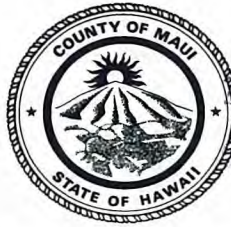


ALAN M. ARAKAWA
Mayor

KYLE K. GINOZA, P.E.
Director

MICHAEL M. MIYAMOTO
Deputy Director



RECEIVED

2014 SEP 26 PM 1:46
OFFICE OF THE MAYOR

MICHAEL RATTE
(Acting)
Solid Waste Division

ERIC NAKAGAWA, P.E.
Wastewater Reclamation Division

**COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT**
2050 MAIN STREET, SUITE 1C
WAILUKU, MAUI, HAWAII 96793

September 25, 2014

OFFICE OF THE
COUNTY COUNCIL

2014 SEP 26 PM 3:09

RECEIVED

Honorable Alan M. Arakawa
Mayor, County of Maui
200 South High Street
Wailuku, Hawaii 96793

APPROVED FOR TRANSMITTAL
[Signature] 9/26/14
Mayor Date

For Transmittal to:

Honorable Riki Hokama, Chair
And Members of the Policy and Intergovernmental Affairs Committee
200 South High Street
Wailuku, Hawaii 96793

Dear Chair Hokama:

**SUBJECT: PIA-82 – PERFORMANCE AUDIT OF THE SOLID WASTE DIVISION,
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**

In response to your request for information related to the above-identified matter, please find attached The Operational Assessment of the Solid Waste Division, Department of Environmental Management, County of Maui.

Should you have any questions, you may contact me at 270-8236.

Sincerely,

A handwritten signature in black ink, appearing to read "K. Ginoza".

KYLE K. GINOZA, P.E.
Director of Environmental Management

Attachments

XC: Michael Ratte, (Acting) Solid Waste Division Chief

June 1 | 09

**Operational Assessment
of the
Solid Waste Division
Department of Environmental Management
County of Maui**

**Greg Hutchins PE
Ed Perkins CIA
Quality + Engineering
800.COMPETE or 503.233.1012**

ACKNOWLEDGEMENTS

Quality + Engineering would like to say 'thank you' to the staff of the Office of the Mayor, Department of Finance, Department of Management, Department of Environmental Management, and its Solid Waste Division that provided assistance with this assessment.

Specifically, we would like to extend our appreciation to the following individuals for supporting the Q+E operational assessment of the Solid Waste Division:

Administration:

Sheri Morrison, Managing Director

Office of the Mayor:

Fred Pablo, Budget Director

Kuheia Paracuelles, Environmental Coordinator

Shelley Pellegrino, Executive Assistant

Department of Environmental Management:

Cheryl Okuma, Director

Greg Kresge, Deputy Director

Allen Atkinson, Administrative Officer

Rhonda Glass, Administration

Karleen Hultquist, Private Secretary

Solid Waste Division:

Tracy Takamine, Chief

George Correia, Residential Refuse Collection Supervisor

Rodney Figueroa, Baseyard Supervisor

Peter Kaina, Baseyard Supervisor

Mike Souza, Landfill Worksite Supervisor

Hana Steel, Recycling Coordinator

Mike Kehano, Project Engineer

Gary Wolk, Engineering Support Technician

Department of Finance:

Kalbert Young, Director of Finance

Suzanne Doodan, Treasurer

Department of Management:

Jacob Verkerke, Information Systems Manager

Ann Elaine Johnson, Information Systems Analyst

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Critical Infrastructure Protection
Quality + Engineering
Forensics - Assurance - Analytics

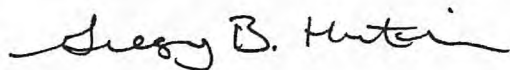
To: Cheryl Okuma
Director of Department of Environmental Management

Kalbert Young
Finance Director

Subject: Solid Waste Division (SWD) Operational Assessment
From: Quality + Engineering
Date: June 1, 2009

Please find attached the Quality + Engineering 'Operational Assessment of the Solid Waste Division' of the County of Maui's Department of Environmental Management.

Thank you for the opportunity of working with the County of Maui. If we can supply additional information, we look forward to hearing from you. Best,



Greg Hutchins PE
Principal - Quality + Engineering
800.COMPETE or 503.233.1012

EXECUTIVE SUMMARY

The County of Maui contracted with Quality + Engineering (Q+E) to conduct an assessment of management and operational controls in the Solid Waste Division (SWD) of the Department of Environmental Management (DEM). The scope of the Q+E assessment of SWD operations includes: 1. Landfill Operations; 2. Residential Refuse Collection; 3. Recycling; and 4. Capital Improvement Projects.

Subsequent concerns about past-due SWD accounts receivable prompted Q+E to retain KMH LLP to conduct an assessment over the revenue cycle (i.e. billings, cash receipting, and revenue recognition) of SWD. KMH LLP is issuing a separate report on the 'Assessment of the Revenue Cycle Controls of the Solid Waste Division' of the County of Maui's Solid Waste Division.

OVERALL OBSERVATIONS

The Solid Waste Division directly and indirectly enhances the brand equity of the Island of Maui. SWD manages and operates three of the most visible and public-facing activities in the County of Maui: 1. Landfill Operations; 2. Residential Refuse Collection; and 3. Recycling.

Q+E conducted an informal survey of several County of Maui Solid Waste Division stakeholders regarding the effectiveness and efficiency of SWD landfill operations and residential refuse collection. Both received high marks¹:

Landfill Operations: A -

Residential Refuse Collection: B

At the current level of work, SWD is an effective provider of core public services to the citizens and taxpayers of the County of Maui, specifically managing landfill operations, collecting residential refuse, and incenting recycling.

SWD work gets done because it has dedicated supervisors and conscientious employees. SWD performance is based on individual knowledge and effort. SWD management practices and controls are generally performed satisfactorily and can be characterized as ad hoc, people-dependent processes and controls. Good performance depends on individual knowledge and effort.

SWD success depends on the competency of County workers and sometimes even heroics of SWD line supervision to get work done. There is general assurance that SWD will execute its mission critical, public services, sometimes with SWD supervisors and employees working outside official responsibilities and beyond the duties defined by their Position Descriptions (PDs).

However, SWD will be shortly facing mounting challenges and risks that may disrupt operations as additional Capital Improvement Projects are initiated. SWD plans, processes, procedures, and controls will be required to address these challenges and risks.

FOUR KEY QUESTIONS

As a further examination of SWD operations, Q+E addressed the following four questions regarding SWD operational effectiveness, efficiency, and economics:

1. What is the status of current SWD Position Descriptions regarding the following?

- a. Verify the skill sets described in Position Descriptions are adequate.

Position Descriptions of SWD management, supervision, and clerical employees are adequate. Position Descriptions of SWD Engineers (CE IV, CE III), Recycling Coordinator, and Engineering Support Technician indicate a mismatch between the employees' work duties and Position Descriptions.

- b. Effectiveness of management and subordinate personnel, including but not limited to whether the Division's goals are being achieved.

SWD management and subordinate personnel are committed to providing the County of Maui mission-critical, public services. Many SWD goals are achieved, while others are in process to be achieved. SWD Strategic and Tactical Plans need to be developed. SWD residential refuse collection and landfill operational plans, processes, and controls need to be developed.

- c. Appropriate placement of positions within the department.

SWD positions are appropriately placed in operations. SWD engineering positions may be integrated into a CIP section within SWD. KMH LLP conducted the review of the SWD Fiscal section.

- d. Evaluate level of service provided to the public, department, and divisional management expectations versus actual performance.

SWD delivers to the County effective mission critical, solid waste public services. There are opportunities for improved effectiveness, efficiencies, and economics.

2. Does the Solid Waste Division have adequate controls to maintain safe and continuous operations at their current level throughout the County of Maui?

SWD has adequate *people* controls for its 1. Residential refuse collection and 2. Landfill operations. Additional documented processes and controls are recommended, specifically Residential Refuse Collection and Landfill Operations Standard Operating Procedures (SOPs).

3. Does the Solid Waste Division have adequate controls to manage its current Capital Improvement Projects (CIP)?

SWD has adequate *people* controls to manage its current CIP programs. However, SWD does **not** have sufficient documentation controls to manage its CIP effectively, efficiently, and economically. Additional processes and controls are recommended, specifically 1. Project Management Manual; 2. Construction Management Manual; 3. Quality Management Manual; and 4. Contract Administration Manual.

4. Does the Solid Waste Division have adequate controls to meet the recommendations of the Integrated Solid Waste Management Plan?

SWD does **not** have sufficient resources, processes and controls to manage the operational and CIP recommendations of the Integrated Solid Waste Management Plan (ISWMP) and Solid Waste Resource Advisory Committee (SWRAC).

Q+E RECOMMENDATIONS

SWD processes, procedures, documentation, and controls can be improved. Current processes are not well documented and can vary depending upon how SWD staff perceives the importance of the tasks being performed.

Q+E recommends SWD establishes and institutionalizes basic Project Management, Construction Management, and Quality Management practices for its Capital Improvement Projects.

Q+E recommends Residential Refuse Collection and Landfill Operations develop consistent processes by developing and following standard operating procedures (SOPs) and implementing additional operational controls.

Upon implementing Q+E recommendations, the County of Maui, Department of Environmental Management, and Solid Waste Division should secure the following benefits:

- SWD Capital Improvement Project (CIP) initiatives will be managed more effectively, efficiently, and economically.
- SWD mission critical services, such as Residential Refuse Collection and Landfill Operations will be delivered more effectively, efficiently, and economically.
- SWD operations and projects will be planned in accordance with SWD policies and procedures.

- SWD will have adequate resources for managing CIP projects.
- SWD management will have appropriate levels of oversight, control, and reporting on critical operations and projects.
- DEM will have assurance of compliance with County of Maui ordinances, DEM policies, SWD procedures, and Hawaii Department of Health permit requirements.

Quality + Engineering (Q+E) team distilled this report into the following **S**trengths, **W**eaknesses, **O**pportunities and **T**hreats (SWOT) analyses:

SOLID WASTE DIVISION SWOT ANALYSIS

STRENGTHS	WEAKNESSES
<ol style="list-style-type: none"> 1. New (relatively) executive leadership in Department of Environmental Management. 2. Work gets done relatively effectively and efficiently in Solid Waste Division. 3. High level of landfill, refuse collection, and recycling operational knowledge exists. 4. Strong functional – vertical silo orientation - ensures oversight and completion of work at landfill operations and residential refuse collection. 5. SWD supervisors design doable workarounds on operational and CIP projects. 6. Current performance goals and metrics are met (often exceeded) regularly. 7. County of Maui has an Integrated Solid Waste Management Plan that satisfies State requirements and reinforces sustainability vision of the County of Maui. 8. SWD is adaptable and takes on additional responsibilities such as those outlined in the Integrated Solid Waste Management Plan. 9. SWD supervisors and exempt employees are committed employees, who want to ‘do the right thing’ even though Department of Environmental Management rules have not been developed and delegation of authorities are unclear. 10. New technologies such as SWD automated residential refuse collection are tested and applied by SWD. 11. SWD recycling efforts have been successful resulting in 34% diversion. 12. MIS is implementing new utility billing system for SWD. 	<ol style="list-style-type: none"> 1. Institutional knowledge is people based not procedural, process, or system based. 2. Heavy reliance on peer and people controls. 3. Lack of updated documentation, i.e. County of Maui rules, procedures, work instructions, and flowcharts. 4. Lack of operational control manuals, i.e. Asset Management, Standard Operating Procedures, etc. 5. Lack of CIP control manuals, i.e. Project Management, Construction Management, Quality Management, etc. 6. Solid Waste Division responsibility is geographically spread to Maui, Hana, Molokai, and Lanai. 7. Ability to adopt new business models such as generate natural gas energy, generate electric energy, run/maintain MRF production facilities, etc. 8. Ability to commercialize new technologies and monetize commercial ventures with a profit/loss business mission. 9. Ability to focus on environmental compliance as additional responsibilities are assumed by SWD.

OPPORTUNITIES	THREATS
<ol style="list-style-type: none"> 1. Develop updated County rules for Department of Environmental Management (DEM) and SWD delegation of authorities. 2. Develop SWD Strategic Plan and Tactical Plan. 3. Develop professional staff to meet Integrated Solid Waste Management Plan recommendations. 4. Develop SWD bench strength (depth and breadth) for project management, construction management, etc. 5. Standardize and proceduralize SWD core processes by developing operational manuals. 6. Develop CIP control manuals and documentation, i.e. Project Management, Construction Management, Quality Management. 	<ol style="list-style-type: none"> 1. Loss of key staff with critical knowledge due to retirements, competition for talent, transfers, etc. 2. Inability to project manage ISWMP CIP projects. 3. CIP cost over runs. 4. Inability to plan, design, build and/or operate WasteTEC, MRF, or other operations. 5. Additional ISWMP CIP projects may destabilize core SWD operations.

SOLID WASTE DIVISION TRANSITIONAL CHALLENGES & RISKS

Solid Waste Division is an organization in transition. The challenges faced by the Solid Waste Division are a reflection of the greater challenges and disruptors faced by the Department of Environmental Management and the County of Maui. While most organizations have several critical drivers of change, SWD is challenged by the following stressors:

- Responding to Hawaii Department of Health Notice of Violations and other environmental non-compliance issues.
- Increasing County of Maui oversight due to continuing revenue requests from the general fund.
- Completing its present CIP initiatives on schedule, within budget, and within scope.
- Planning to implement the County of Maui's Integrated Solid Waste Management Plan (ISWMP) and Solid Waste Resource Advisory Committee (SWRAC) recommendations.
- Integrating new services into current operations, such as billing and collections.
- Developing new business models involving revenue generation, natural gas/electricity generation, Material Recovery Facility (MRF) production, etc.
- Developing and institutionalizing plan, design, and build capabilities for meeting ISWMP and SWRAC recommendations.
- Maintaining consistent and safe public services while focusing resources on capital improvement projects.
- Implementing a new utility billing application, specifically Northstar CIS.

Unless the above stressors are managed proactively, the disruptors will likely result in SWD core public services becoming unstable and may eventually jeopardize the ability of SWD to meet its statutory requirements of collecting residential refuse and managing County-wide landfills.

As well, SWD people, process, and technology risks described below will not be adequately managed and controlled.

PEOPLE RISKS

SWD processes and controls are people dependent. This can create a high degree of variability and risk in the system. In general, the lack of detailed policies, procedures, work instructions can lead to a high level of discretion at the supervi-

sor level. There is little institutionalization of management oversight, control, and reporting in SWD standards, policies, procedures, work instructions, and forms.

In the case of well-trained and well-intentioned employees, a key SWD employee syndrome is created. Operational and technical knowledge resides in a key SWD person. The challenge is that a choke point can be developed in a key process or CIP project should a key SWD manager or project engineer leave. Also in the case of poorly trained or less well-intentioned SWD employees, there is an elevated potential for error, fraud, or abuse in the system.

For example, SWD engineering resources and talent are strained to manage current CIP. SWD does not have technical staff to handle ISWMP CIP recommendations. SWD will need additional technical staff to develop technical specifications, review architect/engineering (A/E) plans, develop/update procedures, review change orders, and maintain oversight over contractors.

SWD faces the following people risks:

- Risk of key supervisors and technical personnel leaving SWD due to retirements or transfers.
- Risk of the SWD not being able to respond to sudden increases in CIP expansion or address the ISWMP recommendations.
- Risk of overloading project engineers and landfill operational managers with additional responsibilities.
- Risk of not having technical (engineering) knowledge, skills and abilities to project manage or contract manage outsourced plan, design, and build activities.
- Risk of not having people knowledge, skills, and abilities to manage and operate waste energy, natural gas, or electricity generation facilities.

PROCESS RISKS

SWD capability to execute its mission critical work depends on its capable management and conscientious workers. However, SWD processes and controls are generally not scalable because the processes rely heavily upon staff knowledge as opposed to defined processes and procedures.

SWD faces the following process risks:

- Risk of unplanned outcomes and/or unintended process changes occurring due to lack of current DEM ordinances, rules, and regulations resulting in conflicting processes or potential noncompliances.
- Risk of SWD not having the management controls and operational capability to manage the following effectively, efficiently, and economically: 1. Recycling programs; 2. Scheduled CIP such as construction of new landfill

cells; 3. Development of revenue generating energy facilities; 4. Development and maintenance of MRF production facilities; and 5. Plan, design, and build new energy facilities (WasteTEC).

- Risk of SWD process circumvention, process gaps, out of scope CIP initiatives, over budget CIP initiatives, over schedule CIP initiatives, project waivers, permit waivers, misalignment of work, or inadequate data retention.
- Risk of SWD being overwhelmed due to increased expectations without appropriate controls, resources, and/or capabilities.

TECHNOLOGY RISKS

SWD manages complex CIP and operational engineering projects. However, SWD can improve its use of information technology (IT), GIS, engineering, and other technologies.

SWD faces the following technology risks:

- Risk of lack of IT support for critical SWD operations.
- Risk of SWD not being able to respond to sudden increases in information technology or operational demands.
- Risk of SWD not being able to effectively adopt or adapt to new IT applications, such as Northstar CIS utility billing system.

FINDINGS AND RECOMMENDATIONS

1. Solid Waste Division needs a Strategic Plan and Tactical Plan.
2. Solid Waste Division Position Descriptions (PDs) of engineering staff need to reflect current work responsibilities. New SWD Position Descriptions need to be developed to ensure Integrated Solid Waste Management Plan (ISWMP) CIP can be executed successfully.
3. Solid Waste Division needs a documentation control system (Standard Operating Procedures) for managing, monitoring, and controlling its 1. Landfill Operations and 2. Residential Refuse Collection services.
4. Solid Waste Division needs a documentation control system (Standard Operating Procedures) for managing, monitoring, and controlling its Capital Improvement Projects (CIP).
5. Solid Waste Division needs a Project Management (PM) Manual for managing, monitoring, and controlling its Capital Improvement Projects.
6. Solid Waste Division needs a Construction Management Manual for managing, monitoring, and controlling the construction of Capital Improvement Projects.
7. Solid Waste Division needs a Quality Management Manual for managing, assuring, and controlling the quality of its Capital Improvement Projects.
8. Solid Waste Division needs a new business model to execute the Integrated Solid Waste Management Plan (ISWMP).
9. Integrated Solid Waste Management Plan (ISWMP) capital budget revenue projections and expense assumptions need to be updated.

1.0 Solid Waste Division needs a Strategic Plan and Tactical Plan.

Solid Waste Division does not have a Strategic Plan or Tactical Plan. The lack of plans is inhibiting SWD from realizing its full potential.

SWD presently uses the Integrated Solid Waste Management Plan (ISWMP) as its strategic plan. ISWMP was developed by the Solid Waste Resource Advisory Committee (SWRAC) with the support of GBB, a solid waste management consultancy.

SWD has not had the time and/or resources to focus on its future. Over the past several years, SWD has come under increasing scrutiny by the Environmental Protection Agency (EPA) and Hawaii's Department of Health (DOH). SWD management time has been focused on addressing legacy environmental noncompliances and Notices of Violation.

The Strategic Plan would outline the vision for the Solid Waste Division over the next five years, addressing where it is going, how it is going to get there, what resources are needed to achieve its goals, and what are the critical milestones in the journey.

The Tactical Plan would prioritize ISWMP projects, so SWD would be able to plan, scope, schedule, cost, and manage its critical CIP initiatives. The SWD Tactical Plan addresses how SWD integrates its present CIP with the ISWMP Scenario III \$200 million CIP. Once the SWD Tactical Plan is approved, then each CIP project can be planned, resourced, and scheduled.

Benefits of SWD Strategic and Tactical Plan include:

- Develop achievable SWD vision, mission, goals, and objectives.
- Ensure continuing stability and continuity of SWD operations.
- Prioritize ISWMP CIP and existing CIP projects over the next three to five years.
- Manage growth in SWD operations and CIP projects through institutionalizing controls.
- Obtain resources for planning, designing, building, and/or operating facilities recommended in ISWMP Scenario III.
- Ensure SWD can fulfill its statutory and permit obligations, while delivering its core public services.
- Assure County of Maui taxpayer and public resources are used in the most effective, efficient, and economical manner.

2.0 Solid Waste Division Position Descriptions (PDs) of engineering staff need to reflect current work responsibilities. New SWD Position Descriptions need to be developed to ensure Integrated Solid Waste Management Plan (ISWMP) CIP can be executed successfully.

SWD has responsible supervisors and committed employees. SWD work is often completed above and beyond a person's work responsibilities as described in his/her Position Description.

Position Descriptions of SWD Engineers (CE IV, CE III), Recycling Coordinator, and Engineering Support Technician indicate a mismatch between the employees' work duties and Position Descriptions.

SWD employs engineering and technical staff to plan, design, and build Capital Improvement Projects. The average workload for SWD engineering staff exceeds the ability of staff to meet timeline, budget, and scope objectives of SWD Capital Improvement Projects.

Engineering Section has retained an Engineering Support Technician to manage the natural gas flare at Central Maui Landfill. SWD Recycling Coordinator has assumed additional responsibilities. These persons' additional duties are not addressed in their Position Descriptions.

ISWMP recommendations will require SWD to obtain the following knowledge, skills, and abilities: 1. Project planning including Environmental Impact Statement development, permit reviews, and site selection; 2. Project Management including planning, designing, and building state-of-the-art energy projects; 3. Construction Management including as-built drawing reviews, QA/QC inspection, plan/spec reviews, 30%/60%/90% reviews, and change order reviews; 4. Contract Administration including contractor and subcontractor selection, contractor monitoring, contract development, and plan reviews; 5. Quality Management, Assurance, and Control including corrective/preventive actions, design quality audits, and construction audits.

SWD may have to obtain additional human resources to implement ISWMP recommendations, including compliance officer, project planner, permitting planner, natural gas engineer, MRF engineer, and power conversion (electrical) engineer.

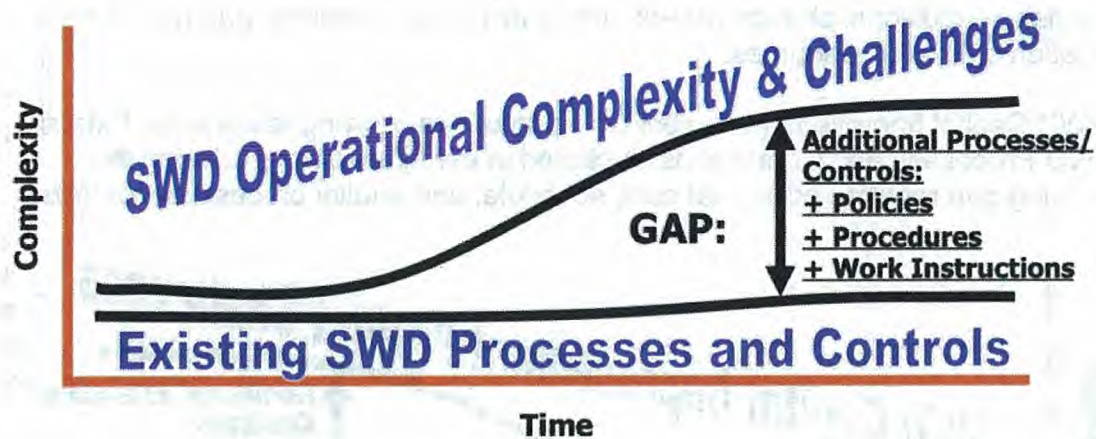
Benefits of updating Position Descriptions include:

- Ensure SWD employees know and agree what is expected on the job.
- Ensure SWD employees have the requisite knowledge, skills, and abilities to execute their work.
- Ensure SWD has capable project engineers to plan, design, and build state-of-the-art WasteTEC and other projects.

3.0 Solid Waste Division needs a documentation control system (Standard Operating Procedures) for managing, monitoring, and controlling its 1. Landfill Operations and 2. Residential Refuse Collection services.

Currently, SWD landfill operations and residential refuse collection work effectively because County supervision and employees are conscientious and capable. Landfill operations faces a number of operational challenges and additional complexity due to expanded responsibilities, DOH permitting requirements, and Integrated Solid Waste Management Plan (ISWMP) recommendations.

The growing gap between 'SWD Operational Complexity and Challenges' and 'Existing SWD Processes and Controls' requires additional SWD processes, procedures, and controls. This is illustrated in the figure below. Q+E recommends that SWD develops Standard Operating Procedures (SOPs) and institutionalizes appropriate operational controls in Landfill Operations and Residential Refuse Collection.



Benefits of SWD documentation control system include:

- Develop a documentation control system so SWD core operations are planned and executed in accordance with DEM policies and SWD procedures.
- Ensure SWD operations are monitored, controlled, and reviewed.
- Ensure SWD operations are documented for adherence to policies, procedures, and standards.
- Improve SWD operational capability to manage new ISWMP facilities.
- Ensure SWD operational controls are equally effective, efficient, and economic in Hana, Lanai, and Molokai Landfills.

4.0 Solid Waste Division needs a documentation control system (Standard Operating Procedures) for managing, monitoring, and controlling its Capital Improvement Projects (CIP). Three CIP control manuals are recommended:

- 1. Project Management (PM) Manual.**
- 2. Construction Management (CM) Manual.**
- 3. Quality Management (QM) Manual.**

SWD Capital Improvement Projects are largely managed and controlled on an ad hoc basis. While projects may be completed on schedule and within scope, they seem to be running above engineering estimates and budget. As well, there are varying levels of project management, construction management, and quality management controls.

The hallmark of CIP excellence is consistency. SWD CIP variability results in the risk of additional change orders, risk of misunderstandings, and risk of misallocation of project resources.

'SWD Capital Improvement Project Challenges' are growing faster than 'Existing SWD Processes and Controls' as illustrated in the figure below. Closing the growing gap requires additional cost, schedule, and quality processes/ controls.



Benefits of SWD documentation control system include:

- Ensure consistent application of SWD project management processes.
- Ensure SWD projects are completed on time, within budget, and compliant to quality and permit requirements.
- Reduce SWD change orders and other project costs.

5.0 Solid Waste Division needs a Project Management (PM) Manual for managing, monitoring, and controlling its Capital Improvement Projects.

SWD Capital Improvement Projects are planned, managed, controlled, and monitored by dedicated SWD engineers. SWD project managers through personal initiative and personal knowledge ensure SWD projects are completed on time and comply with Department of Health permits.

SWD CIP Project Management is sometimes inconsistent. SWD does not have standard protocols and procedures for managing projects. SWD project engineers may manage 3 or 4 multi-disciplinary projects simultaneously. A civil engineer may be planning, managing, and constructing a civil, mechanical, and electrical project. Project lessons learned don't seem to be incorporated into new projects. Project scope, schedule, costs, risks and quality seem to be managed in a reactive manner. Change management process seems to work sporadically. Change orders seem to be high compared to the overall cost of the project.

The Project Management Manual consists of approved and/or recommended project management practices. A Project Management Manual would provide guidance on the consistent application of PM controls in SWD CIP.

Benefits of a SWD Project Management Manual include:

- Ensure SWD projects are within budget, in scope, on schedule, and meet quality requirements.
- Ensure SWD projects are planned and permitted consistently.
- Ensure SWD projects are managed and controlled consistently.
- Ensure SWD projects are designed to meet plans and specifications.
- Ensure consistent process of managing, reviewing, and approving change orders.
- Deploy consistent project management processes and tools in SWD CIP.

6.0 Solid Waste Division needs a Construction Management (CM) Manual for managing, monitoring, and controlling the construction of Capital Improvement Projects.

SWD has a \$22 Million capital budget for 2010 to 2012. SWD for FY 2010 plans the following capital projects: 1. Construction of 3000-gallon diesel tank; 2. Maintenance Facility Design/Permitting; 3. Land purchases of 20 acres for MRF and C&D MRF; 4. Phase IV Gas Collection Design and Construction; 5. Landfill Phase V-B Design; and 6. Landfill Gas (LFG) to Energy Facility.

The Integrated Solid Waste Management Plan (ISWMP) Scenario III anticipates \$200 Million of additional capital projects. ISWMP recommends the following capital projects for 2009 to 2012: 1. Concrete and Demolition (C&D) processing facility; 2. Materials Recovery Facility (MRF) development; 3. Universal Collection – Municipal Solid Waste; 4. Fleet Maintenance Facility; 5. Call Center; 6. Hana Transfer Facility; and 7. WasteTec Facility.²

The primary goal of the Construction Management Manual is to provide consistent construction management administration of current SWD and anticipated ISWMP construction projects.

Benefits of a SWD Construction Management Manual include:

- Provide guidance for managing the construction of the SWD CIP infrastructure.
- Ensure SWD professionals, contractors, planners, A/E designers, construction managers, inspectors, accountants, risk managers follow SWD construction management procedures.
- Ensure that SWD CIP professionals follow consistent field administrative procedures and maintain accurate records.
- Develop clear CIP audit trails for budgeting and change orders.
- Ensure consistent and accurate cost estimating, change order control, and claims processing.

7.0 Solid Waste Division needs a Quality Management (QM) Manual for managing, assuring, and controlling the quality of its Capital Improvement Projects.

The Quality Management Manual is the core quality management (QM), quality, assurance (QA), quality control (QC), and inspection document for SWD CIP.

The Quality Management Manual ensures key oversight, compliance, and control processes are documented; A/E designs are controlled (design review, sign-off, design changes, design waivers); engineering and construction documents are controlled; quality plans are developed; supervisors and employees are trained; internal audits are conducted; methods are in place to ensure work is completed according to standards; and corrective and preventive actions ensure problems are root-cause corrected.

SWD does not have a Quality Management Manual. SWD currently contracts for construction quality assurance and inspection.

Benefits of a SWD Quality Management Manual include:

- Ensure project quality oversight and construction quality assurance resides in SWD.
- Ensure symptomatic and root cause correction of designer (A/E) or contractor nonconformances.
- Ensure statutory completion of paper work and retention of compliance documents.
- Ensure Notice of Violation and permit compliance.
- Assure appropriate level of quality auditing of design submittals, construction inspection, and contract review.
- Assure SWD operations and SWD CIP meet or exceed standards and metrics.

8.0 Solid Waste Division needs a new business model to execute the Integrated Solid Waste Management Plan (ISWMP).

Integrated Solid Waste Management Plan (ISWMP) and Solid Waste Resource Advisory Committee (SWRAC) recommended the following:

- Construct a Material Recovery Facility (MRF) on the Island of Maui to process the County and commercially collected curbside and recycling center materials. (SWRAC recommendation #6).
- Pursue landfill gas utilization at Central Maui Landfill (SWRAC recommendation #9).
- Pursue alternative methods of funding solid waste service (SWRAC recommendation #16).
- Contract with the private sector to receive, store, and process abandoned autos and discarded appliance (SWRAC recommendations 15).

Currently, SWD has a people-based, process-oriented, public-service operating model. SWD supervisors and employees are hired, retained, and rewarded for non-profit operations and risk-averse behaviors. If ISWMP recommendations are implemented, SWD must evolve into a profit/loss, risk-taking business venture. This is a difficult transition.

SWD will need to develop a business model, new business capabilities, and business mindset that are beyond its present charter, authorities, and capabilities in order to become a:

- Profit/Loss natural gas energy generator.
- Profit/Loss bio fuel electricity generator.
- Profit/Loss Materials Recovery Facility (MRF) production recycler.
- Plan/Design/Build Contractor of state-of-the-art energy facilities.

Benefits of SWD adopting a new business model include:

- Develop SWD knowledge, skills, and abilities to operate state-of-the-art energy facilities.
- Ensure SWD personnel have contract administration capabilities and behaviors to manage for-profit business ventures.
- Facilitate transition to a profit/loss, risk-taking and outcomes-driven business model.

9.0 Integrated Solid Waste Management Plan (ISWMP) capital budget revenue projections and expense assumptions need to be updated.

ISWMP, SWRAC, and GBB capital budget revenue projections and expense assumptions justify SWD CIP capitalization, financial returns, and timing of SWD capital projects. Capital budget assumptions and projections should be reassessed and updated based on the volatility of current market conditions, price of recyclable materials, and price of energy. Until then, SWD won't be able to prioritize the development of its present CIP and ISWMP CIP.

As an example, GBB reported the following revenue projections:

1. Curbside recyclable materials revenue was projected as:

\$130/ton revenue (West Coast US)
\$75/ton cost (container shipping)
 \$55/ton net revenue

2. C&D recyclable materials revenue was projected as:
 \$40/ton revenue (Maui market)

3. Electricity WasteTEC to MECO assumptions were:

Assumption: 400 kwh/ton
 Assumption: \$0.15/kwh
 Revenue \$54/ton

The present economic recession challenges all ISWMP capital budget assumptions and projections. For example, the value of recyclables has dramatically fallen. The price of fuel is now stable after falling from \$145/barrel to \$66/barrel for light crude oil.

Market volatility of the revenue from curbside recyclable materials; C&D recyclable materials revenue; electricity generation revenue; and rising expenses result in different capital budgeting and funding scenarios, which impact the timing of the CIP projects.

Benefits of updating ISWMP Scenario III projections include:

- Prioritize and schedule ISWMP CIP development based on return on investment (ROI).
- Provide critical data to evaluate alternative plans (lease back, etc.) for funding ISWMP projects.
- Validate ISWMP assumptions and projections based on current economic assumptions.
- Identify and manage risk factors in ISWMP CIP.

GLOSSARY OF ACRONYMS

CA – Contract Administration

CM – Contract Management

CML - Central Maui Landfill

DEM – Department of Environmental Management

HHW - Household Hazardous Waste

ISWMP – Integrated Solid Waste Management Plan

MIS – Management Information Systems

MRF - Materials Recovery Facility

MSW - Municipal Solid Waste

PM – Project Management

SWD – Solid Waste Division

SWRAC – Solid Waste Resource Advisory Committee

ADMINISTRATION INTERVIEWS

Following County of Maui Administrators were interviewed as part of this report:

Sheri Morrison
Managing Director
County of Maui

Cheryl Okuma
Director
Department of Environmental Management

Fred Pablo
Budget Director
Office of the Mayor

Kuheia Paracuelles
Environmental Coordinator
Office of the Mayor

Shelley Pellegrino
Executive Assistant
Office of the Mayor

Kalbert Young
Director of Finance
County of Maui

DISTILLED COMMENTS FROM INTERVIEWS

Landfill Operations and Residential Refuse Collection received overall high grades:

Landfill Operations: A -

Residential Refuse Collection: B

The County's Solid Waste Division provides the following value:

- Provides vision through the Integrated Solid Waste Integrated Plan (ISWMP).
- Provides mission critical County services, such as recycling, landfill operations, and residential refuse collection.
- Enhances the reputation of the Island of Maui as a destination and vacation spot.
- Enhances the visual appeal and brand value of the County of Maui.
- Responds and resolves customer complaints in an effective manner.
- Provides twice weekly refuse collection at competitive pricing.
- Provides state-of-the-art automated refuse collection.
- Provides state-of-the-art landfill operations.

Potential opportunities for improvement:

- Develop SWD Strategic and CIP plans.
- Contain SWD operational expenses and CIP over runs.
- Implement and operationalize ISWMP recommendations.
- Develop a self-supporting business model for the Solid Waste Division in the County of Maui.
- Develop new ordinances and/or statutory authorities for additional fees for landfill operations and residential refuse collection.
- Ensure residential refuse collection and landfill users are billed accurately and pay for services.
- Reduce the number of residential refuse collection complaints.
- Reduce the amount of waste in the landfill through diversion and recycling.

ENDNOTES

¹ Q+E surveyed Landfill Operations and Residential Refuse Collection, which are the major organizational components of SWD.

² GBB planning and scheduling document.