons have been granted full access rights to the A/R and F/C systems. IWMD determined this necessary to provide adequate support for the first 6 months of operating the new system. In July 2004 we will reduce access rights and authority for IS Personnel to read only. Privileges for add/edit/delete will be removed at that time.

2. Application Controls

Application controls help ensure that transactions are valid, complete, accurate, and timely. We identified the following control issues.

A. Accounts Receivable System:

- The system does not have controls enabled to limit which periods accounting data can be entered or changed.
- The system does not generate a report listing new customer accounts created.
- The system allows editing of daily sales transactions in the batch edit mode.

Recommendation No. 2A: We recommend the IWMD modify the accounts receivable system so that data can only be input into authorized periods, that reports are generated periodically for new customer accounts created, and that batch editing is removed for sales transactions received from the landfill fee collection system so that all transactions automatically post.

IWMD Response: Concur. IWMD Accounting has incorporated the first two recommendations. IWMD is working on implementing a system enhancement so that all transactions will automatically post. This will be completed during Fiscal Year 2004-2005.

B. Landfill Fee Collection System:

- The system does not validate vehicle weights input by the Fee Station Attendant or from the scale for reasonableness.
- The system allows a Fee Station Attendant to inquire about their respective cash drawer balance at anytime during the business day. With this ability, it is possible for a Fee Station Attendant to balance their system drawer at anytime and remove any cash overage without detection. For audit trail purposes, balance inquiries are recorded in the system audit log.
- The system does not automatically create a new transaction for every vehicle that proceeds past the fee station. This control feature would help to ensure the completeness of cash collections at the landfills. IWMD is aware of this issue. To help compensate for this, IWMD informed us that it randomly checks customers in the dumping area to make sure they have paid a disposal fee.

Recommendation No. 2B: We recommend that IWMD obtain changes to the landfill fee collection system to validate vehicle weights for reasonableness.

IWMD Response: Concur. The system does not validate vehicle weights input by the F/C attendant or scale for reasonableness. Currently the A/R clerks review the Daily Site Transaction Report and review scale weights for reasonableness. In the future, we will add a system enhancement to have a control built into the F/C system to warn the F/C if an invalid weight is entered prior to transaction completion. This will be completed during Fiscal Year 2004-2005.

Recommendation No. 2C: We also recommend that IWMD remove the ability for Fee Station Attendants to query their system balance without a supervisor present or monitor balance inquiries recorded on the system audit log.

IWMD Response: Concur. The system allows a fee station attendant (FSA) to inquire about their respective cash drawer balance at anytime during the business day. However, before the FSA can get the total from the system, they have to enter their known balance first. This is a control. Every time the FSA does this process, it is recorded to the database and to the audit log. A report is being written to show when an FSA queries his drawer balance. This will be reviewed by the FSA Supervisor on a weekly basis. The supervisor will see if the drawer balance the FSA inputs is equal to the system drawer balance. If this is consistently off, the Fee Supervisor will know to check on this FSA. This will be completed during Fiscal Year 2004-2005.

Recommendation No. 2D: We also recommend that in future phases (two and three) planned for systems enhancement, IWMD implement controls to help ensure a transaction is created for every vehicle that passes the fee station.

IWMD Response: Concur. In Phase II of the Landfill System project, the IWMD will be implementing gate controls, security cameras and additional automation to ensure all vehicles that pass the fee station will be accounted for. This will be completed during Fiscal Year 2004-2005.

3. System Audit Logs and Monitoring

System audit logs provide audit trails that establish accountability for transactions or system events. We noted the following regarding system audit logs:

- IWMD had not received any training from the vendor for the use of the accounts receivable system's audit log. As such, we were not able to review the audit log function.
- Responsibility and methodology for review of system audit logs for both systems had not been established.

- Retention periods of the system audit logs for both systems had not been established.
- The landfill fee collection system's "no sale" function was not active at the time of our review. As such, we were unable to verify that "no sale" transactions are included on the system audit log.

Recommendation No. 3A: We recommend that IWMD ensure audit log training is received from the vendor for the accounts receivable system.

IWMD Response: Concur. IWMD has received preliminary training to review A/R audit logs and has also developed one report to date for auditing purposes. Additional training will be provided by the vendor and additional reports created for audit purposes during the next several months.

Recommendation No. 3B: We also recommend that IWMD establish audit log review, including methodology and responsibility, and audit log retention policies for both systems.

IWMD Response: Concur. We are in the process of developing audit log review procedures, responsibilities and retention policies for both systems. This will be completed during Fiscal Year 2004-2005.

Recommendation No. 3C: We also recommend the IWMD ensure that "no sale" transactions appear in the daily transaction activity and system audit log of the landfill fee collection system.

IWMD Response: Concur. IWMD will work with the fee collection vendor to implement a software enhancement that will record the activitiy of all "no sale" transactions to the database and audit log. This will be completed during Fiscal Year 2004-2005.

4. Access Controls

Access controls reduce the risk that unauthorized users will access system resources. Such controls are in place for the landfill fee collection and accounts receivable systems; however, we noted the landfill fee collection and accounts receivable systems do not include desirable security features such as unsuccessful logon lockout, forced password changes, and automatic timeout. For the landfill fee collection system, end users cannot change their respective user account passwords; I/S staff must make the change for the users.

Recommendation No. 4A: We recommend the IWMD approach the software vendors for the landfill fee collection and accounts receivable systems and seek the missing security features as mentioned or perform enhanced timely reviews of security related incidents recorded on the system audit logs.

IWMD Response: Concur. IWMD will request a software enhancement from the landfill fee collection software vendor to implement password expiration and allow the end user the ability to change his or her own password. For the accounts receivable software, Microsoft Great Plains eEnterprise, IWMD will periodically review the "Activity Tracking Report" which shows login attempts to ensure there are no security incidents.

Recommendation No. 4B: We recommend that IWMD specify more comprehensive and complete security requirements in future software purchases.

IWMD Response: Concur. IWMD will specify more comprehensive and complete security requirements in future software purchases. Since most applications are Microsoft, we are limited to the features offered in their software.

5. Polices & Procedures and System Documentation

Accounting and Information System policies and procedures governing end user and I/S operation of the new systems have not been updated. These policies and procedures should include administration of user accounts and passwords, use of manual mode in the landfill fee collection system, processing of credits (adjustments) against accounts receivable, and audit logs (see item No. 4 above).

Additionally, we noted the following regarding vendor provided system documentation:

- The accounts receivable system vendor had not provided user and technical reference manuals customized for IWMD.
- The landfill fee collection system vendor had not provided adequate system administration procedures for security related issues including user account/profile management.

Recommendation No. 5A: We recommend that IWMD develop updated written procedures for the landfill fee collection and accounts receivable system. The procedures should include administration of user accounts and passwords, use of manual mode in the landfill fee collection system, processing of credits (adjustments) against accounts receivable, and management of audit logs (see item No. 4 above).

IWMD Response: Concur. IWMD has begun updating all procedures for the new system. For the fee collection system, a User Manual has been provided to each site. It includes: General User procedures, Local & Manual-Mode Procedures, and the Paradigm User Training Guide. An Administration Guide for Information System's staff that includes administration of user accounts and privileges has also been developed.

For the accounts receivable system, training handouts and procedural flowcharts were provided to each user. Existing procedures have been hand-modified. More formal user documentation, as well as audit log procedures, will be completed durning Fiscal Year 2004-2005.

Recommendation No. 5B: We recommend the IWMD ensure user and technical reference manuals for the landfill fee collection and accounts receivable systems are received from the vendors as required by the scope of work.

IWMD Response: Concur. User manuals have been provided to all fee collection users. All accounts receivable users have access to online user guides. Both the fee collection and accounts receivable vendors have provided technical documentation as requested in the Scope of Work.

6. I/S Disaster Recovery Plan

IWMD has developed an information systems (I/S) disaster recovery plan for the restoration of network servers at IWMD Headquarters using back-up tapes and off-site storage; however, a more robust plan is needed. For example, the plan should identify a variety of disaster scenarios at both IWMD headquarters and the landfills such as loss of I/S infrastructure (telecommunications, network communications, and/or hardware) or loss of access to the IWMD headquarters building. The plan should identify key systems and restoration priority, recovery participants, roles and responsibilities, and contact information.

An I/S disaster recovery plan that is in line with an overall business continuity plan helps ensure I/S services are available as required to minimize business impact in the event of a major disruption. Failure to document a complete I/S disaster recovery plan could result in disjointed service resumption and subsequent delays to the restoration of normal operations.

Recommendation No. 6: We recommend that IWMD enhance its I/S disaster recovery plan. Once completed, the plan should be disseminated and tested as appropriate.

IWMD Response: Concur. IWMD is currently working on a more comprehensive disaster recovery plan that addresses business continuity. This plan will be completed and disseminated during Fiscal Year 2004-2005.

7. Documented System Development Life Cycle Methodology

IWMD does not have documented system development life cycle policies and procedures. A typical life cycle addresses the feasibility, requirements definition, design, development, and implementation phases. Policies and procedures for the implementation phase typically cover data conversion, system testing, training, system conversion, and system acceptance.

Failure to properly document system development guidelines could result in the omission of critical steps in the development process. There are resources (Software Engineering Excellence Guidelines developed by ACS) on the County's intranet that the IWMD should review and consider in developing its own system development policies and procedures.

Recommendation No. 7: We recommend the IWMD document their system development life cycle policies and procedures.

IWMD Response: Concur. IWMD will document the current system development life cycle in a formal policy and procedure during Fiscal Year 04-05.

We appreciate the courtesy and cooperation extended to us by the personnel at the Integrated Waste Management Department. If we can be of further assistance, please contact me directly, or Eli Littner, Deputy Director, at (714) 834-5899, or Autumn McKinney, Audit Manager, at (714) 834-6106.

Peter Hughes

Peter Hughes, Ph.D., CPA
Director of Internal Audit

Attachment – Integrated Waste Management Response

Distribution: Pursuant to Audit Oversight Committee Procedure No. 1
Members, Board of Supervisors
Members, Audit Oversight Committee
James D. Ruth, County Executive Officer
Vicki Wilson, Deputy CEO, Infrastructure and Environment
Ron Pierre, Manager, IWMD Business Services
Martha Campbell, Manager, IWMD Information Systems
Espi Garcia, Manager, IWMD Accounting
Foreman, Grand Jury
Darlene J. Bloom, Clerk of the Board of Supervisors

COUNTY OF ORANGE

INTEGRATED WASTE MANAGEMENT DEPARTMENT

Janice V. Goss, Director
320 N. Flower Street, Suite 400
Santa Ana, CA 92703

www.oclandfills.com
Telephone: (714) 834-4000
Fax: (714) 834-4183

RECEIVED
INTERNAL AUDIT DEPARTMENT
2004 JUN 30 AM 8:48

June 29, 2004

TO: Dr. Peter Hughes, CPA
Director, Internal Audit

SUBJECT: IWMD Response to Audit No. 2327, Limited Review of Controls and Implementation of the IWMD's Landfill Fee Collection and Accounts Receivable System

We have reviewed the Revised Draft of Audit No. 2327 prepared by the Internal Audit Department on the Limited Review of Controls and Implementation of the Integrated Waste Management Department's new Landfill Fee Collection and Accounts Receivable System dated May 18, 2004. Attached please find the Integrated Waste Management Department's response to this report.

Should you have any questions, please contact me at 714-834-4122.

Janice V. Goss

Janice V. Goss
Director, Integrated Waste Management Department

Attachment A

Cc: James D. Ruth, CEO
Vicki Wilson, Deputy CEO, Infrastructure and Environment
Ron Pierre, Manager, IWMD Business Services
Martha Campbell, Manager IWMD Information Systems
Espi Garcia, Manager, IWMD Accounting

Attachment A

IWMD Response to Audit No. 2327
Limited Review of Controls and Implementation of IWMD's
Landfill Fee Collection and Accounts Receivable System

1. User Controls

Recommendation No. 1A: At a minimum, we recommend that IWMD change the accounts receivable system privileges so that non-supervisory Accounting staff cannot both record and authorize transactions.

IWMD Response:
Concur. IWMD will explore the possibility of developing a system profile to restrict non-supervisory Accounting staff's access from being able to both record and authorize transactions. In the meantime, we have initiated a mitigating control where the Accounting Supervisor reviews and approves all transactions.

Recommendation No. 1B:
We recommend that IWMD reduce the landfill fee collection (F/C) and accounts receivable (A/R) systems' privileges granted to the Information Systems staff in accordance with proper duties segregation practices.

IWMD Response:
Concur. For the first six months of operation on the new system, 2-Information Systems persons have been granted full access rights to the A/R and F/C systems. IWMD determined this necessary to provide adequate support for the first 6 months of operating the new system. In July 2004 we will reduce access rights and authority for IS Personnel to read only. Privileges for add/edit/delete will be removed at that time.

2. Application Controls

Recommendation No. 2A:
We recommend the IWMD modify the accounts receivable system so that data can only be input into authorized periods, that reports are generated periodically for new customer accounts created, and that batch editing is removed for sales transactions received from the landfill fee collection system so that all transactions automatically post.

IWMD Response:
Concur. IWMD Accounting has incorporated the first two recommendations. IWMD is working on implementing a system enhancement so that all transactions will automatically post. This will be completed during Fiscal Year 2004-2005.

Recommendation No. 2B:
We recommend that IWMD obtain changes to the landfill fee collection system to validate vehicle weights for reasonableness.

IWMD Response:
Concur. The system does not validate vehicle weights input by the F/C attendant or scale for reasonableness. Currently the A/R clerks review the Daily Site Transaction Report and review scale weights for reasonableness. In the future, we will add a system enhancement to have a control built into the F/C system to warn the F/C if an invalid weight is entered prior to transaction completion. This will be completed during Fiscal Year 2004-2005.

Recommendation No. 2C:
We also recommend that IWMD remove the ability for Fee Station Attendants to query their system balance without a supervisor present or monitor balance inquiries recorded on the system audit log.

IWMD Response:
Concur. The system allows a fee station attendant (FSA) to inquire about their respective cash drawer balance at anytime during the business day. However, before the FSA can get the total from the system, they have to enter their known balance first. This is a control. Every time the FSA does this process, it is recorded to the database and to the audit log. A report is being written to show when an FSA queries his drawer balance. This will be reviewed by the FSA Supervisor on a weekly basis. The supervisor will see if the drawer balance the FSA inputs is equal to the system drawer balance. If this is consistently off, the Fee Supervisor will know to check on this FSA. This will be completed during Fiscal Year 2004-2005.

Recommendation No. 2D:
We also recommend that in future phases (two and three) planned for system enhancement, IWMD implement controls to help ensure a transaction is created for every vehicle that passes the fee station.

IWMD Response:
Concur. In Phase II of the Landfill System project, the IWMD will be implementing gate controls, security cameras and additional automation to ensure all vehicles that pass the fee station will be accounted for. This will be completed during Fiscal Year 2004-2005.

3. System Audit Logs and Monitoring

Recommendation No. 3A
We recommend that IWMD ensure audit log training is received from the vendor for the accounts receivable system.

IWMD Response:
Concur. IWMD has received preliminary training to review A/R audit logs and has also developed one report to date for auditing purposes. Additional training will be provided by the vendor and additional reports created for audit purposes during the next several months.

Recommendation No. 3B
We also recommend that IWMD establish audit log review, including methodology and responsibility and audit log retention for both systems.

IWMD Response:
Concur. We are in the process of developing audit log review procedures, responsibilities and retention policies for both systems. This will be completed during Fiscal Year 2004-2005.

Recommendation No. 3C
We also recommend that IWMD ensure that "no sale" transactions appear in the daily transaction activity and system audit log of the landfill fee collection system.

IWMD Response:
Concur. IWMD will work with the fee collection vendor to implement a software enhancement that will record the activity of all "no sale" transactions to the database and audit log. This will be completed during Fiscal Year 2004-2005.

4. Application Controls

Recommendation No. 4A:
We recommend the IWMD approach the software vendors for the landfill fee collection and accounts receivable systems and seek the missing security features as mentioned or perform enhanced timely reviews of security related incidents recorded on the system audit logs.

IWMD Response:
Concur. IWMD will request a software enhancement from the landfill fee collection software vendor to implement password expiration and allow the end user the ability to change his or her own password. For the accounts receivable software, Microsoft Great Plains eEnterprise, IWMD will periodically review the "Activity Tracking Report" which shows login attempts to ensure there are no security incidents.

Recommendation No. 4B:
We recommend that IWMD specify more comprehensive and complete security requirements in future software purchases.

IWMD Response:
Concur. IWMD will specify more comprehensive and complete security requirements in future software purchases. Since most applications are Microsoft, we are limited to the features offered in their software.

5. Policies and Procedures & System Documentation

Recommendation No. 5A:
We recommend that IWMD develop updated written procedures for the landfill fee collection and accounts receivable system. The procedures should include administration of user accounts and passwords, use of manual mode in the landfill fee collection system, process of credits (adjustments) against accounts receivable and management of audit logs.

IWMD Response:
Concur. IWMD has begun updating all procedures for the new system. For the fee collection system, a User Manual has been provided to each site. It includes: General User procedures, Local & Manual-Mode Procedures, and the Paradigm User Training Guide. An Administration Guide for Information System's staff that includes administration of user accounts and privileges has also been developed.

For the accounts receivable system, training handouts and procedural flowcharts were provided to each user. Existing procedures have been hand-modified. More formal user documentation, as well as audit log procedures, will be completed during Fiscal Year 2004-2005.

Recommendation No. 5B:
We recommend the IWMD ensure user and technical reference manuals for the landfill fee collection and accounts receivable systems are received from the vendors as required by the scope of work.

IWMD Response:
Concur. User manuals have been provided to all fee collection users. All accounts receivable users have access to online user guides. Both the fee collection and accounts receivable vendors have provided technical documentation as requested in the Scope of Work.

6. I/S Disaster Recovery Plan

Recommendation No. 6:
We recommend that IWMD enhance its I/S disaster recovery plan. Once completed, the plan should be disseminated and tested as appropriate.

IWMD Response:
Concur. IWMD is currently working on a more comprehensive disaster recovery plan that addresses business continuity. This plan will be completed and disseminated during Fiscal Year 2004-2005.

7. Formalized System Development Life Cycle Methodology

Recommendation No. 7:
We recommend the IWMD document their system development life cycle policies and procedures.

IWMD Response:
Concur. IWMD will document the current system development life cycle in a formal policy and procedure during Fiscal Year 04-05.