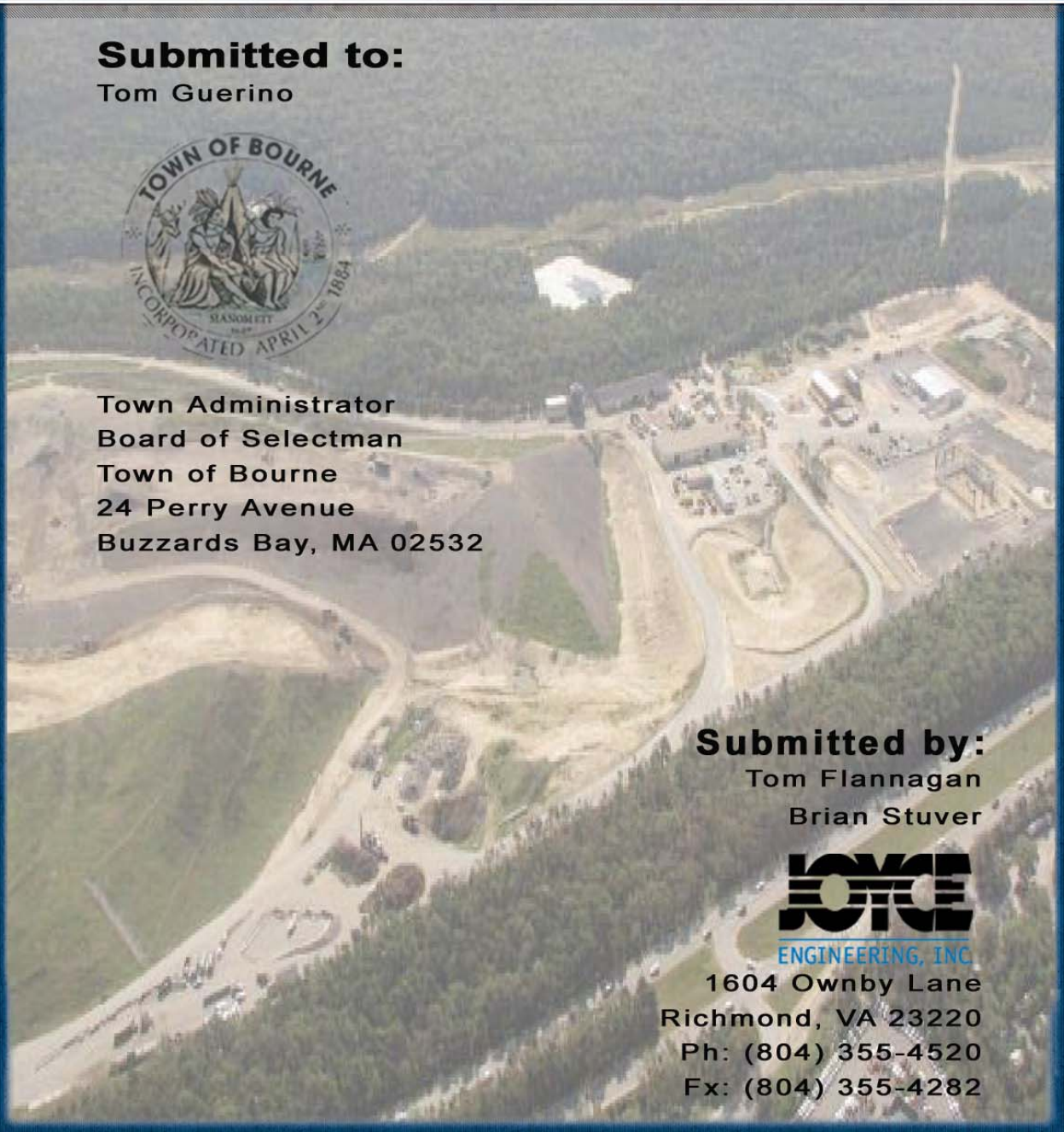
Department of ISWM Evaluation Report



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TOWN OF BOURNE, MASSACHUSETTS
DEPARTMENT OF INTEGRATED SOLID WASTE MANAGEMENT
EVALUATION REPORT

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INTRODUCTION

The Department of Integrated Solid Waste Management (ISWM) manages a complex and multi-faceted facility whose services have significantly matured since its inception. The expansion of services was completed without a significant increase to the existing resources and manpower available to ISWM. In light of recent management changes, the Town of Bourne, Massachusetts (Town) is presented with an opportunity to review the ISWM (Department) needs and direction in order to continue developing a team that is positioned to take advantage of market opportunities in the region.

Joyce Engineering, Inc. (JEI) was retained by the Town to conduct a broad evaluation of the ISWM. This comes at a time when ISWM is undergoing a reorganization of department staff members and is also seeing a decline in revenues caused by the recent economic conditions.

JEI staff made two visits to the site to observe operations and talk with management and staff separately. In addition, Bob Bliss, C.P.A, was contracted by ISWM to conduct a detailed review of the ISWM Enterprise Fund and to make recommendations on ways to improve financial analysis, tracking, and solvency. ISWM management has provided data and input to JEI and Bob Bliss as part of this evaluation process.

The purpose of the evaluation is to:

- Provide a brief overview of current operations;
- Examine personnel resources and determine if a reorganization is warranted and/or if outside help is needed for targeted areas;
- Offer recommendations for next steps; and
- Identify areas that need improvement or additional resources.

EXECUTIVE SUMMARY

The Town of Bourne, Massachusetts (Town) has a tremendous asset in its facility located on MacArthur Boulevard. It has converted an old, unlined town dump-site into a modern facility with several operational areas that combine to make a unique, complex, and multifaceted operation with room to grow. Overall, Department of Integrated Solid Waste Management's) (ISWM) operations are substantially more innovative than most publicly owned waste management facilities.

Since 1999, the ISWM has continued to position the facility for the next major era of growth in the Town and the region by creating and implementing a site development master plan and obtaining the necessary permits. However, ISWM is an organization currently in transition and needs to adapt its organizational structure and business plan to meet changing market conditions, regulatory oversight, and developing technologies. Additionally, due to the recent economic downturn and rapid growth of ISWM, the time has come to scrutinize the financial performance of ISWM to better understand its strengths and weaknesses.

Until recently, ISWM's profitability, even after significant contributions to the Town's General Fund, has been strong and allowed ISWM to make substantial contributions to its net assets. However, ISWM's profitability is based not only on the services it provides, but primarily on the actual amount of waste managed and disposed. This revenue is rarely a fixed amount and therefore, contributions to the Town's General Fund should not be predetermined. With the current economic environment and decreased revenue, ISWM has been forced to rely heavily on its net assets to subsidize its obligations to the Town's General Fund. ISWM cannot continue to rely on its dwindling net assets and, as a result, must develop a sustainable approach to ensure the core business needs are met and that ISWM can remain competitive in the marketplace. Currently, ISWM is a crucial part of the financial viability of the Town, affecting all departments. Without improvements, the Town could risk receiving diminished contributions to the General Fund. The Town must also explore ways to decrease its dependence on the Enterprise Fund, at least until the economy rebounds significantly. In doing so, the Town and ISWM will be better equipped to handle any future economic changes. Finally, the Town and ISWM need to ensure the facility is fulfilling its closure and post-closure obligations, as well as preparing for future waste disposal needs.

It is critically important to recognize that ISWM is a Town department and not an independent, stand-alone business. ISWM does not have the benefit of the corporate level of endorsement or support that their competitors have and thus, in order to remain competitive, ISWM must rely on available expertise from in-house staff with professional assistance from consultants and contractors. ISWM management cannot, and should not, make major decisions on it own, but rather should have the full backing of an informed Town leadership. ISWM management, the Town Administrator, the Director of Finance, and the Town Treasurer must work in concert with the Board of Selectmen and the Board of Health, where applicable, and all should meet on a regular basis. These meetings will help to ensure there is unity and understanding of a plan that will best position ISWM to remain competitive. Ideally, this evaluation will serve as a catalyst to

reinvigorate the interaction among the key stakeholders mentioned so that ISWM can improve its operations and fulfill its potential as a regional asset.

This evaluation was completed based on the current status of the landfill, market conditions, and current solid waste management regulations. Because these parameters can vary, the Town leadership and ISWM management should review and discuss ISWM's needs on a quarterly basis. This will ensure that ISWM and the Town are in the best possible position to meet the established goals, as well as complete all assigned tasks and directives in a timely fashion. To reflect changing conditions in the marketplace, ISWM should update its business plan on an annual basis.

While there is significant growth potential for the facility, the Town leadership must carefully evaluate options for growth and empower ISWM management to take a proactive approach to position itself in the marketplace. Additionally, leadership must commit the necessary resources so opportunities can be developed. Finally, the Town Leadership should regularly review ISWM's financial obligations with regard to operational expenses, market conditions, and contributions to the General Fund.

Town leadership and ISWM management must also review and revise the Business Plan to coincide with changing market conditions, which could entail different waste-streams, waste-sheds, waste quantities, contractual arrangements, new technologies, strategic partnerships, and energy development. This review will help to ensure ISWM reaches established benchmarks and sets realistic goals for future growth. Without clear, specific expectations and an open line of communication between Town leadership and ISWM management, ISWM staff will fail to capitalize on potential opportunities. However, after informed and detailed discussions with a knowledgeable and motivated leadership, ISWM will prove to be a regional leader. ISWM is far more than just a landfill; it is an environmental park with multiple facets that has the opportunity for significant growth. To support this growth, the Town must begin to prepare financially to purchase adjacent properties that are deemed necessary for expansion, additional operations, and/or buffers. The Town must also continue to analyze the feasibility and practicality of relocating the Town of Bourne's Department of Public Works from its current facilities on MacArthur Boulevard to a more suitable location, as well as evaluate the pros and cons of privatizing the collection and hauling services. JEI believes the Business Plan should address better coordination efforts between ISWM and the DPW and provide careful scrutiny and cost analysis of all curbside collection and recycling programs.

RECOMMENDATIONS

In order to position ISWM to provide the best array of options for the Town, both in the short-term and the long-term, JEI recommends the following action items:

- Implement the proposed Organization Structure and fill all vacant positions; See Section C;

- Review current operational practices in all facility services to identify inefficiencies and provide enhanced training, necessary equipment, and appropriate staffing to improve operational benchmarks and techniques, See Section D;
- Review the current leachate management practices to identify ways to reduce the excessive financial impact to the facility; See Section D;
- Develop a Landfill Gas Master Plan to optimize collection and help reduce the potential impact of odors to the surrounding community; See Section D;
- Evaluate the viability of recycling programs; See Section D and F;
- Establish a more comprehensive heavy equipment maintenance program with assigned mechanics who are disciplined and experienced with "yellow iron"; See Section D;
- Evaluate all collection operations conducted by ISWM and the Department of Public Works; See Section D and F;
- Develop a comprehensive Environmental, Health, and Safety Management System; See Section E;
- Establish monthly reviews of profit and loss statements to ensure all stakeholders recognize ISWM's financial status concerning the achievement of benchmarks; See Section F;
- Create a Memorandum of Understanding between the ISWM Enterprise Fund and the Town's General Fund that codifies the relationship and how money is transferred; See Section F;
- Develop a short-term plan that stabilizes revenue streams for the next 5 years leveraging ISWM's core asset, the landfill; See Section F;
- Update and revise the Business Plan, and Community Relations Plan to ensure the ISWM staff and the Town have a clear and unified vision of the objectives for the facility and that these objectives are effectively communicated; See Section H; and
- Continue to support ISWM in its ability to capitalize on the enviable location, core assets, and innovative operational methods to benefit the Town, its employees, and the Region.

NEXT STEP

As the next step, JEI strongly recommends all ISWM stakeholders, such as the Strategic Planning Group, meet collectively and publicly to discuss the recommendations in this evaluation and the acceptability of current and future disposal practices. Failure to improve communications and operational efficiencies will likely jeopardize ISWM's financial viability and could result in increased tax levies to subsidize facility operations. These publicly accepted decisions will help guide ISWM in updating its short-term and long-term Business Plans.

A. DEPARTMENT OVERVIEW

The Town began operating an unlined landfill on MacArthur Boulevard in 1967. In addition, the Town has provided for many decades, and continues to provide, curbside collection of municipal solid waste and recyclables from residents on an at least weekly basis. By the early 1990s, the Town was faced with the choice of closing the unlined landfill and going to an alternative disposal site, such as the SEMASS waste-to-energy facility in Rochester, or developing a landfill to meet the modern landfill design regulations requiring the installation of a composite liner system, collection of leachate, installation of a landfill gas collection system, and the capping of finished areas on a regular basis. The Board of Selectmen performed an evaluation of the Town's solid waste management options and ultimately decided to move forward with the development of a modern, regional facility with expanded operations and services that would raise the necessary funds to be self sufficient without aid from the Town's General Fund.

As a result, the Department of Integrated Solid Waste Management (ISWM) was organized in 1998 and in August 1999, the General Court of Massachusetts passed Chapter 49 of the Acts of 1999, which formally authorized the creation of ISWM. ISWM was tasked to operate the Town of Bourne Landfill and on-site recycling operations. In addition, ISWM was responsible for the overall master planning of the town-owned land located on MacArthur Boulevard. This law also transferred solid waste management duties, with the exception of curbside municipal solid waste (MSW) collection and curbside recycling, from the Town of Bourne's Department of Public Works to ISWM and mandated ISWM to establish the position of General Manager for its direction. ISWM, through the Administrative Fee, funds both curbside collection of MSW and recycling. Curbside collection has been funded since the inception of ISWM and MSW collection has been funded since Fiscal Year 2005. ISWM was also ratified by the Town Charter in 2001, when the Town of Bourne switched its form of government from a full-time Board of Selectmen, to a part-time Board with a Town Administrator. The Town Charter also requires the position of General Manager to oversee ISWM.

ISWM is managed as an Enterprise Fund under Massachusetts General Law Chapter, 44, §53F½, see Appendix I, and is overseen by the Massachusetts Department of Revenue. The requirements of the Enterprise Fund specify how funds can be distributed from ISWM to the Town's General Fund. Another unique facet of ISWM is that, after careful work by the Town and its legislative delegation, the General Court of Massachusetts passed Chapter 300 of the Acts of 2000 in October 2000 that subjected ISWM to a tax set forth in Section 24A of Chapter 16 of MGL. This tax was created by the legislature in 1980 and required privately owned and operated solid waste management facilities to pay the municipalities in which they operate a fee of $1.00 per ton of material they managed. This fee is adjusted annually using the Consumer Price Index – Boston, and currently is $3.18 per ton of material managed for calendar year 2009. This will be adjusted in January for 2010. Internally, ISWM refers to this as the Host Community Fee. Since its inception, through the Administrative Fee, Host Community Fee, and in-kind services/avoided costs, ISWM has contributed approximately $17 million to the General Fund. Appendix II shows a breakdown of these contributions.

ISWM has grown considerably, in complexity, revenue, and services provided, since its inception. An approximately $6 million per year business has grown to over $13 million in recent years. In addition to the landfill, ISWM assets now include specialized construction equipment, two new buildings, and a new residential recycling center. Through ISWM, the Town is part owner of the Upper Cape Regional Transfer Station located at the Massachusetts Military Reservation. As part owner, a Town representative (Town Administrator or designee) sits on the Upper Cape Regional Transfer Station Board of Managers. The Town has co-owned this facility with Falmouth, Mashpee, and Sandwich since 1996, when it began sending its municipal solid waste to SEMASS via a rail spur located within the building. This interest could play an important role in the future development of ISWM.

B. SITE OVERVIEW

The Town of Bourne began operations of an unlined landfill in 1967 on a portion of a 74 acre parcel located on the northbound lane of MacArthur Boulevard (Route 28). A new headquarters and associated buildings were built to house the Town of Bourne Department of Public Works. Since then, the Town has added 25 acres of abutting land to the south and constructed several new facilities. To understand the overall layout of the facility, please refer to Figure 1 which shows the current layout of the approximately 100-acre site. Comparatively, Figure 2 is an aerial photo of the site in 1996.

Landfill development

Phase 1A, 1B, 1C (Phase 1ABC) was the original unlined landfill section developed. Operations began in 1967 and this served as the main depository for municipal solid waste (MSW) from the Town of Bourne until 1999. This area received a clay cap in the late 1980s; however, this was removed as part of a vertical expansion in the late 1990s. Phase 1ABC was capped in 2000 and has an active landfill gas collection system.

This landfill gas collection system is comprised of both vertical and horizontal collection wells connected through a network of piping that ultimately culminate at the utility flare, located in the northeast corner of the site. Gas is then combusted to reduce contaminant levels, control odors, and off-site migration. Groundwater is monitored on a quarterly basis through a series of wells both upgradient and downgradient. Figure 3 shows a monitoring plan for the entire site which includes groundwater monitoring wells, gas monitoring wells, and the gas collection system. In an effort to address any potential environmental liabilities, ISWM has a $3 million environmental pollution liability policy with American Insurance Group, Inc. and a standby emergency response contract with Clean Harbors.

Phase 1D is the other unlined phase located just west and non-contiguous of Phase 1ABC disposal area. The Department of Public Works used this area for waste disposal operations in the 1970s. Parts of the current residential recycling center and previous compost area are located over this waste. Unlike Phase 1ABC, this area has only an interim cap. Therefore, this had to be addressed per the Massachusetts Department of Environmental Protection (DEP) regulations.

After consultation with DEP, the Town applied for and received a permit to remove the old waste, recycle what's feasible, reuse clean soils, and rebury old municipal solid waste in the new lined landfill. Reclamation activities took place in 2002 and approximately two-thirds of the old phase has been reclaimed, creating room for expansion of the lined landfill. However, a significant portion of the remaining material underlies the current residential recycling center. As a result, ISWM has constructed a new center on the southern portion of the site so reclamation activities can be completed. In addition to new landfill capacity, the old Department of Public Works salt barn was demolished and replaced further to the south.

ISWM anticipates transferring the residential recycling operations from the old center to the new center by the end of the year and commencing reclamation activities shortly thereafter. The amount of waste material remaining is relatively small and the goal is to finish reclamation activity by late spring of 2010. Once the center is relocated and reclamation activities are concluded, a new scale house and scales will be constructed where the guard shack is currently located and the main access road will be realigned, greatly improving queuing capacity and traffic flow. Figure 4 depicts the proposed site access plan for which the Town has already received a permit from the Massachusetts Highway Division. These adjustments, along with other recent infrastructure improvements, will give ISWM the option to increase its waste acceptance rate, as necessary, to take advantage of alternate solid waste disposal options and technologies other than landfilling. A full evaluation and discussion of opportunities should be addressed when ISWM updates its business plan.

Phase 2 was the first lined landfill section at the site and was constructed in 1999. It is a single composite lined landfill with leachate collection. Leachate is the liquid that has passed through waste, and consists of precipitation as well as liquid from the waste itself. The composite liner is comprised of layers of clay, geomembrane liner, and geo-synthetic clay liner material to protect against infiltration of leachate to the groundwater. The Phase 2 waste was purposefully separated from Phase 1ABC to allow for the possibility to reclaim that area in the future. However, as space became limited, it was necessary to fill in the valley between the old areas and the new lined area. This limits the reclamation ability of Phase 1ABC to the western portion (potential Phase 5); however, ISWM is currently not planning to reclaim this area.

At the time Phase 2 was operational, Massachusetts DEP was limiting the amount of new municipal solid waste landfill capacity; therefore, this phase consists primarily of construction and demolition waste. The Town decided to send its municipal solid waste to the SEMASS waste-to-energy facility in Rochester, Massachusetts via the Upper Cape Regional Transfer Station on the Massachusetts Military Reservation. The goal, at the time, was to build a construction and demolition waste processing facility and only use the landfill to dispose of the residuals from the processing facility. However, for a variety of reasons described in the FY 2002 Review and Business Plan in Appendix III, the Town decided not to build the construction & demolition debris processing facility and instead pursue a permit to accept municipal solid waste once again. Phase 2 has been capped and has an active landfill gas collection system.

Phase 3 began operation in the Spring of 2001 and is a double composite lined landfill. Instead of one layer of geomembrane liner and one layer of geo-synthetic clay liner, it has two layers, along with a leak detection layer to provide warning of any potential liner problems. Phase 3 has three stages. Stages 1 and 2 consist mainly of the same construction and demolition waste materials as disposed in Phase 2. Phase 3, Stage 3 has some municipal solid waste, which the Town began accepting again in the spring of 2005. This phase is also capped along the east slope and has an active landfill gas collection system.

Phase 2A/3A, which began accepting waste on April 2005, is located in the valley between Phase1ABC, Phase 2, and Phase 3. Currently, the landfill is permitted to accept an average of 600 tons per day for disposal, with a daily cap of 700 tons and a yearly cap of 219,000 tons. It is comprised of a complex liner design which takes into account capped areas, unlined areas, and the different liner designs of the phases it overlays. Phase 2A/3A is comprised of two stages 1 and 2. ISWM began operating Phase 2A/3A in Stage 1, the eastern portion. Stage 2, the western portion, was constructed this past spring. ISWM received an Authorization to Operate and began operations in Stage 2 on Tuesday, September 22, 2009. This new area, along with Stage 1, will provide several more years of disposal capacity.

Phase 4 will be the next cell developed and will be located in the space previously occupied by Phase 1D. Phase 6 is the last planned phase. Phase 6 will occur where the current Department of Public Works buildings and current ISWM office trailers are located, at the southern end of the old landfill parcel. After these structures are relocated to the south or off-site, this area can then be developed for future landfill capacity.

Appendix IV shows a summary of the volume for each phase, how much space has been consumed, and how much airspace remains. There is also a projection of closure dates ranging from 2026 to 2035 using varying historical rates of consumption. Figure 5 shows how the site will look at full build-out.

Concurrent with its role of running a business, ISWM has also spent considerable time and resources improving the value of the Town-owned parcel through infrastructure improvement and permitting approvals. Improvements to the site completed either by ISWM staff with Town equipment or through contractors include:

- Installation of an underground utility conduit around the perimeter of the site;
- Several new infiltration basins;
- New paved interior roads;
- Installation of water mains;
- Scale house and in-bound and out-bound scales;
- Boulder walls along the west boundary and north boundary;
- New baling facility;

- New construction and demolition waste transfer station;
- New residential recycling center and compost processing area;
- Reclamation of a majority of the old unlined Phase 1D landfill;
- New fire suppression system for all new buildings on the southern parcel which included a 250,000 gallon underground water storage tank;
- New 207,000 gallon, glass-fused steel leachate storage tank and load out area; and
- New site-wide wireless digital video camera surveillance system.

These facility improvements have not been widely publicized; however they have had a significant impact on day-to-day operations. These improvements have also positioned the Town to play a significant role in the management of solid waste in southeastern Massachusetts, as well as garnered attention from technology developers. In addition to tangible assets, ISWM has sought and received site assignment from the Town of Bourne Board of Health for the full 25 acre parcel to the south. This will allow for all solid waste management activities except for landfill and incineration. Therefore, this is the area primed for development of alternative technologies.

Figure 6 is an aerial photo taken in December 2008 and highlights the amount of work that has been accomplished at the site since 1996. Figure 7 shows the current site layout and abutting parcels of land to the south. These parcels are land-locked and JEI recommends that, as part of its planning, the Town consider acquiring these parcels to provide even more potential to an already very valuable site.

While a significant amount of work has been done, infrastructure improvements, utilities and permitting work does remain as part of the site master planning process. Projects that remain include:

- Continued site work such as infiltration basins, boulder walls, utility extensions, landscaping and beautification, improved signage, upgraded gates and paving;
- A major comprehensive air permit that includes provisions for a landfill gas-to-energy project of up to 4.3 megawatts. The development of this will be discussed in the business plan to build on work done in a recent feasibility study. See Appendix V for a conceptual design layout;
- Final punch-list items for the new residential recycling center, including a new Swap Shop;
- An update to the business plan.

C. ORGANIZATIONAL STRUCTURE

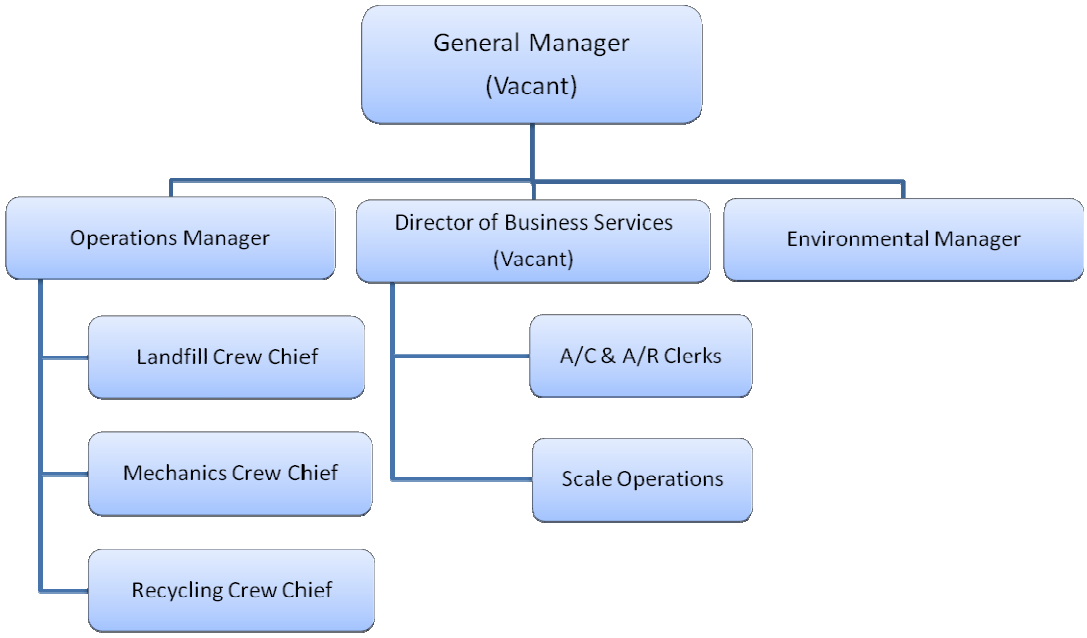
As demonstrated above, ISWM manages a complex and multi-faceted operation whose services have significantly matured since its inception. This expansion of services has been completed without a significant increase to ISWM's existing resources and manpower. In light of recent management changes, the Town is presented with an opportunity to review ISWM's needs and direction in order to continue the development of a team that is positioned to take advantage of market opportunities in the region.

Without sufficient and appropriate utilization of personnel resources, continued support from outside consultants, contractors, and expanded support from the Town Management, ISWM will continue to struggle to be competitive in the marketplace, which is dominated by private operations. At the current support level, ISWM is continually at risk of failing to meet the Town's financial expectations and the regulator's compliance requirements. These deficiencies are seriously jeopardizing ISWM's long-term viability. While ISWM continues to operate the existing facilities, consideration should be made to continue upgrading the infrastructure and expanding the facility.

As a result of the current staffing level, ISWM is unable to invest the time and focus on strategic planning and operational analysis that is necessary to remain in compliance, as well as competitive in the market. Presently, ISWM management decisions regarding site issues are addressed in a reactionary mode rather than a proactive mode. This has also significantly impacted staff morale, as team-building efforts have been suspended in order to keep the site operational and in compliance. It is apparent that ISWM must improve analysis of specialty tasks and projects to determine the necessary qualifications, time requirements, and overall workload of site personnel. This review will enable ISWM to delegate certain projects or tasks to outside sources better suited to complete the work. This will also enable site staff to focus their resources and assets on consistent daily operations.

The proposed changes to the management structure are focused on the upper level site personnel. Once selection of the core management team members has been finalized, refinement of responsibilities can be completed based on the ISWM strategic planning.

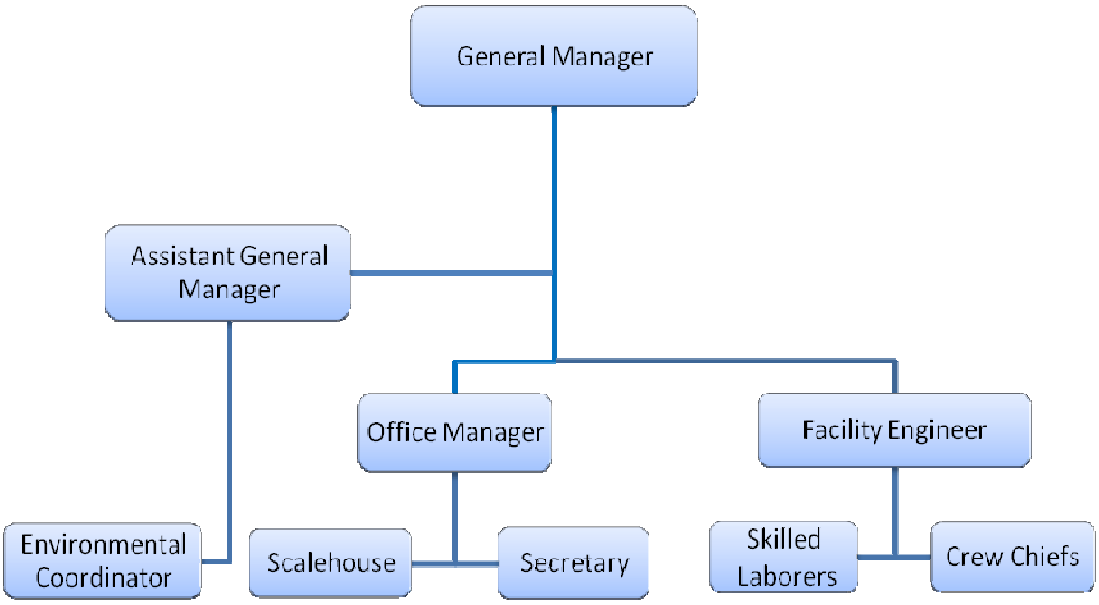
The current organization chart, with vacancies, is shown below.



Currently, the General Manager position is vacant and the duties are being performed by the Operations Manager. In addition, the Director of Business Services position is vacant and the duties are being performed by the Environmental Manager.

Important factors that JEI considered when looking at the organizational chart included: senior management positions, total staff, and long-term planning needs. JEI also reviewed the roles of major support contractors. JEI concentrated its recommendations on changes to the structure of senior management and personnel in the direct support positions. Minor changes are recommended for other staff and can be addressed once the senior management changes have been completed.

A recommended organization chart is shown below.



The major changes include the elimination of the Operations Manager and the Director of Business Services and the addition of an Assistant General Manager, Facility Engineer, and Office Manager. In addition, the Environmental Manager is renamed Environmental Coordinator. Position descriptions and responsibilities are outlined below. As presented, many of the current responsibilities of the Operations Manager should be completed by the Facility Engineer. In addition, many of the responsibilities of the Director of Business Services should be distributed between the Assistant General Manager and the Office Manager.

The Assistant General Manager should help oversee regulatory functions, such as annual reporting requirements, development of an Environmental Health and Safety Management System, Massachusetts DEP waste ban and load inspection programs (with the Environmental Coordinator), manage the CDL/DFW program for the Community, work with the General Manager to maintain community relations and government affairs, and focus on planning with the General Manager.

The Facility Engineer would manage the daily operations at the site. With assistance from the General Manager and Assistant General Manager, the Facility Engineer should delegate Department specific tasks to each respective crew chief.

The Environmental Coordinator will manage the daily environmental compliance of the site. In addition, the Environmental Coordinator is primarily responsible for creating, implementing, and managing an Environmental Health and Safety Management System.

Accounting methods and Enterprise Fund management should be reviewed for compliance and analyzed for performance by a third party accounting firm on a regular basis. The consulting firm must be experienced in municipal accounting and enterprise fund management.
The current crew chief structure and support staff under each division will largely remain in place. A vacancy for a laborer will be filled in the near future. Also, as a result of Massachusetts DEP permit directives and updated regulatory inspection requirements, two laborer positions will be elevated to skilled laborers. One skilled laborer will focus on the active landfill gas collection system operation and maintenance activities. The other skilled laborer will be recertified as an Asbestos Supervisor to oversee inspections and the required documentation paperwork.

Please note that the General Manager, Assistant General Manager, and Facility Engineer are considered senior management. Senior management should meet on a weekly basis to plan the daily operations at the site. Once the weekly meeting is complete, the Facility Engineer should meet with the crew chiefs to discuss operations, compliance, and staffing issues. The Office Manager should meet with the secretary and scale house staff, at least weekly, to discuss operations and staffing issues. Senior management should meet at least twice a year to review the Site Master Plan (infrastructure), and the Business Plan.

General Manager – This position is mandated by law and the Charter. The General Manager reports directly to the Town Administrator. The Town Administrator and General Manager are responsible for informing, making recommendations to, and ultimately implementing the directions of the Board of Selectmen. The General Manager also regularly updates and works with the Board of Health to maintain compliance at the facility. The General Manager's responsibilities will remain in conformance with the requirements specified in the legislation passed to establish ISWM. Those responsibilities include, but are not limited to:

- Operation of a fully compliant, safe and environmentally sound facility as the primary responsibility;
- Development and administration of the Annual Operating Budget. This process will include a review and update of the five, ten, and thirty year Capital Needs Requirements;
- Annual review of potential construction needs. This will guarantee timely construction of successive liner sections and closure of areas brought to final grade. Consideration will also be given to the gas recovery system to ensure its expansion plans keep pace with the growth of the landfill;
- Development of site infrastructure and improvements in accordance with the Site Master Plan;
- Development and administration of an Annual Business/Marketing Plan. This plan will set tip fees and appropriate rates intended to optimize the facility's financial capabilities and evaluate projected revenues versus projected expenses;

- Establish metrics and a monitoring system to be reviewed monthly, which will ensure financial compliance with the current budget structure and provide sufficient warning when financial goals and requirements are not being achieved;
- Assist in the development of, and monitor adherence to, an Airspace Management Plan. This plan will reflect the goals and objectives, as determined by the Town, to govern the annual consumption of airspace required to maintain yearly financial commitments to the General Fund and maintain sufficient reserves within the Enterprise Fund;
- Manage all personnel matters and make recommendations on staffing needs;
- Represent ISWM at Town meetings, and on various boards, committees, and regulatory bodies;
- Meet with the Town Administrator and other Department heads for overall Town management planning;
- Work with the Strategic Planning Group; and
- Other duties as assigned.

Assistant General Manager – Reports to the General Manager. The Assistant General Manager works closely with the General Manager to implement and administer directives from the Board of Selectman, Town Administrator, Board of Health, and other various groups and committees whose directives have been sanctioned by the Town Administrator. The Assistant General Manager's responsibilities include, but are not limited to:

- Work on strategic planning activities for the business plan and site development, including contracts, permitting, construction, new technologies, energy production, and partnerships (public and private);
- Coordinate meetings, organize agendas, track ISWM goal progress, and provide planning tools for the General Manager such as GANTT charts, project lists, and budgets;
- Manage the CDL/DFW program for the Community in conjunction with the General Manager;
- Work closely with the General Manager and Town Administrator to manage community relations and government affairs;
- Assist with personnel matters as needed in conjunction with the General Manager
- Organize site library and archives with the Facility Engineer and Environmental Coordinator
- Assist the General Manager with preparation for meetings with the Town Administrator and Board of Selectmen;
- Organize financial data/budgets and reporting, revenue and expenses, and track contracts;
- Work with the auditor on quarterly and annual audits;
- Work closely with the General Manager on the annual budget and capital plan;

- Supervise the creation and implementation of the Environmental Health and Safety Management System to organize all compliance matters, including safety related issues;
- Oversee and assist the Environmental Coordinator to ensure facility compliance;
- Represent ISWM on various boards, committees, and regulatory bodies as needed; and
- Other duties as assigned

Facility Engineer – Reports to the General Manager. The Facility Engineer works closely with the General Manager and Assistant General Manager and is responsible for daily operations of all areas of ISWM including the landfill, residential recycling center, and baling facility. The Facility Engineer oversees all site construction projects, mining activities, and is the primary contact for all contractors. ISWM's Crew Chiefs report directly to the Facility Engineer. The Facility Engineer's responsibilities include, but are not limited to:

- Maintain landfill systems on site (flare, gas collection, leachate, scrubber), project/contractor management, reporting, special waste/soils review, Beneficial Use Development, self audits, permitting, and other operational tasks as the primary responsibility;
- Work closely with General Manager and Assistant General Manager on the annual budget and capital plan;
- Review the site master plan and make recommendations;
- Site maintenance, including but not limited to: sweeping, drainage, and electrical;
- Oversee crew chiefs and associated subordinate staff;
- Provide engineering assistance to other Town departments as needed;
- Present to boards, committees, and regulatory bodies as needed;
- Ensure implementation of permit conditions;
- Review and make recommendations for equipment and infrastructure improvements;
- Ensure the facility has the proper equipment and supplies; and
- Other duties as assigned.

Office Manager – Reports to the General Manager. The Office Manager works closely with the General Manager and is responsible for daily office and scale house operations. The Office Manager's responsibilities include, but are not limited to:

- Accounts Payable;
- Accounts Receivable;
- Works to expand revenue by finding new and innovative recycling markets;
- Responsible for cashing out daily receipts and polling data to Town Hall;
- Manage Waste Works;

- Purchase orders;
- Track spending against articles;
- Procurement;
- Sale of recyclables;
- Scale backup; and
- Other duties as assigned.

Environmental Coordinator – Reports to the Assistant General Manager. The Environmental Coordinator works closely with the Assistant General Manager and Facility Engineer and is responsible for environmental compliance of all areas of ISWM including the landfill, residential recycling center, baling facility, and scale house operations. The Environmental Coordinator oversees the development and implementation of the Environmental Health and Safety Management System and is responsible for managing the Environmental Health and Safety Management System. The Environmental Coordinator's responsibilities include, but are not limited to:

- Creating and implementing an Environmental Health and Safety Management System that organizes all compliance matters, including safety related issues;
- Maintain all compliance files;
- Maintain library – plans and permits;
- Prepare and conduct training (Safety, Asbestos and Hazwoper);
- Prepare and conduct internal audits (Environmental Health and Safety Management System, Safety, Compliance, Etc.);
- Procure necessary Environmental Health and Safety System equipment and supplies;
- Track and ensure compliance;
- Assist with permit management and report submittals;
- Conduct data analysis as needed;
- Enforce waste bans; and
- Other duties as assigned.

Secretary – Reports to the Office Manager. The Secretary's responsibilities include, but are not limited to:

- Phones;
- Filing;
- Credit applications;
- Accounts Receivable support;

- Data entry to support Vehicle Maintenance Program;
- Sticker sales tracking;
- Waste Works backup;
- Customer relations;
- Backup scale operator; and
- Other duties as assigned.

Contractor Support

Engineering – Current engineering support is provided by SITEC Environmental, Inc. acting in the role of Engineer of Record. SITEC provides engineering services and stamps all plans as P.E. As the Engineer of Record, they prepare most permit applications with ISWM and provide construction quality assurance services as required by Massachusetts DEP. SITEC also conducts third party bi-monthly inspections in accordance with the Authorization to Operate and provides copies to the Massachusetts DEP and the Board of Health. Finally, SITEC conducts quarterly volume surveys and an annual aerial photograph.

Scrubber – Operation of the wet scrubber is provided by Hydros, Inc. This is a sole source proprietor because of the unique design of the scrubber created by Hydros expressly for ISWM to remove sulfurous compounds. The wet scrubber represents an experimental approach to the removal of sulfurous compounds from the landfill gas at the flare inlet. A historical review of the waste streams accepted at the facility reveals the facilities propensity to generate hydrogen sulfide gas. In an effort to achieve and maintain compliance with Massachusetts DEP flare inlet gas quality standards, ISWM chose to pursue the wet scrubber technology as it offered a more efficient option for the removal of sulfurous compounds than the technologies currently in use. The wet scrubber technology has shown great success but is still evolving, therefore Hydros, Inc. will continue to maintain and operate the system until the technology is fully developed and operational equipment and procedures are fully established.

Laborers – ISWM uses CND for temporary laborers, primarily for litter picking. ISWM does not have extra staff to perform this function, yet it must continue to minimize and prevent wind-blown litter from migrating off-site for regulatory and aesthetic reasons.

Landfill gas collection system/flare – Current landfill gas collection system operation and compliance oversight is provided by JEI acting in the role of Consulting Engineer. The Consulting Engineer should work with ISWM personnel trained to make any adjustments to ensure odor management and collection efficiency. The contracted engineer will also help ISWM conform to the Landfill Gas Management Master Plan, see Section D.

ISWM is currently advancing development of a landfill gas-to-energy project now that the quality and quantity of landfill gas is sufficient to consider investing in a power plant. The first task currently underway is to obtain a comprehensive air permit that includes approval of up to 4.3

megawatts of reciprocating engines. However, the Town must decide the best model for financing and operating such a facility. Given the capital investment and oversight required ISWM may need a partner such as the Cape and Vineyard Electrical Cooperative, which the Town is currently a member. Alternately, ISWM could hire a third party that could lease space at the ISWM facility and develop power independently. Finally, consideration must be given to transferring day-to-day operation and maintenance of the landfill gas collection system.

Financial – The Town should retain a Certified Public Accountant, preferably with experience in the administration of public enterprise funds, on an as-needed basis to review changes to oversight, tracking, and financial management. The term of service should be developed once ISWM staff understands the full scope of services required for the financial management.

Planning – Commonwealth Resource Management Corporation will continue to provide assistance with air permitting, flow calibration, power plant development, etc. Also, they will provide support for the business plan update and assist with the new Strategic Planning Group. The term of service should be developed based on an as needed basis.

D. OPERATIONS

ISWM has several operational areas that combine to make a unique, complex, and multifaceted operation. Overall, ISWM's operations are more substantially innovative than most publicly owned waste management facilities. The current labor force at the site appears to operate the facility sufficiently. However, by reviewing the major operational areas, the current labor force could be redistricted to operate the site more efficiently. A description of each of the current operations and recommendations are presented below:

Airspace Utilization and Waste Compaction Density

Observations

ISWM's primary asset is its "airspace", or permitted capacity available for the disposal of solid waste. In order for ISWM to be as efficient and profitable as possible, use of airspace must be meticulously managed. Airspace utilization is defined as the weight of solid waste disposed per cubic yard of landfill airspace consumed. There are three primary categories that the landfill operations can control which affect airspace utilization. These categories are the compaction of waste, the volume of cover material used, and the artificial acceleration of primary and secondary settlement. Capacity studies performed by the incumbent consulting engineer and provided by ISWM were reviewed by JEI to evaluate historical records.

During facility visits, JEI personnel observed daily waste handling procedures to evaluate waste compaction efficiency and cover material use. The active disposal area was monitored at several times during operating hours. At the working face, JEI observed one dozer and two compactors. The dozer was the primary piece of equipment in operation, while two compactors idled. Also observed were loose waste lifts that were consistently placed in depths that exceeded the industry

standard of two feet. Additional two to five foot deep loose lifts were placed on top of previously placed, un-compacted waste. The industry standard is three to five passes with the compactor prior to placement of the next two foot loose lift. It is also important to continue tracking compaction records in order to evaluate the changes to compaction based upon equipment upgrades, fluctuations of waste intake and type, or operational changes.

The typical strategy for waste handling operations should involve the use of dozers and compactors. A dozer will push waste dumped from hauling trucks into 2 foot high layers of waste above the waste compacted during previous operations. It is important that these waste layers be of sufficient width and length for compactor operation, and that the layers be built with as little slope as possible. The compactor will then make between 3 and 6 passes over the waste using the weight of the compactor and the tearing action of the wheels and penetrations of the wheel teeth to compact the waste into place. The operator must judge when sufficient passes have occurred based upon how deeply the compactor is riding in the waste. Well compacted waste should feel solid to the operator. Too few passes will result in wasted airspace, while too many passes results in additional fuel usage and wear and tear on equipment. Depending on waste intake rates, the dozer may be preparing another layer of waste for the compactor to work adjacent to the layer currently being compacted, or the dozer may wait for the compactor to finish work and then place another layer above the previous layer. Placement and compaction of waste layers should continue until a minimum lift height of 10 feet is achieved. A target lift height of 20 feet is an industry benchmark, with good operational practices providing a long-term average lift height of 15 feet. Increased lift heights will result in less cover material being applied since working faces will be smaller for equivalent volumes of waste.

ISWM currently utilizes auto fluff as the primary alternate daily cover material. This material is being accepted as a replacement waste stream for the construction and demolition waste processing fines that were rejected, due to the substantial hydrogen sulfide odors that the material generated. The “fluff” also appears to be an adequate volume and revenue substitute.

Primary settlement is the relatively short term settlement caused by the physical shifting of waste components into a configuration of lesser volume. In a natural setting, this is due to the weight of the waste and potential dissipation of any accumulated pore-water if waste materials are relatively low in permeability and saturated, although this is typically not an issue in municipal solid waste. Secondary settlement includes long term volume deformations typically termed “creep”, as well as the decomposition processes in municipal solid waste.

ISWM is utilizing several methods in order to increase the rate of primary settlement. JEI observed stockpiled automobile fluff and borrowed soil material on the top of the landfill in a section not actively involved in waste placement. In addition, the main access road and tipping deck are located on waste. The extra weight of the cover materials, as well as the weight and vibrations of heavy truck traffic are likely increasing settlement rates. ISWM had also previously installed an active landfill gas collection system. Despite the fact that landfill gas is significantly less dense than solid waste materials, the quantity of gas that can be produced results in a

significant weight of gas being removed from the landfill, leading to additional secondary settlement.

Recommendations

Compaction values for recent waste placement are reported by the engineer of record as over 1,500 lbs/CY at the landfill. While this value is consistent with industry standards, operational changes to correct the deficiencies noted above may increase compaction. Any increase in the compaction will result in an increase in total waste disposal capacity, which will extend the useful life of the facility. In order to increase operation efficiency and compaction, it is necessary for waste handling equipment operators to understand and have training in the current compaction methodologies.

It is important for the dozer and compactor ("yellow iron") operators to concentrate on their own specific tasks on the working face. The dozer operator should focus on placing waste and preparing lifts so the compactor can be fully utilized. Compactors should avoid pushing waste or operating on slopes, as slope operation slows the compactor and upsets machine balance, thereby decreasing the number of times wheel teeth contact the waste and reducing the force behind each tooth penetration, lessening compaction. Slope operation also consumes additional fuel in the heavy compactors. Pushing waste or operating on slopes adds resistance to compactor travel and leads to wheel spin. Compactor wheel spin will act to "fluff" the waste under the wheels due to the wheels slipping through the waste. This will result in additional fuel and equipment wear and tear to re-compact the disturbed areas. This will also increase the square footage, requiring additional cover material and waste valuable airspace.

Increasing secondary settlement rates is not currently as common an industry practice as landfill surcharging. The primary methods for increasing secondary settlement are adding additional liquid to the landfill, either through leachate recirculation or landfill bioreactor design (where leachate is re-circulated and additional liquid is added from outside sources) and the installation of an active gas recovery system. Liquid addition allows organic decomposition processes to occur at faster rates since the lack of moisture is initially a limiting factor. As waste decomposes, it breaks down into smaller particles, allowing for additional physical settlement, and the solid waste is converted to landfill gas, consisting primarily of methane and carbon dioxide which can be removed from the landfill.

A less common practice that is gaining in popularity for the increase of secondary settlement is leachate recirculation. ISWM was previously injecting a bacteria inoculated solution "bugs" into the landfill to increase waste decomposition. JEI recommends that the landfill investigate a leachate recirculation plan to maximize the available airspace of the landfill and increase gas production to obtain additional revenue for carbon credits and renewable energy credits.

Bioreactor landfills are the least common option for landfill secondary settlement. They have the advantage of producing the most rapid settlement and gas production of any option, but have the disadvantage of requiring a very technical landfill operating staff due to engineering and

operational challenges presented by the addition of such large amounts of water to the waste mass.

Landfill airspace should have a cost assigned to each cubic yard for tracking and budgeting purposes. At public facilities, the cost can be estimated from capital construction costs of the landfill cell and the annual operations budgets for the expected lifespan of that cell, versus the airspace gained from cell construction. This per cubic yard cost estimate reinforces the value of each cubic yard of airspace to the facility when performing a cost benefit analysis for equipment upgrades, employee training, or alternate daily cover use. ISWM management staff should perform this calculation using the appropriate landfill budgets, capital costs, and financing costs. It is also important to continue tracking compaction records in order to evaluate the changes to compaction based upon equipment upgrades, waste intake fluctuations, or operational changes.

Leachate Management System

Observations

JEI observed the leachate tanker truck loading process and discussed the leachate management strategies with landfill managers.

Leachate is currently collected from the landfill and pumped into a leachate storage tank on site. The leachate collected is then transported by a private hauler to a local waste water treatment plant. Review of the hauling records, indicate the facility has hauled an average of 6 to 10 million gallons of leachate per year. Leachate generation rates have significantly increased since December 2008, when Stage 2 of the Phase 2A/3A landfill area was lined. Costs for hauling ($0.03 per gallon) and treatment ($0.04 per gallon) also appear appropriate based on industry standards. The landfill is not currently permitted to receive waste water treatment plant dewatered sludge and has no reciprocal disposal agreements.

Recommendations

Leachate transport and disposal costs can account for significant expenses over the life of the landfill facility and 30 year post-closure period. Leachate production will generally increase over the life of the facility as additional acreage is added to the landfill with spikes in production during the initial waste placement in newly constructed cells. JEI recommends that ISWM explore the following actions to reduce the amount of leachate generated by the landfill. Provisions for diverting precipitation from constructed, but not yet activated landfill cells should be adopted. Additionally, the staff member assigned to conduct the weekly inspection of the leachate collection system should be tasked with diverting uncontaminated stormwater from the secondary containment area, as well as tracking and recording the volumes and dates.

Many municipal solid waste landfill facilities achieve significant cost savings by cooperative agreements with waste water treatment plants. The landfill will often agree to take stabilized, dewatered treatment plant sludge in return for treatment of the leachate. JEI recommends the

facility investigate potential cost saving agreements with local waste water treatment facilities. The annual leachate disposal costs for the facility have ranged from approximately $196,600 to $315,200, with higher values during periods of higher leachate generation associated with the opening of new cells. As the landfill expands, these values can be expected to increase. The costs will also continue into the 30 year post-closure period.

Annual hauling costs for landfill leachate, according to site records, currently ranges from approximately $262,175 to $424,251, with higher values during the opening of new cells, and lower values during operation of existing cells. With leachate production expected to increase as the landfill is expanded, and the fluctuating costs of diesel fuel, JEI recommends ISWM investigate the direct connection to a sanitary sewer system. When evaluating the cost benefit, it is also important to account for the 30 year landfill post closure period.

JEI recommends ISWM evaluate and initiate a leachate recirculation plan to reduce the quantity of leachate being hauled to the treatment plant and maximize the available airspace of the landfill. The recirculation of leachate will result in increased landfill gas production which could provide additional revenue through beneficial use opportunities. However, increased landfill gas production, if not controlled, could lead to significant odor issues. Therefore JEI recommends that if ISWM decides to implement leachate recirculation, it must proactively develop and follow a Landfill Gas Management Master Plan to ensure odors do not become a recurring issue.

Landfill gas collection system

Observations

ISWM previously installed an active landfill gas collection system. Currently, the system extracts landfill gas from Phases 1A, 1B, 1C, 2, and 3. In addition, horizontal landfill gas collectors have been installed in Phases 2A and 3A. However, in response to continued odor problems, ISWM recently installed vertical extraction wells in the Phase 2A and Phase 3A landfill area.

Recommendations

JEI strongly recommends ISWM develop a Landfill Gas Management Master Plan. The plan will ensure the facility's active landfill gas system is expanded when critical benchmarks are reached. The plan will also minimize the potential for future escaping odor incidents and ensure the infrastructure of the landfill gas system, including blower, flare, and scrubber system, are adequately sized to handle the increased flow rates. Additionally, the plan will help ISWM budget for all necessary capital expenses related to the active landfill gas collection system.

During the second site visit, JEI trained one of ISWM's personnel to balance the active landfill gas system, and would recommend that at least one additional ISWM personnel be trained in the balancing of the landfill gas collection system. ISWM has already invested in the landfill gas monitoring equipment and can realize a significant cost savings by keeping most of the day to

day landfill gas system work in-house.

ISWM needs outside help to assess its landfill gas collection system. Operations could be supplemented effectively with a one year contract for consulting services to: review well field data and make recommendations by phone and email about system adjustments; conduct on-site visits on a quarterly or as needed basis; and provide advice on long-term improvements to the blower and flare. This would greatly assist current staff who must switch hats between running the landfill and managing these systems. This is not the most efficient manner to conduct business and furthermore, the skill sets required are not interchangeable. As noted earlier, the Town must also look at separating the responsibilities for the landfill gas collections system, scrubber, and flare when making decisions about developing power on site.

Construction and Demolition Waste Transfer Station

Observations

JEI observed operations in the Construction and Demolition Waste Transfer Station on two occasions. Currently, incoming construction and demolition waste is dumped on the tipping floor where an excavator processes and loads the waste into the transfer trailer. To allow the operator a proper line of site from the excavator cab, the machine must be perched on top of stockpiled waste. A dust/odor suppression system is also utilized at the Construction and Demolition Waste Transfer Station. At the time JEI visited, the smell of the deodorizer used in the suppression system was very strong in and around the facility. JEI noted that when the operators where not actively processing waste, they remained outside of the building.

Recommendations

The excavator currently utilized to process and load the construction and demolition waste into transfer trailers is not well suited to that type of application. The boom and stick configuration is designed for earthwork and is often positioned at a very awkward angle when reaching into the load out pit and transfer trailers. This presents the potential for damage to the trailer walls or hydraulic cylinders on the excavator resulting in the slowing of production. The existing excavator also wastes a substantial amount of working floor space. JEI recommends ISWM begin using a material handler machine (see Appendix VI) that can be more task specific with the proper boom/stick/grapple configuration and a hydraulically elevated operators cab.

Additional transfer station operational changes should include modification to the current procedures utilized with the odor control misting system. A cost savings may be realized using only water as the primary fluid in the mist dispensing system since suppressing the dust created during the construction and demolition waste processing is the reason the system is in operation, not odor control.

Residential Recycling Center

Observations

This operation is a significant benefit to the residents of the Town of Bourne and is very popular.

Currently, the Residential Recycling Center is open 7 days per week in the summer and 6 days per week in the off-season. ISWM charges only $15 for the first sticker and $10 for the second sticker, with no charges for any other materials coming in.

Recommendations

JEI recommends opening the new area as soon as possible to highlight the significant site improvements that have been made and to allow for completion of the Phase 1D reclamation. Given the financial strain on ISWM, JEI recommends that serious consideration be given to closing the facility on non-peak days, such as Tuesday and Wednesday, reallocating labor to reduce overtime, increasing the sticker fee with a discount for seniors, and charging for items such as televisions, computers, and fluorescent bulbs for which ISWM must pay to have removed. These aspects must be reviewed so that income from the recycling operation is offset by the expense, while still retaining as much access for the residents as possible.

Baling Facility/Recycling Operations

Observations

The baler is currently not being efficiently utilized. Labor is spending an inordinate amount of time running routes to many individual or local business customers to pick up small amounts of material without charge. During observations, staff was off-site collecting unprofitable loads and unable to process materials already received, which lead to a significant accumulation of recyclables in the Baling Facility. As a result, commercial and municipal customers bringing large volumes of segregated recyclables were turned away due to the overfilled bailing facility.

Recommendations

Recycling operations are not currently profitable and must be streamlined. The ISWM needs to specialize in processing the recyclable materials and refrain from competing with the large hauling companies, who focus on collection. Also, as market conditions improve, ISWM should evaluate sharing revenues to attract customers. Collection should be limited to Town owned facilities only. In addition, collection operations should be shifted to the Department of Public Works, which is better equipped to accomplish road operations. To help reduce the costs and free up the Department of Public Works staff, the Town should consider shifting to bi-weekly curbside collection of recyclables.

Equipment Maintenance

Observations

Current equipment appears adequate for facility operations; however, historical records, warranty organization, tracking of repairs and maintenance, major component replacement, rebuilds, parts inventory, and machine replacement history were not evident.

Recommendations

With the capital, operational, and maintenance expense associated with landfill equipment, it is critical that landfill staffers develop and follow a long term equipment maintenance plan. The facility's plan, at a minimum, needs to include a preventive maintenance tracking board and a proactive oil sampling program. The staff member entrusted with overall equipment and site maintenance should also be capable of performing or overseeing an oil sampling program during preventative maintenance. The potential cost savings for identifying problems before reaching component failure more than justifies the cost and effort of the sampling program. This preventative value is the reason such testing is required under some equipment warranties and should be a standard practice at the facility. Sampling results should be tracked and analyzed for trends.

JEI recommends the plan be reviewed and updated annually based upon problems or successes encountered in operations during the previous year. This plan must include the target inventory of landfill equipment, a replacement schedule for each piece of equipment for budgetary projections, and a procedure detailing equipment repair and maintenance practices to limit total equipment downtime and ensure critical equipment availability. Landfill management should be familiar with this plan and utilize it to help in budgeting purposes.

E. ENVIRONMENTAL HEALTH & SAFETY

The primary goal of a comprehensive Environmental Health and Safety System is to protect human health and the environment. The waste management industry is a very dynamic industry and a fully implemented Environmental Health and Safety System is a critical factor in ensuring the viability of the site. As a result, oversight and management of the program are pivotal to its success and adequate resources and staff must be allocated to focus on these tasks to ensure compliance and meet the demands of a very dynamic industry.

The operations at ISWM are similar to those of the construction industry with special considerations for the handling of solid waste. While it may not be readily apparent to residents using the recycling center, there is a tremendous amount of activity occurring at the site on any given day. These operations include the use of heavy equipment to: manage waste at the landfill; build infrastructure; move large volumes of dirt or compost; and transfer construction and demolition waste. In addition to the heavy equipment, large trucks are also a constant at the facility. Finally, the Baling Facility is a busy location that includes the use of a large hydraulic baler fed by a pit conveyor to bale recyclables under compression. As demonstrated by the sheer

scale and nature of the work ISWM manages, it is vital to have a comprehensive, up-to-date, Environmental Health and Safety Management System to ensure policies and procedures are developed, communicated, and implemented.

ISWM continues to conduct numerous training sessions and provides personal protective equipment to employees. However, updating the management of these areas to better organize, codify, and communicate information will save both time and money. Additionally, ISWM must improve its data management system and oversight of the many systems at the facility including the leachate collection system, the gas collection system, and the flare and scrubber system. This is especially important, as permit conditions have become ever more detailed and complex in response to the changing state and federal regulations. Tracking data and trends not only helps with compliance matters, but it also provides critical information that will assist management in making critical decisions about infrastructure improvements, capital expenditures, best management practices, and the potential impacts new waste streams will have on the existing in-place waste, landfill gas, and the quality of the leachate. These tasks have grown both in volume and breadth as ISWM and the facility have grown.

As noted earlier, JEI is recommending changes in the organizational structure of ISWM that will better position the Town to meet these challenges as it evaluates the next era of growth at ISWM. The primary changes are the creation of two new positions that will replace two current positions. JEI recommends that the Operations Manager position be replaced with a Facility Engineer who will be part of the senior management team along with the General Manager and Assistant General Manager. In addition to the role of Facility Engineer, JEI recommends creating the position of Environmental Coordinator to assist the Assistant General Manager and the Facility Engineer. The Environmental Coordinator's role will replace the current Environmental Manager position and will be primarily dedicated to compliance tasks.

Together, the Assistant General Manager and Environmental Coordinator will have responsibility to research, develop, and implement the components of an Environmental Health and Safety Management System. This system will be the structure around which compliance will be based. An Environmental Health and Safety Management System is essentially the roadmap that guides operations on a day-to-day basis so that work is done safely and in an environmentally responsible manner. Generally, the Environmental Health and Safety Management System methodology is outlined below and is designed to be an ongoing and evolving system. Appendix VII contains a sample checklist that JEI developed which can be used for self-audits at ISWM. This can be customized further and it is recommended that it be a part of any Environmental Health and Safety Management System.

Typical methodology for an Environmental Health and Safety Management System is as follows:

Plan: Planning, including identifying environmental and safety aspects and establishing goals

Do: Implementing, including training and operational controls

Check: Checking, including monitoring and corrective action

Act: Reviewing, including progress reviews and acting to make needed changes to the Environmental Health and Safety Management System.

F. FINANCIAL MANAGEMENT

At the end of Fiscal Year 2009, ISWM had a net operating loss, after contributions to the Town's General Fund, of $2,526,756. Though there were numerous factors that contributed to this loss, the most significant was the downturn in the economy, which drastically reduced the rate of incoming tonnage. While JEI had several in-depth conversations with Town and ISWM staff regarding the FY 2009 financial performance, ISWM did not generate any accounting reports to show profit and loss statements by cost category. In addition, ISWM did not generate any formal income statements that could be reviewed by ISWM management on a routine basis. Staff noted that income statements for ISWM were available on the Town's accounting system. However, the current accounting format, chart of accounts, does not allow revenues and expenditures to be broken down by cost centers. The logical cost centers for ISWM are the Landfill, the Construction and Demolition Waste Transfer, and the Recycling operations. In addition, there is no system in place to account for expenses incurred that should be divided between the respective cost centers. As a result, accurate profit and loss statements cannot be generated to account for these expenses. JEI recommends a system be developed and implemented to allow ISWM's completion of these tasks as soon as possible.

As part of his financial evaluation, Bob Bliss developed monthly profit and loss statements for fiscal year 2009, see Appendix VIII. In addition, the Town is in the process of changing its chart of accounts to facilitate the necessary financial reporting for ISWM. These monthly reports should continue to be prepared and carefully monitored by ISWM management. Actual results from each month should be measured against the current year's budget, along with the prior year's results. In addition to the income statements, a monthly financial report should be prepared. These reports should briefly explain the financial status of ISWM, with emphasis given to any results that are either not meeting or exceeding expected results. This report should be given to the Town's financial management, Board of Selectmen, Board of Health, and Finance Committee.

At a minimum, ISWM should meet with the Town's financial management, including the Director of Finance and the Town Treasurer on a quarterly basis to formally review the financial status of ISWM, as well as discuss other management decisions that could affect ISWM's finances, such as borrowing. This group should establish a set of metrics that will be utilized to actively track financial performance both internally and comparatively with industry standards. In light of the recent economic downturn, review of the monthly income statements and projected revenue and expense trends, on a quarterly basis, will allow ISWM and Town officials to develop financial strategies and corrective action, if the actual financial results fall short of the budget projections.

Active financial monitoring and coordination will assist in preparing ISWM's Fiscal Year 2011 budget. However, ISWM must ensure that all of its financial obligations including, but not limited to, the host fee, administrative fees, and closure/post closure costs are satisfied when defining its overall financial budget. This amount divided by the number of operating days will give an approximation of the daily receipts required to be solvent.

Finally, financial reporting and monitoring is even more critical due to the depletion of ISWM net assets. The net assets are composed of two funds, unrestricted and restricted. The restricted fund is established to meet ISWM's closure and post-closure care obligations and is required by the Massachusetts DEP. The unrestricted fund is a discretionary fund maintained by ISWM management. At the beginning of Fiscal Year 2009, the balance of ISWM's unrestricted fund was $4,942,285. Due to the operating loss discussed above and other unplanned expenses, the balance of the unrestricted fund had been reduced to $1,540,529 at the end of Fiscal Year 2009; see Appendix IX for a Fund Balance as of June 30, 2009.

Massachusetts DEP regulations require that the Town establish a reserve account to fund the closure cost of the landfill. In Fiscal Year 2009, the Town needed to update its financial assurance mechanism to account for the opening of the Phase 2A/3A disposal area. As a result, the Massachusetts Department of Finance subsequently transferred $825,000, 25% of the projected $3.3 million closure liability from the balance of the unrestricted fund. Review indicates that the Town did not allocate the subsequently required 25% ($825,000) contribution to the restricted fund for closure costs in the Fiscal Year 2010 operating budget or an article at annual Town meeting. This omission from the budget will likely require that the funding source come from the unrestricted fund balance, as was done in Fiscal Year 2009. As stated earlier, the undesignated fund balance may be in a deficit at the end of Fiscal Year 2010. As a result, ISWM may need to find alternate sources of funding to satisfy the required payments in Fiscal Year 2011 and Fiscal Year 2012. The Town must ensure it is accounting for all financial obligations, including all closure costs, and should revise the Fiscal Year 2010 operating budget or vote on an article showing the funding source as ISWM revenue or undesignated fund balance. An industry standard is to structure the tipping fee to ensure all financial obligations are met.

The Town will not have to raise the current year's deficit of $2,526,756, due to new enterprise accounting regulations issued by the Massachusetts Department of Revenue. These new regulations do not require communities to recoup a prior year's deficit if there are sufficient funds in the facility's unrestricted fund to cover the deficit. As previously stated, ISWM's unrestricted fund balance decreased from $4,942,285 to $1,540,529 in Fiscal Year 2009, due to the recent economic downturn. Therefore, if current revenue trends continue, the Town will likely deplete ISWM's remaining unrestricted fund balance and could find itself with an additional operating deficit at the end of Fiscal Year 2010. As required by the regulations, this deficit would likely be funded by a tax levy on the Town's residents. Moreover, ISWM may be forced to increase residential disposal fees to raise additional funds. The Town should review all of ISWM's obligations and prioritize expenditures to ensure long-term financial stability of the department. This review will ensure that the Town residents won't become responsible for subsidizing the Department operations for a prolonged period of time.

As a result, the Town should carefully review and monitor ISWM's 2010 budget to prevent a substantial loss occurring in 2010 and depleting the remaining unrestricted balance. It is important to note that ISWM must generate a profit of $3,188,815 to cover the following indirect costs, (see Appendix X for the Administrative Fee for Fiscal Year 2009 and Fiscal Year 2010) before it retains one dollar in its unrestricted fund balance:

Host Fee	$	350,000
Closure Reserve Cost	$	875,000
Administrative Fee	$	1,963,815
	$	3,188,815

As stated earlier, the Department of Revenue has issued new guidelines regarding the management of enterprise funds. The Bureau of Accounts with the Department of Revenue recommends that every community establish a written internal policy regarding indirect cost allocation that is reviewed on an annual basis. Currently, the Town has not developed a written policy regarding indirect cost allocation. However, a review indicates a worksheet has been developed depicting how such costs were calculated. JEI strongly recommends a written policy be developed and that the Town Administrator, General Manager, Director of Finance, and Town Treasurer work together to review the latest guidance on Enterprise Funds (see Appendix I) to determine the implications, if any, of the new regulations on the operation of ISWM.

Currently, the cost of the Town's trash and recycling pick up, while completed by the Department of Public Works, is an expense for ISWM. These indirect expenses were transferred to ISWM in 2006 when they were generating a substantial surplus. Review of the Fiscal Year 2009 budget indicates the cost of these services to ISWM was $467,986 for trash and $385,970 for recycling, which total $853,956 of in-kind reimbursements to the Town. Further review indicates ISWM only collected $306,273 in recycling revenue in Fiscal Year 2009, which does not cover the indirect costs allocated by the Town or any direct costs of the recycling program at ISWM. It should be noted that recycling, as a cost center, has generated a loss of $1,355,630 or 54% of the total loss ISWM experienced in Fiscal Year 2009.

In light of the recent economic downturn, the losses sustained by ISWM in Fiscal Year 2009 and the significant depletion of the unrestricted fund, the Town should consider eliminating or restructuring these in-kind charges until the financial environment improves. As noted earlier, ISWM has already contributed significant funds to the General Fund over its short life. JEI believes the Business Plan should address better coordination efforts between ISWM and the DPW as well as careful scrutiny and cost analysis of all curbside collection and recycling programs. In addition, the Town should evaluate the pros and cons of the privatization of collection and hauling services. The Town must also carefully review the recycling operations to determine how to increase revenue sources and decrease the operating cost. Finally, the Town needs to realize that the recycling program, in its current form, may never be a self-sufficient operation and decide whether or not it is willing to subsidize the costs currently incurred by ISWM.

Another JEI recommendation is to set a maximum in-kind contribution not to exceed a certain percentage (e.g. 20% of prior year's revenue) with adjustments for known increases in revenue.

ISWM also needs to review its Capital Plan to assess what equipment is necessary for operations, what equipment can be eliminated or liquidated, and the best financing methods for achieving that plan. The Town must coordinate the development of this plan and the scheduling of capital expenses with ISWM's management. This will ensure ISWM is able to account for the capital expenses in its Operating Budget and accounted for in the business plan.

Finally, ISWM should not fill the Director of Business Services position. Monthly financial reports can be generated internally by utilizing current office staff. If additional staff is needed, JEI suggests utilizing a part-time clerical position to free up current staff from routine daily tasks, in order that financial reports are maintained on timely basis. ISWM is currently using Mr. Bliss' services to address various financial matters. As noted earlier, JEI recommends a Certified Public Accountant be retained until the newly organized ISWM team is comfortable with the improved tracking and management tools.

G. BUSINESS PLANNING

As recent economic conditions have shown, businesses must adapt to changing conditions in order to remain viable and competitive. A critical tool to accomplish this goal is a written business plan that presents a road map for moving forward. Key elements include:

- an assessment of current performance;
- an analysis of factors affecting performance including; competition, regulatory framework, and customer mix; and
- a comparison of various business models, both long-term and short-term.

The last time a business plan was reviewed in this comprehensive fashion was in July 2002. ISWM presented the Town leadership with a document entitled FY 2002 Review and Business Plan – Development History, Current Operations and Evaluation for Strategies for Response to Changes in Regulations and Market Conditions. This document was prepared by ISWM management with input from two consultants, George Aronson of Commonwealth Management Resources Inc. and John Merritt of Merritt Environmental Solutions. ISWM management provided the Town leadership with an overview of the document, the challenges it described, and options for consideration. A copy of that presentation is included in Appendix XI.

JEI recommends that ISWM update its business plan annually to ensure that assumptions made in previous years are evaluated against changing market conditions. This update should consist of two major components when reviewing options for the business model. The first is a short-term business plan that will stabilize finances over the next 3-5 years. Key decisions to be addressed in the plan include the degree to which the Town will continue to rely on ISWM to subsidize the General Fund and the landfill's rate of consumption of disposal airspace that will be tolerated to meet those objectives. It should be noted that the decisions the Town makes in

the next few years will greatly impact the Town's ability to position itself to meet long-term disposal contracts that will be available in 2016. These decisions will ease the pressure on ISWM as it evaluates options for major investments in technology that will extend the life of the landfill.

The second part of the business plan update should be an analysis of long-term options to implement at the end of a 3-5 year investigation, development, permitting, and construction period. Given the potentially large investment, such options would require guaranteed waste contracts to finance them. ISWM, with the Town leadership, must begin the evaluation process now so that any new facilities will be in place to handle the increased volume of incoming waste.

During the process of developing the next iteration of the ISWM business plan, it is important the leadership understands that the Town of Bourne must carefully evaluate each option on a level basis. This means that the implications of choices should be quantified and compared to other options. Also, some decisions may be more political than economic and these less tangible factors must be taken into account. Among the questions that need to be addressed are:

- How far off the Cape should the Town pursue waste contracts?
- What revenue level is ISWM required to pay to the General Fund?
- What waste streams, e.g. ash, biosolids, etc. are acceptable?
- What types of waste management technologies are acceptable?
- Does the Town want to only own and operate a facility, or are there other arrangements to consider such as leasing space for alternate solid waste management technologies or to form a regional waste district?
- Does the Town want to eliminate managing MSW generated outside the Town's jurisdiction and focus on other waste streams to make revenue targets?
- How will revenue from power sales generated by landfill gas be factored in and who will develop the necessary infrastructure?
- Is the Town willing to purchase more abutting land to the south of the current facility?
- How much capacity should remain available to the small contractors and the spot market versus that under contract?
- How much landfill airspace is the Town willing to sell to meet financial goals in the short and long terms?
- Are there opportunities for partnerships?
- Should the Town work to develop the Upper Cape Regional Transfer Station? Is it willing to operate it as well?
- What waste disposal contract length will require Town approval? Ten years? Fifteen years?

Finally, the next business plan update should also evaluate the risk factors and opportunities in

the industry, including regulatory initiatives and competition. What is becoming readily apparent is that the value of the ISWM facility is increasing significantly as the number of permitted sites for solid management decreases. With facilities in Fall River, Taunton, and Carver reaching capacity and closing, the eastern Massachusetts region will see a dramatic drop in the number of active landfills over the next several years. A key to the Town of Bourne's future success in the region is the infrastructure and permitting work that has been completed over the last 10 years positioning the Town to take advantage of these opportunities.

Appendix XII shows the projected landfill disposal capacity through 2015. Note that the Carver Landfill is estimated to close in 2016. Once this occurs, it is very likely that the Town of Bourne will be only one of three landfills in the state that will actively pursue waste outside of its host community. Nantucket is not an option because of its isolation and New Bedford is a district that is primarily concerned with servicing New Bedford and Dartmouth. That will leave the landfill in Westminster run by Waste Management and the landfill in Southboro, run by Cassella. Appendix XIII shows a map of the solid waste disposal facilities in Massachusetts in 2003.

As noted, ISWM's Business Plan has not been updated since 2002 and needs to be modified to reflect the significant changes in the regulatory framework, competition, technology development, and the overall economy. JEI recommends that ISWM and the Town Administrator move quickly to form a core team of staff, a consultant, and Town leadership to begin work on this plan. With diligence and focus, a draft could be ready by the end of the year. Once an update to the Business Plan has been written, ISWM should present its findings to a joint meeting of the Board of Selectmen, Board of Health, Finance Committee, Town Administrator, Director of Finance, and Town Treasurer to answer questions and receive feedback. This will help ensure the differing perspectives of each constituency are heard in a common setting so that the best course of action can be determined.

H. COMMUNICATIONS

The key to success for any organization is the ability of its management to provide a clear and unified vision of the desired objectives and to effectively communicate that vision. One of the main weaknesses noted by JEI during the evaluation is the lack of ongoing, substantive communication, both internally (between the Town and ISWM) and externally.

As previously noted, ISWM has grown substantially in the last ten years and thus warrants the attention commensurate with this growth. The Town can no longer afford to review operations at ISWM in a crisis mode and must interact with the management on a regular basis. The benefits of a proactive approach include:

- Building trust and confidence in the Town's management of ISWM;
- Increasing the morale at ISWM as it is recognized as a significant asset;
- Reducing stress for all stakeholders;
- Increasing the ability for decisions to be made in a timely manner;

- Increasing the ability to be proactive, innovative, and competitive; and
- Significantly reducing erroneous information in the media and public.

Outlined below are recommendations for improving communications.

Internal Communications

JEI noted that senior management has strayed from meeting on a regular basis to discuss operational issues and longer term planning tasks. This trend appears to have been ongoing for several years, but has been compounded by reduced staff in recent months. ISWM must reestablish weekly management meetings to set goals, chart progress, and identify issues that require attention by the Town Administrator. Regular meetings, at least monthly, need to be held with the Crew Chiefs to identify problem areas and issues, allowing them to effectively manage their respective divisions. Finally, the staff needs to be updated, at least monthly, on the status and plans for the facility. This communication will help the staff take ownership of ISWM's overall mission and goals and will help improve morale and team building.

To help ISWM better communicate with Town Management, JEI recommends that the General Manager and the Town Administrator meet once a week to discuss the status of the facility and any issues. Additionally, JEI recommends that the Town Administrator meet with ISWM senior management at least once a quarter at the ISWM facility to get a detailed briefing on the progress and status of key issues. This will improve coordination and increase the Town Administrator's knowledge and familiarity with the challenges and opportunities facing ISWM. It will also signal to ISWM employees that it is an important operation to the Town. JEI also recommends the Director of Finance be included in some of these meetings to remain informed on the current financial position relative to the budget and to have an understanding of the critical issues facing ISWM.

Finally, ISWM should provide updates to the Board of Selectmen, Board of Health, and the Finance Committee on a semi-annual basis, at least. The successful implementation of initiatives and projects at ISWM is critically linked to approvals from these groups. By keeping decision-makers informed on the status of the facility, the speed and efficiency at which approvals can be returned will increase significantly. An additional benefit of these presentations is that the media is usually in attendance and information will be disseminated to the general public, thus reducing any public confusion or misunderstanding of the facility.

Discussion with ISWM staff indicated a dedicated group of representatives from the Board of Selectmen, Board of Health, and the Finance Committee which worked with ISWM senior management in the past. This group, with input from the Town Administrator, served as a forum for ISWM management to share detailed information not easily communicated in brief updates. These representatives updated their respective boards, successfully keeping the information flowing. JEI strongly recommends this Strategic Planning Group be reconstituted and work with ISWM on the next iteration of its business plan.

The final recommendation is to educate the Town employees. While this may seem unnecessary, staff feedback indicates that some employees do not fully understand the role ISWM plays in the operation of the Town and ISWM's contributions. The exact form of this training can be decided later, but the general idea is to help bring the employees to a level of understanding so they can increase understanding throughout the community.

These initiatives represent the core of effective communication. Communication facilitates the transfer of information and knowledge, which in turn fosters confidence and trust. ISWM is a town asset and decisions on how best to utilize that asset should be made by a well informed Town leadership that has been supplied with the necessary analysis and information to make prudent decisions.

External Communications

ISWM must reinvest and update its Community Relations Plan. In recent years, this program has not been a priority, leading to misunderstandings in the community about ISWM.

As previously stated, ISWM is an integral part of the Town, providing basic, but significant services to the community. Not only does the general public need to be updated on ISWM's initiatives to mitigate and reduce the effects of its operations, but public understanding and approval of ISWM is critical to its continued viability and future growth. To aid growth, ISWM must inform the public on how it is financed, the financial benefits provided to the General Fund, the infrastructure improvements made, and the possibilities for future growth.

JEI recommends the Community Relations Plan be reviewed and re-established as soon as possible. In addition, ISWM management, with coordination from the Town Administrator, should be given the authority to proactively reach out to the Town of Bourne residents.

Several efforts that could be instituted include:

- Reintroduction of an annual report mailed to residents.
- Updated information on the ISWM website.
- Cable television shows.
- Speaking engagements with schools, local clubs, and environmental organizations.
- On-going offer to provide tours.
- An annual Open House at ISWM.

Government Affairs

JEI strongly recommends that ISWM continue to participate in regional and state planning efforts

at the Cape Cod Commission and Massachusetts DEP, as it has since its formation. It is critically important that ISWM be aware of regulatory trends, proposed legislation, and initiatives that could have an impact on its operations and business plan. This participation also allows ISWM to demonstrate its capabilities and communicate its position within the industry. These meetings are also a good opportunity to network and maintain relationships with fellow municipalities and customers that regularly attend.

Finally, by participating in regional and state planning efforts, ISWM can maintain contact with the legislative delegation representing the Town of Bourne. Having the support of state representatives and senators is important in the event special legislation is needed by ISWM or if unfavorable legislation is proposed that could negatively affect operations. Fortunately, ISWM has had good contact with staff at these offices in the past and JEI strongly encourages that ISWM and the Town maintain these relationships. This may also pay dividends in unexpected ways if staff can recommend to ISWM beneficial programs or grant opportunities available to the Town. The more the staff understands the role of ISWM on a regional basis, the more likely it is that they will think of the Town when environmental initiatives are proposed.