Southeast Conference
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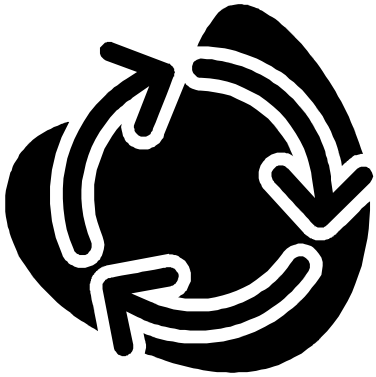
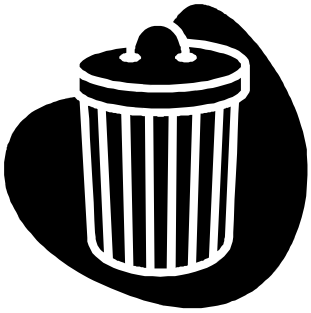
# MUNICIPAL SOLID WASTE DISPOSAL ALTERNATIVES
## SOUTHEAST ALASKA: DEVELOPING REGIONAL SOLUTIONS

**July 2006** ***Draft***





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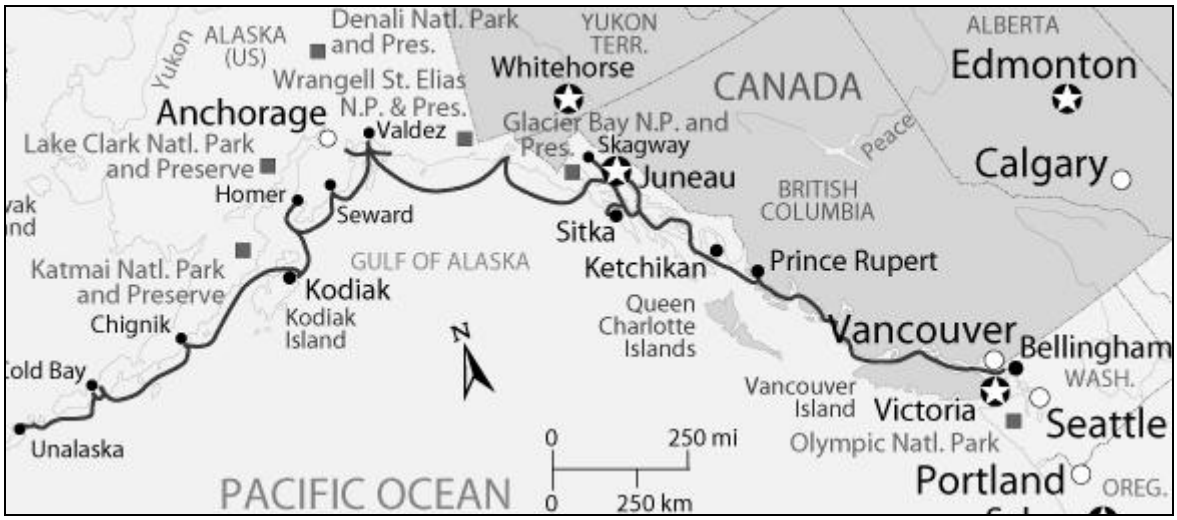


***Communities along the Gulf Coast of Alaska***

## *Executive Summary and Overview*

Southeast Conference is evaluating alternatives to decrease and control the costs of handling, processing and disposing of municipal solid waste. It seeks to improve the services for solid waste disposal for Southeast Alaska communities through a collaborative effort of towns and governmental agencies for mutual gain. In a step-wise fashion, SEC and its consultants for this report have reviewed the existing practices, the region's future needs, possible locations for a regional disposal site and available technologies for recycling and waste reduction.

Two looming questions have been answered during the past 18 months: 1) there is enough interest by communities, state and federal agencies, private firms and the public to continue to discuss and review a regional facility; and 2) solid waste legislation, passed in May 2006, allows communities to form an "authority" for solid waste handling and disposal. The communities of Wrangell, Petersburg, Thorne Bay all expressed interest in continued discussion of a regional facility near their communities. Private companies in Kake and Haines also expressed an interest in working on the issue with technologies they are developing. With some local political support, the communities of Metlakatla and Sitka also have expressed interest. Officials in the city and borough of Juneau also are watching development of a regional solution to solid waste disposal. This year, Thorne Bay is conducting a feasibility of a potential site in Tolstoi Bay on Prince of Wales Island.

Southeast Alaska communities and Southeast Conference have completed numerous reports over the past 15 years for solid waste and recycling. The reports, for the most part, led to the same conclusion – there are economies of scale to be gained and costs, equipment and risks to be shared when communities cooperate on a unified solid waste program. However, in past years, there has been no glue to help the communities bind a unified program, and each has gone its own way. Ketchikan's landfill reached capacity and closed 10 years ago. It then began shipping waste to the Lower-48. Six other communities found the same impediments for developing a new site: 1) suitable site

availability; 2) the high cost for individual communities to build a modern landfill based on their volumes; and 3) attractive, short-term options.

Over the past two years, Southeast Conference has revived an initiative to seek alternatives to the increasingly expensive disposal of solid waste throughout the region. For this report, Southeast Conference contracted with Smith Bayliss LeResche and Southeast Strategies to perform the first phase of this initiative, which consisted of collecting and reviewing various existing studies and data and evaluating the communities of Southeast Alaska's current methods for dealing with their solid waste and recyclable materials. Consultants reviewed ways to consolidate, recycle and dispose of wastes.

This report focuses only on an initial portion of a regional solution. Factors can and will change in the coming months and years that make a regional facility more or less feasible. This is a work in progress and will serve as a reference document for communities considering solid waste alternatives.

Future steps, some of which can overlap, would include:

- Develop a Solid Waste Authority
- Determine Community Participation
- Seek funding
- Review Facility Site options - Site Selection
- Feasibility studies at one or more sites
- Finalize funding package
- Design – Construct
- Operate a landfill or landfills

Ideally, the RMSWF should save communities money in both the short-term and the long term. This is a goal of a regional program. The average cost per ton to ship waste to the Lower 48 and to pay disposal fees is $102/ton, with ranges from $70/ton to over $200/ton. The largest component of this cost is freight, where savings are gained if shorter distances are needed.

The authors explored the state of the art in waste management, including incineration, and identified potential sites for a Regional Municipal Solid Waste Facility (RMSWF). Much of the consultants' time was spent gathering information from the communities, discussing technologies and options and determining the collective level of interest. As part of this report, SEC and its contractors also reviewed the cost of developing a landfill and identified potential funding sources. Because of the large array of options available to communities and not knowing the volume of solid waste going to a regional facility, costs for development and costs for operations are difficult to determine with much precision at this time. The authors have given ranges of costs and revenue.

To assist in the research, the authors contacted various officials and agencies from the two dozen communities within Southeast Alaska. They contacted municipalities in

regions adjacent to Alaska's Panhandle. This assisted in gathering information regarding what the various communities are doing currently with their solid waste and recycling, whether the communities are interested in a regional solid waste program, and whether a community would be interested in hosting such a facility. Any new facility and landfill must apply high environmental standards to protect adjacent natural resources. The operation also needs to provide a continuous and consistent service so that communities may rely on it.

USDA-Rural Development, through a grant, funded the work for this project which was to lead to the next step – to try to develop a plan that gets communities closer to a regional solution for handing solid waste. It is not the purpose of the grant to choose a site and the technologies that will be included. These decisions will be made at a later step, most likely by members of a solid waste authority. Future steps include site or sites to be examining, feasibility studies, site selection, design, construction and operation.

The trend in the Lower-48 states has been to close local landfills and open larger multiple-community multiple-county landfills, whose area of collection crossed state lines. Washington State is a good example of this trench. It has 10 times the population of Alaska and has about $1/10^{th}$ of the number of landfills (21 permitted landfills compared to Alaska with more than 200).

Municipal solid waste in Southeast Alaska is currently handled in a variety of ways, from uncontrolled open dumping, open burning, composting, permitted landfilling, and baling and shipping solid waste to the Lower-48. Southeast Conference and its consultants found positive responses from municipalities to its research, with several communities interested in hosting such a facility, as well as a few private companies interested in providing technology and hosting a RMSWF.

Regional solid waste options include:

1. Continue to close landfills and ship MSW to the Lower-48
2. Develop local landfills
3. Develop one or more regional, state-of-the art landfills

The work of this report focused on the third alternative. Developing individual landfills for major communities is expensive and land is scarce. Already, several communities in Southeast Alaska considered developing their own landfills, then decided to ship wastes to the Lower-48. Without additional volumes from other communities, the likelihood of landfills being feasible in individual communities is more remote. Developing a regional landfill has economies of scale as well economic development aspects to consider. It will create jobs in that community, and, through waste-to-energy conversion, might be able to develop a source of affordable electricity for residents, businesses or new enterprises.

All major communities including and south of Sitka, ship their Municipal Solid Waste (MSW) to Washington State or Oregon. Sitka's municipal solid waste travels 1100 miles to its landfill. These six communities ship approximately 23,000 tons/year (64 tons per day). Shipping communities include:

- Ketchikan
- Sitka
- Petersburg
- Wrangell
- Prince of Wales (Craig, Klawock)

For the majority of the time while drafting this report, it was assumed that Juneau, at least initially, would not be part of a regional organization for solid waste disposal. It has a private landfill and its owner, Waste Management, Inc., states the landfill's life expectancy is 25-30 years. Therefore, the drafters of this report primarily developed and reviewed scenarios that included only those communities that currently shipped waste.

In early 2006, Juneau officials expressed interest to be included in discussions for a regional option, while its community leaders review local alternatives. If Juneau's waste stream of 30,000 tons/year (83 tons/day) is added to waste from other communities, the combined annual average would be about 150 tons per day. This volume greatly increases the likelihood of any regional alternative being successful. Juneau's waste stream is larger than the volume now shipped to the Lower-48 by the six communities that ship municipal waste.

Other communities of coastal Alaska – such as Yakutat, Cordova and Kodiak - also might get involved in a multi-regional effort, as might smaller communities in Southeast Alaska which have unpermitted dumps. Kodiak's landfill is nearing its capacity and soon that community and borough will seek alternatives. Possibly, by utilizing a back haul of barge line services, Kodiak (population 14,000) also might add additional volumes to a regional landfill in Southeast Alaska.

The Environmental Protection Agency's mantra is to reduce, recycle, and reuse wastes before landfilling. Every community wants recycling as a component of its solid waste program. Yet, recycling markets are distant and prices for recycled commodities vary from year to year. Revenues gained do not always decrease costs for community programs. Some high value commodities, like aluminum, are already handled by charitable organizations in those communities as a fund-raising mechanism. In a regional scenario, recycling and other waste reduction efforts could be handled in individual communities and waste shipped separately. Or recyclables could be commingled and then separated at a regional site in a Materials Recovery Facility (MRF).

At best, Southeast Alaska communities are recycling only a small percentage of their waste streams. The price these communities pay, excluding volunteer time, greatly exceeds the cost of landfilling these items. This, however, does not mean that recycling should not be included in a regional facility. Recycling is one of the waste reduction methods considered important by nearly everyone.

The other components of a regional site could include various waste reduction technologies, of which there are many. A footnote about technologies is important. In

reviewing many technologies, this report focused on those that are 1) available; 2) proven; 3) cost-effective for the volume of solid waste in our region; and 4) being used for Municipal Solid Waste. This report contains a list of these technologies. Others have suggested technologies that might be useful to some extent in the future, such as conversion of waste cooking oils to biofuels and a process known as destructive distillation, which uses heat to convert wastes into energy. Cooking oil is a small percentage of the waste in Southeast Alaska, but has become problematic in several communities.

SEC believes the region should view solid waste as a resource. It can be converted to energy for heat and electricity. Waste-to-Energy (WTE) conversion also reduces the attraction of animals to landfills and reduces the volume of landfilled materials by as much as 85-90%. Taking care of this waste within the region should be considered a priority, as well as a responsibility. A new landfill will provide continued employment for many years. This is especially important as the regional population has declined over the past decade in most subregions of the Panhandle.

Minimum site requirements include approximately 20-50 acres of land plus buffers. Adjacent land uses should be compatible with the type of landfill developed. Geology, terrain and proximity to salmon streams need consideration, as well. Approximately 20 acres would be needed for a residue landfill (landfill plus waste-to-energy plant), or 50 acres for a conventional landfill. Proximity to docks, roads and utilities (electricity, sewer and water) also is important, as is the availability of a workforce.

The cost to develop a regional site, excluding land acquisition, ranges from $10-$30 million, depending on the selection of alternatives. The need to secure additional funding through the Alaska legislature and the federal government is imperative to develop a regional landfill site.

The host community is not expected to be the operating entity for a regional facility. The authority that develops the site could seek bids to operate the facility from recognized landfill operating companies that have expertise in managing these sites. For example, Waste Management, Inc., which operates the Juneau landfill, is part of a national firm with this type of expertise. With the right mix of funding, community momentum and state and federal agency involvement, a regional landfill could be built in 2-3 years.

## SOLID WASTE AUTHORITY LEGISLATION – 2006

"An Act authorizing the establishment of regional solid waste management authorities."

Another step toward regionalization was taken in May 2006 when the Alaska legislature passed and Governor Frank Murkowski signed a bill that authorized the establishment of Solid Waste Authorities. This was a missing step in past regional efforts for communities to collaborate on municipal solid waste disposal. The law allows communities to form a legal entity that is separate from communities. Communities need to hold elections approving their participation in the management of an authority. These authorities would be accountable to the citizens they serve through public meetings as well as to the legislature through annual review of their finances. This legislation (House Bill 392) also allows the authorities to seek grants, loans and bonds. Southeast Conference was instrumental in gaining passage of this bill which was introduced to the legislature in January 2006 by Rep. Peggy Wilson (R-Wrangell.) The text of this legislation is attached to this report as an appendix.

*Special Thanks:*
*A special thanks is due Bill Allen, the former Alaskan director of USDA Rural Development. Without his vision and his agency's funding, this report could not have been done.*

*Another acknowledgement goes to Rep. Peggy Wilson and her staff for their vigilant work in passage of the Solid Waste Authority legislation.*

## *RECOMMENDATIONS*

Based on the data gathered from Southeast Conference (SEC) and Southeast Alaska communities, and through informal discussions with the three cargo barge companies serving this area, the following recommendations are offered:

- Southeast Conference must stay actively involved in the months after passage of legislation which enabled Southeast communities (and other interested Alaska regions) to form Regional Solid Waste Authorities (RSWA). Legislation goes into effect in August 2006. Communities can also work on multi-community efforts either through the SEC Environment Committee or by entering into a Joint Government Agreement with each other.
- SEC's Environment Committee should explore the make-up of such RSWA, such as board of directors, membership composition and voting powers. As with past SEC involvement, once the Authority is solidly in place, SEC will back away from a lead role, possibly serving in the capacity of facilitator as it does for the Southeast Conference of Mayors and for energy issues.
- SEC must decide soon what role it should or shouldn't play in choosing or endorsing a particular site or community. SEC's role as an advocate and as a reviewer of proposals may be subject to criticism – as two or more community members may be vying for the host community for a regional facility.
- SEC must be the avenue for regional funding at least until an Authority is in place. As the Alaska Regional Development Organization (ARDOR) for Southeast Alaska and having other state and federal designations, SEC can help develop grant plans, hold meetings and work with funders.
- The inertia to develop a Regional Municipal Solid Waste Facility (RMSWF) must come primarily from a community or communities. There are at more than five communities or organizations which have expressed a serious desire to host a RMSWF: Petersburg, Thorne Bay, and Wrangell plus Kake Tribal Corporation and Haines, through Haines Sanitation. Sitka's mayor also has asked that his community not be excluded at this point, but Sitka's geographic location and the scarcity of available landfill areas on its road system make this site problematic. A few individuals from Metlakatla also have expressed some level of interest. Other local government bodies that seek further consideration have passed resolutions stating their interest and support of a regional solution.
- Each location has obstacles to overcome, such as financial, available resources and labor, site development, infrastructure development and trust in communities to use a regional site. Reliability of the regional facility and trust in the authority and its operating company also will be factors that will determine the participation levels of communities.

## *ALTERNATIVE SYSTEMS*

Following is a synopsis of treatment systems for consideration as options at a southeast RMSWF. Regardless of which system is selected, a Material Recovery Facility (MRF or "murf") should also be constructed. The listed resource companies are for contact purposes and should not be construed as an endorsement for their services nor their product. The USEPA web site offers in depth information about all the treatment options.

http://www.epa.gov/osw/

There are no operating MRFs in Alaska, and Alaska probably ranks dead last in recycling in the United States. Remoteness of locations combined with small population centers and high transportation costs all contribute to the rank. Even Anchorage, with about half the states' population, does not have a MRF, but it does have at least three recycling companies. Anchorage operates a state of the art landfill near Eagle River.

Rabanco, the solid waste contractor for Ketchikan and other Southeast Alaska communities that ship waste, operates a MRF in Seattle for wastes picked up in Seattle. The Seattle recycle program is very aggressive, making Seattle among the top recycle cities in America. They work under the premise that the money spent to recycle is measured against the cost of disposal, which in the case of Seattle amounts to about $42 per ton. The program operated slightly out of the red.

http://www.rabanco.com/default.aspx

**OPTIONS FOR SOUTHEAST ALASKA**

A. **SHIPPING SOUTH**. Continue to ship to the mainland under the umbrella of a RSWA. This option may provide a mechanism for better disposal rates, and could provide support services for recycling efforts. This option does not appear to offer a significant overall cost reduction, and the product is still leaving Alaska. A cursory evaluation suggests also that bringing MSW to a central location for reprocessing (running through a MRF) and then shipping south is not cost effective.

B. **CONVENTIONAL LANDFILL OR BALEFILL**. Depending on the selected site, a landfill is still a viable option. All Southeast Alaska options are going to require landfilling residuals. A landfill must be designed with an impermeable liner and leachate collection system. Most likely a methane gas collection system will be required. The collected gas can be utilized to produce electricity. The landfill option can be constructed in less than two years, and could be used as a temporary measure should a Waste to Energy facility be the final choice.

C. **WASTE TO ENERGY** (WTE) by incineration. This option is primarily dependent on location. There needs to be an energy demand and proximity to a power grid. Fifteen to twenty five percent of the incinerated waste requires landfilling. With an aggressive MRF component, the lower percentage may be achieved. There are approximately 90 WTE facilities operating in the United States. Measured as a recycle/reuse component, a WTE produced the equivalent of approximately 50 gallons of fuel oil per ton of refuse derived fuel. A 100-ton-per day-plant can produce 2.5 megawatts of energy, equivalent to providing the electricity needs of 2000 homes. Another WTE option is to locate the facility to feed steam for a kiln or hot water for an adjoining facility.

www.ref-fuel.com
www.covantaenergy.com
www.oxyxmp.visia.com
www.wheelabratortechnologies.com
www.incineration.com

D. **WASTE TO ENERGY** through conversion to ethanol. There is currently a proposal to build such a facility in Ketchikan. The firm is seeking financing. Ethanol residue for landfilling is approximately twenty to thirty percent of the input volume. The volume of MSW in Southeast would not support an ethanol facility, so the plant would have to be fed primarily with wood waste. There are no operating MSW ethanol facilities in the United States. A recent paper out of Cornell University states that "wood biomass requires 57 percent more fossil energy than the fuel produced." A proposed facility in NY State which had been under consideration for about ten years was finally permitted in 2001. Funding was never secured, and the development company web site has disappeared.

www.arkenol.com
www.novafuels.com
www.news.cornell.edu/stories/July05/ethanol.toocostly.ssl.html

E. **COMPOSTING.** MSW has been composted for over 75 years. Today there are about 100 MSW compost facilities in the United States. Haines Sanitation is operating a successful compost facility and has proposed expanding throughout Southeast. Approximately two thirds of MSW is compostable. Although southeast Alaska produced compost would be hard to competitively market given the preponderance of inexpensive imports, should conventional landfilling be a chosen option, a composting fraction should prove beneficial for producing final cover materials.

Haines Sanitation 907.766.2736
www.cedar-grove.com
www.compostingcouncil.org

## *SOLID WASTE FACILITY FUNDING OPPORTUNITIES*

Following are summaries of several agencies and programs which could provide funding for aspects of a regional solid waste management plan, authority, facility, and/or impacts of this facility such as cleanup and closure of old landfills. This is not a comprehensive list, but indicates that many sources of funding are available. It is difficult to pinpoint funding opportunities at this point in the project, as it is currently ill defined. However, this list can serve as a starting point.

The most promising sources of funding appear to be the EPA Regional Geographic Initiatives grants, and discretionary funds from USDA Rural Development and possibly other sources such as the Alaska Legislature, U.S. Congress, the US Economic Development Administration and the Denali Commission. In addition to the programs mentioned here, agencies such as the USDA Natural Resource Conservation Service are beginning to fund biomass projects. Depending on how this plan and/or facility is configured, this project could be eligible for some of those funds also.

**U.S. Environmental Protection Agency:**

*Discretionary funding* through the Office of Solid Waste, and *Solid Waste Demonstration Project* awards which can be multi-year, with no cap. EPA funds most of their grants through other agencies and organizations. Typical amount of funding varies by project. There are no deadlines for application. Contact: Joe Sarcone, Rural Sanitation Coordinator, Anchorage, Phone: 907-271-1316.

*Regional Geographic Initiatives:* For geographically-based projects that address regional strategic priorities, and that fill critical gaps in EPA's ability to protect human health and the environment. Problems addressed by this program often showcase innovative solutions and act as a catalyst for cooperatively addressing important environmental issues. Projects should:

- Address places, sectors or innovative projects;
- Be based on a regional, state, tribal or other strategic plan;
- Address problems that are multi-media (e.g., water, air, hazardous waste, etc.) in nature or fill a critical gap in the protection of human health and the environment;
- Demonstrate state, local and/or other stakeholder participation; and/or
- Identify opportunities for leveraging other sources of funding.

Projects may be funded for up to four years. They are generally funded in the $10,000 to $50,000 range. Very little funding has come to Alaska to date. Region 10 contact: Dan Phalen, phalen.dan@epa.gov, Phone: 206-553-8578.

*OSWER Innovation Pilot Grants*: This grant funds creative approaches to waste minimization, energy recovery, recycling, land revitalization and homeland security. Funds cannot be used for construction. May not be available for 2006. Contact: Brigid Lowery, lowery.brigid@epa.gov, EPA OSWER, Phone: (202) 566-0198.

*Solid Waste Management Assistance*: To promote use of integrated solid waste management systems to solve municipal solid waste generation and management problems at local, regional and national levels. Funds allowed for training, education, surveys, studies and demonstrations. No construction or acquisition of land is allowed with these funds. Cap is $250,000. Contact: EPA Grants and Administration Division, 3903F, Washington, D.C. 20460, Telephone: (202) 260-9266. Web Site: http://www.epa.gov.

*Environmental Justice:* There could also be some funding through several programs addressing environmental justice issues, depending on the location and configuration of the facility.

**USDA Rural Development**

*Water & Waste Program Grants*: Money for site closure possible if plan for new disposal method is included. Must do environmental review and cost analysis. Method chosen should be least costly method that protects the environment well. So transfer station or waste removal for closing sites may be funded. Equipment or O & M expenses not allowed. No cap on grant amount. Typical amount: $100,000. Southeast Alaska regional contact: Keith Perkins, keith.perkins@ak.usda.gov, Phone: 907-747-3506.

*Direct Loan Program:* Very low interest loans payable over 40 year period. Can include equipment purchase. Can include 1st year operating expense. Typical amount: No cap.

*Guaranteed Loan:* Helps secure bank loans by guaranteeing loan. Typical amount: No cap. For Technical Assistance grants apply between Oct.1 – Dec. 31. No deadline for other programs, but apply early. Need Application form for all programs**.** Contact: Debby Retherford: www.usda.gov/rus/water/tatg.htm, Phone: 907-761-7705.

*Discretionary Funds* – This agency has provided substantial funding for SEC's electrical intertie project, and has been pleased with the use of their money. This solid waste project is in keeping with their goals for the region, and discussions with Rural Development representatives indicates that they would be pleased to discuss how they can assist SEC with this project. There are several sources and types of grants that could be made available to us. A face to face meeting with the Alaska USDA Rural Development Director is tentatively planned during the SEC Mid Winter Summit in Juneau at the end of March. Southeast Alaska regional contact: Keith Perkins, keith.perkins@ak.usda.gov, Phone: 907-747-3506.

**Army Corps of Engineers:**

ACOE is interested in working with Villages, and may be willing to work with this project. They have recently completed a pilot project with a Northwest Village and they are waiting to receive the results of a project review. Contact Joe Sarcone, Rural Sanitation Coordinator, EPA, 907-271-1316, to get ACOE contact.

**U.S. Economic Development Administration (EDA):**

*Discretionary funding* for this project is possible through EDA, although they are anticipating budget cuts in the coming years. Contact: Berney Richert, Anchorage, brichert@eda.doc.gov, Phone: 907-271-2272.

**Federal Interagency:**

*Federal Environmental Justice Demonstration Project:* Danny Gogal, Environmental Justice Office, EPA, www.epa.gov/swerosps/ej/ , Phone: 202-564-2576

**Alaska Department of Environmental Conservation (DEC):**

Some discretionary funding available. No deadlines. Juneau Contact: Ed Emswiler, Phone: 907-465-5353, Website: www.state.ak.us/dec/deh/sw/main/sw_index.html

*Village Safe Water (VSW) Capital Improvement Project Program (CIP):* Also known as *Alaska Village Grants Program:* Large grants available (no cap) for planning and implementation of site closure and new waste disposal facility funding. There is a strict priority ranking procedure performed by ANTHC and VSW. You must have a community plan first that looks at how waste disposal fits into your long-term community goals, such as economic development and water and wastewater treatment. Apply as soon as possible. You will be placed on a list and move up each year. Amount awarded depends on construction needs of the project. Juneau Contact: Ed Emswiler, Phone: 907-465-5353, Website: www.state.ak.us/dec/deh/sw/main/sw_index.html

*Brownfields Cleanup and Redevelopment Grants*: These grants are passed through from EPA, and are mainly used to clean up contaminated areas. Discussions with the DEC Brownfields representative indicated that some of these funds could possibly be used to close landfills in rural communities after a regional solution is developed. There are several Brownfields programs and funding varies. Contact the DEC Brownfields Coordinator in Fairbanks: John Carnahan, john_carnahan@dec.state.ak.us, Phone: 907-451-2166.

*Alaska Clean Water Fund*: Makes low interest loans available for water quality-related projects. Loans can finance up to 100% of costs for planning, design and construction of publicly owned facilities. Loans can serve as local match for other federal or state

funding sources. $42.3 million available in 2006. Projects are scored by the department. Contact: Mike Lewis. Phone: 907-269-7616, mike_lewis@dec.state.ak.us .Website: http://www.dec.state.ak.us/water/muniloan/index.htm

*Municipal Water, Sewerage, and Solid Waste Matching Grant Program:* Makes matching grants available to communities on a competitive basis. Deadline is in August each year and funds become available in the following year. This program's annual offering has declined significantly in the last five years. Solid waste projects generally do not score as high as water and sewer projects that have human health. Contact: Mike Lewis, Phone: 907-269-7616, mike_lewis@dec.state.ak.us . Website: http://www.dec.state.ak.us/water/munigrant/index.htm

**Denali Commission:**

*Solid Waste Management Grant Program*: Provides grant funding for researching improvement options for handling local municipal solid waste. The grant cap is $100,000 under most of the recent program. New RFPs are issued every 6-12 months as money becomes available. Contact: Cindy Roberts, Program Manager, croberts@denali.gov, Phone: (907) 271-3018.

*Discretionary Funding*: Some discretionary funding and/or federal earmarks are possible for desirable projects. Webpage: http://www.denali.gov/index.cfm, Phone: (888) 480-4321.

**Biomass/Bioenergy Research and Development Funding Assistance:**

*USDA Rural Utilities Service (RUS)*: Competitive grants to assist communities with extremely high energy costs. The funds may be used to acquire, construct, extend, upgrade, or otherwise improve energy transmission or distribution facilities service communities in which the average residential expenditure for home energy exceeds 275% of the national average. Webpage: https://e-center.doe.gov/iips/faopor.nsf/UNID/040C7DB08E79271B85256FA80064B7C1?OpenDocument

*Energy Legislation*: Authorizes $110 million in each of fiscal years 2005 – 2009 for demonstration projects to produce biodiesel fuel from biomass ethanol.

### *TRANSPORTATION*

A major factor which will make a RMSWF economically attractive in southeast is the cost of transportation. Informal interviews with Alaska Marine Lines (AML) Northland Services, and Sampson Tug & Barge yielded a potential transportation cost saving of 25 to 50 percent. The actual existing transport costs to Seattle were not provided. These costs are blended into a per-container fee with transport costs from Seattle to the regional landfill.

Ketchikan is paying the lowest rate for disposal in America. The landfill tipping fee charged to Ketchikan is approximately $23 per ton, and transportation is approximately $47 per ton. (Ketchikan actually pays a per container shipping fee regardless of the weight.) Therefore, in calculating a transport cost for Southeast, the Ketchikan reduction would be between $12 and $24 which could be added to treatment and disposal costs in weighing the benefit of keeping the waste stream in Southeast Alaska.

The average cost that Southeast Alaska communities pay for transportation and the tipping fee is $102/ton. Craig pays over $200/ton. Other communities pay from $120-130/ton to ship and dispose.

### *ECONOMICS*

As stated previously, the cost of a regional facility with a recycling center is $10-30 million and depends on many variables (volume and technologies utilized). This price tag does not assume the cost of purchasing land, as there may be opportunities for land swaps between the local governments, state entitlement lands and the US Forest Service, which owns most of the land around Southeast communities. Regional and village Native corporations own about 400,000 acres of real estate in Southeast Alaska. This is private land. To date, only Kake Tribal Corporation has proposed using some of its land for a regional facility. There proposal is for land near the community of Kake.

Construction costs typically cost, according to Municipal Solid Waste Management magazine (July 2005), run from $300,000 to $774,000 per acre. The authors reviewed costs in other Alaska communities to build modern landfills.

## Typical Construction Costs

| | Low Cost | High Cost |
|---|---|---|
| Clear/Survey | $ 6,000 | $ 11,000 |
| Excavation | $ 100,000 | $ 330,000 |
| Berm | $ 10,000 | $ 16,000 |
| Clay Liner | $ 32,000 | $ 162,000 |
| Geomembrane | $ 24,000 | $ 35,000 |
| Geocomposite | $ 33,000 | $ 44,000 |
| Granular Soil | $ 48,000 | $ 64,000 |
| Leachate System | $ 8,000 | $ 12,000 |
| QA/QC | $ 75,000 | $ 100,000 |
| PER ACRE | **$ 336,000** | **$ 774,000** |

Source: MSW Management, July/Aug 2005

## Southeast Alaska Estimated Costs – SBL - 2005

| | |
|---|---|
| Site Development (250,000/acre) | $ 2,500,000 |
| Sewer Plant | $ 1,000,000 |
| Materials Recovery Facility | $ 1,000,000 |
| Permits and Engineering | $ 500,000 |
| Equipment | $ 500,000 |
| Utility Devlopment | $ 2,000,000 |
| Buildings | $ 1,500,000 |
| Reserve | $ 1,000,000 |
| Waste-To-Energy Plant | $15,000,000 |

*Minimum landfill footprint is approximately 50 acres. Minimum site development needed is approximately 10 acres. Waste-to-Energy plant construction calculated at per-ton daily input of $250,000/ton.

## SOLID WASTE PRODUCED PER YEAR

Landfill Rate 70.0%
Trash/Day/Person 6 *lbs*

| Population | Trash/Day | Landfill Rt | Lbs/Day | Lbs/yr | Tons/Yr |
|---|---|---|---|---|---|
| **10,000** | 60,000 | 70.0% | 42,000 | 15,340,500 | 7,670 |
| **20,000** | 120,000 | 70.0% | 84,000 | 30,681,000 | 15,341 |
| **30,000** | 180,000 | 70.0% | 126,000 | 46,021,500 | 23,011 |
| **40,000** | 240,000 | 70.0% | 168,000 | 61,362,000 | 30,681 |
| **50,000** | 300,000 | 70.0% | 210,000 | 76,702,500 | 38,351 |
| **60,000** | 360,000 | 70.0% | 252,000 | 92,043,000 | 46,022 |
| **70,000** | 420,000 | 70.0% | 294,000 | 107,383,500 | 53,692 |
| **80,000** | 480,000 | 70.0% | 336,000 | 122,724,000 | 61,362 |
| **90,000** | 540,000 | 70.0% | 378,000 | 138,064,500 | 69,032 |
| **100,000** | 600,000 | 70.0% | 420,000 | 153,405,000 | 76,703 |

## REVENUE GENERATION BASED ON POPULATION AND COST/TON

| Population | Tons/Yr | $ 60 | $ 70 | $ 80 | $ 90 | $ 100 | $ 120 |
|---|---|---|---|---|---|---|---|
| **10,000** | 7,670 | 460,215 | 536,918 | 613,620 | 690,323 | 767,025 | 920,430 |
| **20,000** | 15,341 | 920,430 | 1,073,835 | 1,227,240 | 1,380,645 | 1,534,050 | 1,840,860 |
| **30,000** | 23,011 | 1,380,645 | 1,610,753 | 1,840,860 | 2,070,968 | 2,301,075 | 2,761,290 |
| **40,000** | 30,681 | 1,840,860 | 2,147,670 | 2,454,480 | 2,761,290 | 3,068,100 | 3,681,720 |
| **50,000** | 38,351 | 2,301,075 | 2,684,588 | 3,068,100 | 3,451,613 | 3,835,125 | 4,602,150 |
| **60,000** | 46,022 | 2,761,290 | 3,221,505 | 3,681,720 | 4,141,935 | 4,602,150 | 5,522,580 |
| **70,000** | 53,692 | 3,221,505 | 3,758,423 | 4,295,340 | 4,832,258 | 5,369,175 | 6,443,010 |
| **80,000** | 61,362 | 3,681,720 | 4,295,340 | 4,908,960 | 5,522,580 | 6,136,200 | 7,363,440 |
| **90,000** | 69,032 | 4,141,935 | 4,832,258 | 5,522,580 | 6,212,903 | 6,903,225 | 8,283,870 |
| **100,000** | 76,703 | 4,602,150 | 5,369,175 | 6,136,200 | 6,903,225 | 7,670,250 | 9,204,300 |

**Southeast Alaska Population Trends**
**By Borough and Census Area (CA)**

| | 2004 | 2000 | 1990 | Change 2000-2004 | 1990-2000 | Natural Increase (Births-Deaths) 2000-2004* | Net Migration (In-Out) 2000-2004* |
|---|---|---|---|---|---|---|---|
| **Southeast Region Total** | 70,622 | 73,082 | 68,989 | -2,460 | 4,093 | 2,112 | -4,572 |
| Haines Borough | 2,245 | 2,392 | 2,117 | -147 | 275 | 10 | -157 |
| Juneau City and Borough | 30,966 | 30,711 | 26,751 | 255 | 3,960 | 1,109 | -854 |
| Ketchikan Gateway Borough | 13,030 | 14,059 | 13,828 | -1,029 | 231 | 353 | -1,382 |
| Pr of Wales-Outer Ketchikan CA | 5,548 | 6,157 | 6,278 | -609 | -121 | 176 | -785 |
| Sitka City and Borough | 8,805 | 8,835 | 8,588 | -30 | 247 | 304 | -334 |
| Skagway-Hoonah-Angoon CA | 3,101 | 3,436 | 3,680 | -335 | -244 | 51 | -386 |
| Wrangell-Petersburg CA | 6,247 | 6,684 | 7,042 | -437 | -358 | 97 | -534 |
| Yakutat City and Borough | 680 | 808 | 705 | -128 | 103 | 12 | -140 |

### *Community Survey Results*

Information was received from 17 of the communities contacted for this study. The communities and their current recycling and solid waste handling programs are listed in alphabetical order.

***Angoon*** (population 497)

Located on the west coast of Admiralty Island, Angoon is a small community of about 481 permanent residents. While interested in participating in a region-wide program if available, Angoon officials were concerned regarding transportation costs from the small community. Angoon currently disposes of solid waste at an open landfill. Recycling in the community consists of a scrap steel pickup yearly.

***Coffman Cove*** (population 156)

Located in northeastern Prince of Wales Island , Coffman Cove is a small community of about 171 permanent residents. Coffman Cove is interested in participating in a regional program, if available. Coffman Cove does not have any available area to host such a facility, but suggested that other locations on Prince of Wales may be suitable. Coffman Cove currently has no facilities for dealing with waste, individuals either haul their trash to Klawock, or burn in burn barrels.

***Craig*** (population 1,102)

Craig is located on the southwest coast of Prince of Wales Island and has more than a thousand permanent residents. Craig currently has a contract to ship all of their municipal waste to the Klawock landfill. The city of Craig is interested in participating in a regional program, but does not have an area at which to host a regional facility. Craig officials support a regional facility on Prince of Wales Island.

***Elfin Cove*** (population 29)

A small community of up to 100 seasonal residents, Elfin Cove does not have a collection system. Elfin Cove residents burn trash individually at the community burn area.

***Gustavus*** (population 459)

Gustavus has a community landfill area where waste is segrated into combustibles, recyclables, and compost material. Labor intensive operation. Community interested in regional plan if it doesn't raise costs.

***Haines Borough*** (population 2,207)

The Haines Borough does not provide collection or disposal services for the community. Haines Sanitation operates a grind and compost operation. The owner claims his system is readily scalable and therefore a good choice for use region wide.

***Hoonah*** (population 861)

No response, not interested. Community has dump. No recycling program.

***Hydaburg*** (population 369)

Mayor needed tribal council permission to provide data.

***Juneau*** (population 31,193)

With about 31,000 permanent residents, Juneau is the largest community in Southeast Alaska. The City and Borough of Juneau does not provide collection

or disposal services for the community. These are provided by Arrow Refuse and Waste Management, respectively. CBJ does provide for Household Hazardous Waste disposal, recycling, and junk vehicle disposal.

***Kake*** (population 598)

Deferred to Kake Tribal which plans to operate incinerator at Point Macartney. Kwan Waste and Power, LLC., plans to utilize pyrogasification technology to turn garbage into power, and is interested in hosting a RMSWF.

***City of Ketchikan / Ketchikan Gateway Borough*** (population 13,125)

The City of Ketchikan operates the MSW facility. Borough residents pay a flat fee to participate. Currently all putrescible MSW is shipped south---approximately 9600 tons in 2004. Ketchikan pays the lowest rate of all the communities shipping south. City staff has shown indifference to a RMSWF believing that such cannot be operated at less cost than currently charged to Ketchikan.

***Klawock*** (population 780)

Already exists as de facto regional disposal landfill for POW. Not interested in providing data or in a regional facility. Information on the Klawock facility was provided by the Prince of Wales Tribal Environmental Company.

***Metlakatla*** (population 1,397)

Two solicitations to the city showed it was not interested. However, private individuals and one elected official expressed interest. Might also like to be considered as a regional host site.

***Pelican*** (population 115)

Town has roughly 125 residents. The town has a designated dump area and uses crushed glass for cover. The town built a burn box in 2005.

***Petersburg*** (population 3,155)

Interested in hosting regional facility. Currently shipping approximately 2,000 tons per year.

***Sitka*** (population 8,947)

Interested in hosting regional facility or components of a regional facility. Currently shipping approximately 8,600 tons per year.

***Tenakee Springs*** (population 98)

Residents currently burn solid waste on public tidelands. Some interest if a regional cite is developed.

***Thorne Bay*** (population 486)

Community is highly interested in hosting a regional facility and is making steps to acquire the land area necessary for this. The city received a grant in 2006 and is completing a preliminary feasibility study of a landfill site.

***Wrangell*** (population 1,974)

The City of Wrangell is located on the northwest tip of Wrangell Island, 155 miles south of Juneau and 89 miles northwest of Ketchikan. It is near the mouth of the Stikine River, an historic trade route to the Canadian Interior

Interested in hosting regional facility.

***Yakutat*** (population 619)

No collection, individuals bring trash to town's open dump. Items are sometimes burned. Yakutat spends $60,000 per year maintaining this area.

## COMMUNITY COSTS

| Community | Collection Costs | Recycling Costs | Total Disposal Costs | Hazardous Waste Disposal | Shipping Cost |
|---|---|---|---|---|---|
| Juneau | Private | 162,000 | Private | 291,000 | |
| Elifn Cove | | | 1,000 | | |
| Pelican | | | 5,000 | | |
| Thorne Bay | | | 14,162 | 3,000 | |
| Wrangell | 96,189/ Landfill | 2,000 | 299,370 | 15,400 | 203,181 |
| Craig | | 1,000 | 181,273 | 1,873.35 | 178,400 |
| Petersburg | 56,250 | | 773,904 | | 205,000 |
| Sitka | 550,000 | 490,000 | 2,764,405 | | 1,223,175 |
| Ketchikan | 662,620 | 111,177 | 2,850,488 | 55,500 | 672,193 |
| Gustavus | 58,680 | 6,000 | 64,680 | | 21,000 |
| Haines | Private | 6,700 | | | |
| Yakutat | $60,000 landfill | | 60,000 | | |

## *HOST ENTITY and RMSWA REQUIREMENTS*

Once the authority for a regional municipal solid waste (RMSW) facility is in place, some very important early decisions must be made. As mentioned earlier, board make-up, membership and voting, the components to be built and purchased, rates and charges, are but a few important early-on issues. A more sensitive concern surrounds who will own and or operate a facility. Hopefully the RMSWA will obtain grants for design and construction which monies may possibly be available to the host entity.

Community [entity] Requirements

- Obtain authority to host a RMSWA through Council/Assembly Resolution or voter approval
- Secure or dedicate land, and depending on treatment process evaluate site for suitability

RMSWA Requirements

- Funding for design and construction
- Set Rates, administer program
- Recruit communities
- Administer contracts for treatment and transportation

Unanswered questions include:

- Who will oversee the design and construction of a RMSWF?
- Who will own the RMSWF?
- Who will select the treatment process?

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