

Solid Waste Management Planning “SWMP” Planning for a New Model of Waste Handling in Gustavus

A Report:

What was done in FY2015 - FY2016 (the first two years)

Goals for FY2017 – FY2018 (the next two years)

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July 24, 2016

Background

Gustavus has a unique solid waste facility and a high recycling rate unheard of in small, rural Alaskan communities. To maintain this distinction we need to improve our buildings, infrastructure and our work areas in a way that promotes both the efficiency and sustainability of our operation but also makes the DRC a great place to work and an enjoyable place for the public to do their recycling. Equally important is the need to maximize the lifespan of our available landfill area so as to avoid a disposal crisis in the future.

The current SWMP was initiated with the Council's adoption of Resolution 2014-20 “A Resolution Supporting the Continued Development of a Comprehensive Solid Waste Management Plan, Facility Plan and Landfill Closure Plan” on June 9, 2014. The June 2014 scoping document is an attachment to that resolution.

Because the SWMP process spans multiple Councils, periodic reports such as this are essential for the current Council to know what information and actions have preceded them, what projects are currently being undertaken and what any recommendations are. This is also the Councils opportunity to endorse or modify the planning process.

What was gained/ learned during the first two years

Appended to this document is a twenty-five year time-line compilation of all the major solid waste planning documents associated for Gustavus including all the Alaska Department of Environmental Conservation (“ADEC”) Operating Permits.

One of the most important projects in the first two years was the Report:

 [Analysis of Waste Management Practices in Gustavus, Alaska](#)

Prepared by Bell & Associates, Inc. in conjunction with Vista Consultants, LLC August 2015

This report provides a context for our operation and answers several questions regarding the current structure of the DRC, current landfill usage, projected life of the landfill, information about probable costs involved with exporting waste and other topics.

From page 4 of the report:

1. Where could waste from Gustavus be taken? Section 9 – Evaluation
2. How would it be stored prior to shipment? Section 9 – Evaluation
3. How would it be shipped? Section 9 – Evaluation
4. What is the cost of exporting waste? Section 9 – Evaluation
5. Can or should the landfill be expanded, and if so how? Section 7 – On-Site Waste Disposal and Section 9 – Evaluation
6. What Alaska Department of Environmental Conservation requirements would have to

be met for a landfill expansion? Section 7 – On-Site Waste Disposal and Section 9 – Evaluation

7. What would be the cost of landfill expansion? Section 7 – On-Site Waste Disposal and Section 9 – Evaluation
8. Under either the export or landfill expansion scenario, what operational changes at the DRC would have to be implemented? Section 7 – On-Site Waste Disposal and Section 9 – Evaluation

Regarding the lifespan of our landfill: at current rates of disposal the available remaining area would represent approximately 10 years of additional capacity.

The report emphasized the need for a topographic survey to compute reliable capacity estimates. (page 14 of the report “ 7.3 Disposal Capacity Assessment”)

Regarding the possible costs of shipping waste out the report gave the following table:

Table 5 – Comparison of Alternative Disposal Costs (page 22)

Option	Low Cost (per ton)	High Cost (per ton)
Ship to Washington Landfill	\$465	\$519
Ship to Juneau Landfill	\$371	\$398
Incineration	\$483	\$483

For comparison in the DRC's FY15 Annual Report the cost per ton for processing all waste that flows across the scale at \$660 per ton. However a simple comparison to the above table is not accurate. The FY15 Annual Report averages the cost of the entire operation over each ton of waste processed whereas the above table only represents the cost of transportation and final disposal and does not include the cost of operating the DRC. Clarifying the comparison between local disposal and exporting waste is a central question for the next part in this project.

SWMP expense report for the first two years

Two Purchase Orders with Bell & Associates

PO 15-183 \$10,000 (spending \$9,725 in FY15 and \$275 in FY16)

PO 16-028 \$600

A travel bill from Roger North, Vista Consultants LLC for \$1,123.42 that was paid with \$151.95 from the DRC's budget and \$971.47 from the DRC "City Grant".

The total money spent the first two years of the SWMP was \$11,723.42. However this number does not include the portion of my time (payroll) which was also spent on the process. I would guesstimate my hours to be at least 100.

Goals & projects for the next two years

Safety and efficiency improvements to the current facility

The efficient and economical processing of waste depends on a facility that is adequately sized and well laid out with an overall concern for public safety, operator safety and efficiency. The current building and the material storage areas located outside the building are undersized for providing all of the functionality that is asked of them and there is an unsafe mixture of operator work areas and public work areas both within and around the main building and vehicle traffic flow problems are also occurring. To address these issues the next part of the planning process will look at:

- Improving traffic flow – Design and implementation of a new driveway, vehicle flow and parking plan for the entire facility
- Improving all forms of storage and how materials move between storage and processing:
 - Continuing the effort of separating where the operator works and where the public does their work
 - Pre-processing storage “inflow” (raw feedstocks, typically uncovered bins and pallets or materials);
 - Post-processing storage “outflow” (exportable, palletized: bales, super-sacks and boxes; material that is typically covered)
- Provide a plan for improving the main building
 - Design a scale and public entry area where waste is weighed and sorted. Planning for an area that can comfortably accommodate 6 or more individuals/ groups and minimizes the overlapping work areas of the DRC operator and the public
 - Proper storage sizing for 7 – 10 days of un-baled waste
 - Adequate work areas for the efficient and safe operation of two or more balers
 - A cost estimate for a 3-phase power connection to existing power grid (APT). The closest access being the power power cables along eastern side of State Dock Road

Managing the remaining landfill airspace

In 2014 the DRC had been receiving waste as a permitted facility for 20 years and had reached an important juncture. The initial design capacity of the disposal area within the original 1994 fenced area had been reached and all additional waste was going to go atop the waste that was already there – a waste mound.

Planning is essential to avoid an ad-hoc vertical expansion or an ad-hoc lateral expansion of the landfill and balefill. The use of stable three to one (3'H:1'V) slopes typical for a modern landfill, and Gustavus' high groundwater table dictate that the existing balefill/landfill footprint will have to become larger in order to go much higher in elevation to provide additional capacity.

The geographical center of Gustavus has a flat topography and the creation of an artificial mound in the center of the community is something that needs careful consideration.

Key questions that need clarification:

- How much waste could be added to the existing mound before the maximum height is achieved?

- How would any expansion of the landfill/ balefill area affect the other areas of operation at the DRC – is there any room for expansion out side of the original fenced in area?

A topographic survey of the existing facility is essential to accurately determine how much landfill volume has been used and how much is available.

Improvements to the food waste composting operation

- Improving the composting operation by improving the (60' x 110') composting area for more efficient operation; rebuilding the current “muddy whenever it is wet” composting area to areas of concrete or compacted D-1 depending on their level of use.
- Additional improvements to the composting operation by training: ~40 class time and facility tours at food waste composting facilities processing at least 30,000 pounds of post-consumer food waste annually
- Consideration of the proposal to compost fish waste from charter boat operators that would otherwise be dumped from the Gustavus dock and floats. This situation is creating a sea lion problem. Planning for collection, transportation and composting of the fish waste would be considered in detail.

Greater integration between the Community Chest and the DRC

The perennial question is to merge the Chest with the the DRC or to maintain two separate locations. Each has its own advantage and disadvantage.

The status quo is to keep the Chest at its own location however certain retail items such as building materials could be relocated to the DRC.

During the next two year planning process these ideas will be explored in more detail.

How to implement a transfer station at the DRC

Gustavus's available landfill area is very limited and the exporting of non-recyclable MSW needs to begin within the mid-term in order to avoid a landfill capacity crisis in the long-term. Continuing to plan on how to transition towards becoming more of a transfer station based operation rather than a landfill based operation for our non-recyclable waste is very important.

Key questions:

- What are the biggest priorities that need to be considered for operating a transfer station in Gustavus?
 - Using our current facility as a template it is: traffic; parking; customer flow; waste storage, equipment and operator work areas
- How would the waste be transported and where would it be shipped to?
 - Alaska Marine Highway AMHS They ship recyclables and many forms of inert waste such as old boats, chairs, bulky plastics etc. but they categorically will not ship garbage (see 2015-01-29 e-mail to Richard Hertzberg “Ferry System and freight hauling contacts”)
 - Linden Transport/ Alaska Marine Lines (AML). AML barges garbage from several

cities in SE Alaska (Petersburg, Haines, Wrangell) to the Seattle area but AML does not come to Gustavus even on a limited basis – the freight/ tonnage isn't there.

- Landing craft - MV Liteweight. Currently this is the only craft which can regularly transport MSW from Gustavus to Juneau.

More detailed analysis of these carriers will be a part of the next planning process

- How would a new facility impact its neighbors (such as traffic flows)?
- How would a new facility likely look?
- What would the initial capital costs and operational costs be and how much would waste disposal cost for Gustavus' residents if a new facility were built?

In order to learn more I have planned a site visit to Petersburg, Alaska to see their solid waste processing facilities and meet with staff. Petersburg is a community which has transitioned from being landfill based to transfer station based.

Landfill Closure plan development

The development of closure plan for the existing landfill and balefill area would give future Councils and DRC Manager clear information regarding the capacity, appearance, and monitoring requirements for the waste mound once it has reached capacity.

Any other waste related topic could be addressed such as planning for moving and disposal of dilapidated floats in the Salmon River Boat Harbor area could be addressed in the SWMP process.

How these Goals & Projects are funded

Funded by FY2017 Operating budget:

- My time associated with drafting and editing documents, researching, or compiling reports (payroll)
- Assistant Operator/ Temporary labor used for covering my duties as operator while I work on the SWMP process. These are based on a limited time period hires by the Mayor (payroll)
- Receiving training in food waste composting such as the 5 day courses offered by US Composting Council training at UC Davis or South Carolina (training & travel)
- Visiting/ touring food waste composting facilities during the travel associated with the composting training (training & travel)
- Petersburg site visit (travel)

Capital Projects for the Capital Project funding process

The DRC has several on-going capital projects that are in the unfunded development stage. Projects involving expenditure over \$5,000 will require a scoping document to be considered in the Council's Capital Project program

Currently these projects include (not prioritized):

Name	Scoping Document?	Approximate Cost
Pre-processing storage area, driveway access and tree planting project	Yes, not adopted	\$57,700 (project can be funded in part)
Composting yard surface hardening project	No	\$11,260 - \$50,000
Topographic survey and landfill capacity calculations	Yes, not adopted	Not yet known
Main building refurbishment/ replacement and equipment layout Plan	No	Not yet known
Household hazardous Waste Module	Yes (2013)	\$43,000

Scoping Document Attachment

2016-2018 scoping document and work plan (revision of 2014-2016 document)

Gustavus Disposal and Recycling Center

FY2017-18 Solid Waste Management Plan – Time-Line and Document List of Solid Waste Planning Documents and ADEC Operating Permits

2014 - 2016 Solid Waste Management Plan

-  [Resolution 2014-20](#) A Resolution Supporting The Development Of A Comprehensive Solid Waste Management Plan, Facility Plan And Landfill Closure Plan
-  [June 2014 Scoping Document](#)
FY15 & FY16 Solid Waste Management, Facility Planning and Landfill Closure Plan Project – Planning for a New Model of Waste Handling in Gustavus
-  [Analysis of Waste Management Practices in Gustavus, Bell & Associates Report August 2015](#)
 -  [Appendix A SWMP Scoping Document](#)
 -  [Appendix B Collecting the Klondike Article](#)
 - Appendix C ACS Modular Incinerator Documents
 - [01 Waste Types](#)
 - [02 Models, Specs & Costs, 26 page document](#)
 - [03 Batch Load & Burn Rate](#)
 - [04 Fuel & Electricity Use](#)
 - [05 Operating Instructions](#)

2015 ADEC Permit Documents

-  [ADEC Solid Waste Permit SW3A017-20](#)
-  [General Operations Plan](#)
-  [Food Waste Composting Plan](#)
-  [Groundwater Sampling Plan](#)
-  [Area Map](#)
- [Site Drawing](#)

2010 ADEC Permit Documents

-  ADEC 2010 Permit SW3A017-15
-  [2010 General Operating Plan](#)
-  [2010 Food Waste Composting Plan](#)
-  [2010 Closure Plan](#)
-  [2010 Ground Water Monitoring Plan](#)

2007 Options for Moving of One or More Functions of the DRC

- [Final Recommendations on DRC Site Location Options, September 12, 2007](#)
- [TABLE I Functions Attributes Chart](#)
- [TABLE II Sites Attributes Chart](#)
- [TABLES III & IV Potential Sites for DRC](#)
- [Raising Value and Lowering Costs paper by Mike & Karen Taylor](#)
-  [Resolution 2007-04](#) A Resolution Of The City Of Gustavus Delegating Responsibility To The Gustavus Disposal And Recycling (DRC) Committee To Study The Feasibility Of Relocating All Or Part Of The DRC Facility To Address The Long Term Needs Of The City

2005 -2010 Incorporation land acquisition Documents

-  [Resolution 2005-02](#) A resolution by the City of Gustavus, Alaska requesting from the Department of Natural Resources, conveyance under as 38.05.810, of the 12 acre parcel that the City of Gustavus Disposal & Recycling Center (formerly Gustavus Landfill) resides (adl 105947). This conveyance shall not be a part of the acreage entitled to the city as part of its municipal entitlements under as 29.65.030. This resolution also requests that DNR waive the provision under as 810 requiring the land to revert to the state if not used for public and charitable use. Furthermore the City of Gustavus requests that DNR turn over to the city the Closure Trust Fund associated with the Landfill site lease
-  State of Alaska Patent Number 21969, ADL 107314

2005 ADEC Permit Renewal

- ADEC Solid Waste Permit SWSHA0011994:20103MA
- May 2005 Food Waste Composting Operational Plan
- October 2009 Modification to Groundwater testing requirements

2000 ADEC Permit Renewal

- Solid Waste Permit 0011-BA005
- Permit application form/document

1995 ADEC Permit Renewal

- Solid Waste Disposal Permit 9411-BA003 (5 year renewal of 1994 document)

1994 Initial Solid Waste Disposal Permit

- Solid Waste Disposal Permit 9411-BA003

1994 Landfill Committee Planning Documents

-  [Incineration Option Diagram](#)
-  [Incineration costs](#)
-  [Compaction Option Diagram](#)
-  [Compaction costs](#)
-  [Calculations and Assumptions](#)
-  [Gustavus Contingency Plan for Dump](#)

1991 Village Safe Water Program Gustavus, Alaska Solid Waste Engineering Study

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