Ensuring affordable, long term, environmentally sound disposal of MSW

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Municipal Review Committee, Inc.

Application for Determination of Public Benefit

Prepared for:

Municipal Review Committee, Inc.
395 State Street
Ellsworth, Maine 04605
www.mrcmaine.org

Prepared by:
Municipal Review Committee, Inc.
CES, Inc.
CommonWealth Resource Management Corporation
Eaton Peabody, PA

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Solid Waste Program
17 State House Station
Augusta, Maine 04333-0017
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FOR DEP USE ONLY	
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Bureau: S Type of Application: W5 Activity: N	Fees Paid:
Project Analyst:	Check No.:

APPLICATION FOR A DETERMINATION OF PUBLIC BENEFIT FOR A NEW OR EXPANDED SOLID WASTE DISPOSAL FACILITY

This form shall be used to submit an application in conformance with the requirements of 38 M.R.S.A., Sections 1310-N-sub-3-A and 1310-AA, and Chapter 400, section 5 of the "Solid Waste Management Regulations". Please see Chapter 400, subsections 5.A and 5.B to determine if your facility is exempt from this determination or may employ a rebuttable presumption of public benefit.

PLEASE TYPE OR PRINT

Company Name: Municipal Review Committee, Inc. **Telephone:** 207-664-1700

Applicant's Last Name: First Name:

Contact Person: Greg Lounder Executive Director Telephone: 207-664-1700

Address Information

Applicant Name: Municipal Review Committee, Inc. **Agent/Consultant Name:** CES, Inc.

Telephone: 207-664-1700 Telephone: 207-989-4824

Mailing Address: 395 State Street Mailing Address: P.O. Box 639

Street Address: 395 State Street Street Address: 465 South Main Street

Town: Ellsworth State: ME Zip: 04605 Town: Brewer State: ME Zip: 04412

Address: Billing

Name: Municipal Review Committee, Inc.

Mailing Address: 395 State Street

Street Address: 395 State Street

Town: Ellsworth State: ME Zip: 04605

Site/Activity Information

Project Description: Public Benefit Determination - New Solid Waste Disposal Facility

Location: Argyle or Greenbush Directions: SEE ATTACHED SHEET

PLEASE SEE PAGE 2 - SIGNATURE REQUIRED

Location: Argyle Directions: I95 North to Exit 199. Travel South on Route 16, turn left onto Route 116, site is approximately three miles on left.

Location: Greenbush Directions: I95 North to Exit 1B in Orono. Follow Stillwater Avenue NW to Old Town, turn right onto Center Street and continue to Route 2 in Bradley. Take Route 2 and travel six miles to Greenfield Road. Turn right onto Greenfield Road and travel four miles. Site is on the right.

SIGNATURE OF APPLICANT

By signing this application, the applicant certifies that he or she has within 5 days prior to filing: (1) published the public notice form once in a newspaper circulated in the area where the project is proposed to be located, (2) sent a copy of the public notice form by certified mail to the owners of property abutting the land upon which the project is located, (3) sent a copy of the public notice form by certified mail to the chief municipal officer and chair of the municipal planning board of the municipality in which the project is located, (4) filed a complete copy of this application, including all supporting documents and amendments, with the appropriate town clerk, city clerk or, county commissioner of the municipality in which the project is located, and (5) reviewed the appropriate state laws that relate to the proposed project.

I certify that based upon my knowledge, experience, and the best available information, I believe the facility is not inconsistent with local, regional, or state waste collection, storage, transportation, processing, or disposal. I also certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I, the property owner or lessee, authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein. I am aware there are significant penalties for submitting false information, including the possibilityof fine and imprisonment.

DATE: April 14, 2014

NAME: _____
(Applicant)

TITLE: Executive Director

(If other than applicant, attach letter of agent authorization.)

Include the following information to support this application for a public benefit determination.

1. Describe the proposed facility. Include at a minimum: the location and acreage of the site; acreage within the solid waste boundary if the proposed facility is a landfill; the disposal capacity in cubic yards and the projected facility life; a list of the waste types, major sources, and estimated annual volumes to be handled at the facility; the geographic area to be served by the proposed facility; and a map showing the facility location.
   Refer to Section 1.0-Planned Facility Description and Appendix H.

2. Identify the immediate, short-term, or long-term capacity need(s) which this facility will address, and whether the capacity of the proposed facility will exceed that required to meet the identified need(s).
   Refer to Section 2.0-Capacity Needs.

3. Describe how the proposed facility is consistent with the state waste management and recycling plan. (This is not required for proposals to expand commercial facilities that accept only special waste for landfilling.)
   Refer to Section 3.1-Consistency with the State Plan.

4. Describe whether the facility is intended to: compete with presently available solid waste facilities, replace these facilities, or provide disposal services not presently available.
   Refer Section 3.-Consistence with Regional or State Waste Collection, Storage, Transportation, Processing, or Disposal.

5. Provide documentation of your title, right or interest in the property proposed for facility development.
   Refer to Section 4.0-Title, Right, or Interst and Appendix G.

6. Provide a map showing all abutters and a list of names and mailing addresses for all abutters.
   Refer to Section 5.0-Tax Map and Abutter's List and Appendix H.

Please note that the Department may not accept an application for a new or expanded solid waste disposal facility for processing until the commissioner determines that the proposed facility or expansion provides a substantial public benefit.

PUBLIC NOTICE OF INTENT TO FILE

Please take notice that the Municipal Review Committee, Inc. (MRC), a non-profit regional association as described in 38 M.R.S.A. § 1304-B(5)(A) with a membership comprised of 187 Maine municipalities and a mission to ensure affordable, long term, and environmentally sound methods of disposal of waste for its members, 395 State Street, Ellsworth, ME 04605, 207-664-1700, is intending to file an application with the Maine Department of Environmental Protection (DEP) on or about April 2, 2014 pursuant to the provisions of 38 M.R.S.A., Sections 1310-N-sub-3-A and 1310-AA.

The application is for a Determination of Public Benefit for a new secure solid waste disposal facility to be located in either Argyle or Greenbush, Maine. The secure disposal facility is being planned as part of an integrated solid waste management system to be implemented in 2018. The planned integrated solid waste management system will be consistent with the State's solid waste management hierarchy and reduce waste to the extent practical prior to land disposal. The MRC members within the State of Maine currently deliver waste to the Penobscot Energy Recovery Company (PERC) facility under Waste Disposal Agreements that are scheduled to expire on March 31, 2018.

According to Department regulations, interested parties must be publicly notified, written comments invited, and if justified, an opportunity for public hearing given. A request for a public hearing must be received by the Department, in writing, no later than 20 days after publication of the public notice.

The application and supporting documentation are available for review at the Department's Augusta office, during normal working hours. A copy of the application and supporting documentation may also be seen at the Penobscot County Commissioners Office, 97 Hammond Street, Bangor, Maine and the Town of Greenbush, 132 Military Road, Greenbush, Maine.

Send all correspondence to: Maine Department of Environmental Protection, Solid Waste Program, 17 State House Station, Augusta, Maine 04333-0017 (207-287-2651 or 1-800-452-1942).

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EXECUTIVE SUMMARY AND VISION

The Municipal Review Committee, Inc. (MRC) has prepared this document to support its application for a determination by the Maine Department of Environmental Protection (Maine DEP) that the solid waste disposal facility planned and described herein provides a substantial public benefit in accordance with Title 38 Maine Revised Statutes (M.R.S.A.) § 1310-N-sub-3-A and §1310-AA and 06 096 Code of Maine Rules (CMR) Chapter 400, Section 5.

The MRC (the applicant) is a non-profit corporation with a membership comprised of public sector municipalities and regional associations formed by two or more municipalities. It was formed in 1991 by its member municipalities, pursuant to their obligation under state law to provide solid waste disposal services for domestic and commercial solid waste generated within the community under Title 38 Maine Revised Statutes (M.R.S.A.) § 1305(1). MRC's mission is to ensure affordable, long term and environmentally sound methods of disposal of MSW for its members. The MRC is also a regional association as described in 38 M.R.S.A. § 1304-B(5)(A). The MRC members include 187 municipalities within the State of Maine that deliver MSW to the Penobscot Energy Recovery Company (PERC) facility under Waste Disposal Agreements that are scheduled to expire on March 31, 2018. The relationship between the MRC and PERC through the years has undergone many changes, including multiple changes in ownership of the PERC facility, establishment of MRC municipalities as limited partners in the PERC partnership with ownership positions in the PERC Facility, contract restructuring, re-financings and so on. Through all necessary adaptation – the MRC mission has remained a constant guiding compass to all we do.

The Waste Disposal Agreements between the MRC member municipalities and the entity that owns the PERC facility are scheduled to expire on March 31, 2018. The PERC Partnership Agreement also expires on December 31, 2018. Development of the successor arrangements to these agreements provides a rare opportunity to reconsider how the entire MSW system can be restructured and redefined after such date to best serve the MRC municipalities in compliance with the MRC mission and with the hierarchy of MSW management methods. In this context, the MRC seeks to develop a system involving facility component parts that comprise a holistic and integrated approach.

The application is part of a program authorized by the MRC Board of Directors to plan for and implement an integrated approach to solid waste management to ensure affordable, long-term and environmentally-sound management of MSW by its membership after the Waste Disposal Agreements expire. The MRC has received formal support for this application from 70% of the member communities as further described in Section 1.1.4 and as listed in **Appendix E** to this document. Such system for management of MSW will comply with the *State of Maine Solid Waste Management Hierarchy* (38 M.R.S.A. § 2101), which consists of the following methods of solid waste management to the extent practical in order of priority:

1. Reduction of waste generated at the source;
2. Reuse of waste;

3. Recycling of waste;
4. Composting of biodegradable waste;
5. Waste processing that reduces the volume of waste needing land disposal;
6. Land disposal of waste.

The MRC has long recognized the interrelationship of the *State of Maine Solid Waste Management Hierarchy* with its mission to ensure affordable, long term and environmentally sound disposal of MSW. This interrelationship leads to our vision of a future solid waste materials management system involving facility component parts that comprise a holistic and integrated approach. Our vision recognizes, supports and accommodates the wide variety of local MSW materials management approaches used by the 187 communities in our service area. Our vision includes facility components that are scaled to serve the needs of our member communities while avoiding the need to import MSW from out of state, yet does not require waste delivery guarantees that conflict with waste reduction, re-use and diversion efforts. Our vision includes a system premised on self-reliance derived from appropriate ownership and control. Our vision includes an economical system that does not rely on substantial, ongoing subsidies from the State or otherwise. Our vision includes facility components that can adapt over time to changes in waste generation and composition, and to changes in the markets for products derived from processed MSW. Finally, our vision sees change as an opportunity to improve our system.

The system being planned by the MRC will be comprised of the following elements:

- Continuation of, or successors to, the existing programs and systems by which municipalities sponsor collection and transfer of MSW, and sponsor collection and processing of recyclables and organic materials, through a variety of waste reduction and reuse programs, curbside collection programs, drop-off programs, and operation of transfer stations and other facilities.

- A facility or facilities to divert materials for recycling, beneficial use of organic materials and/or fuel production from collected mixed waste, which might consist of either (a) continued use of the PERC Facility in a modified configuration involving a smaller scale and/or other changes; or (b) a new regional facility developed by the MRC using emerging technology to recover recyclable materials, products derived from organic materials and/or processed engineered fuel (PEF) from collected mixed MSW; or (c) a strategy to maximize local diversion prior to MSW collection through a set of local processing facilities, organics composting or digestion facilities and non-traditional transfer stations and consolidation points to facilitate use of remote MSW processing, single-stream recycling and organics processing facilities by municipalities throughout the MRC service territory. Although the MRC is not required to obtain a public benefit determination in order to construct such processing facilities, information on such strategies is provided herein as the basis for understanding the need for the development of a secure landfill.

- A new secure landfill for disposal of the waste for which diversion for recycling, composting, processing or other beneficial re-use is not practical, and which would only accept waste generated and originating within the State of Maine. The MRC is submitting this Application for a Determination of Public Benefit in accordance with 38 M.R.S.A. § 1310-N (3)(A) and § 1310-AA and 06 096 CMR Chapter 400, Section 5, specifically to develop this secure landfill.

The MRC notes that the development of a secure landfill is an integral part of development of the fully integrated system for solid waste management to meet the needs of Maine municipalities, who's MSW has been delivered to the PERC facility on a long term basis, in accordance with the hierarchy of management methods described above. Capacity for landfill disposal of waste materials is a necessary element to achieve financing for and otherwise provide support for the diversion facilities that are at the heart of the plan to achieve maximum practical diversion. Landfill disposal capacity is also necessary to provide the MRC with the flexibility to accept a range of types and quantities of waste that might need to be land filled in the event that the measures for achieving the maximum practical level of diversion are less successful than had been projected. For this purpose, the MRC cannot rely on the Juniper Ridge Landfill, which cannot provide certainty that permitted capacity will be available for the types and quantities of waste and waste residuals to be managed by the MRC on either a short-term or long-term basis after 2018, nor can the MRC rely on other landfills due to the regional nature of the planned development and due to transportation distances and other factors.

The MRC or a successor entity comprised of municipalities and regional associations will own the landfill and will own the land on which the landfill and any mixed waste processing facilities are developed. By maintaining public ownership of the landfill and land, the MRC can assure that (a) the secure landfill is used only to provide capacity for residuals from the mixed MSW processing facilities and other needs of the member Maine municipalities; (b) the secure landfill can be used to support development of mixed MSW processing capacity with the intent of maximizing diversion of materials from MSW; and (c) capacity at the secure landfill will be used as sparingly as possible.

The MRC recognizes that acquisition of the public benefit determination and other permits required to construct the secure landfill will require more elapsed time (four to five year duration) than the acquisition of the permits required constructing the other elements of the system. For this reason, the MRC is submitting this application in advance of the full specification of the details of the other elements of the system. Nonetheless, as a public sector entity committed to affordable, long-term and environmentally sound management of MSW in accordance with the hierarchy, the Maine DEP can be assured that the MRC is committed to implement all elements of the planned system in ways that achieve the maximum practical diversion of MSW from the landfill in accordance with the Maine State Plan and policies.

As discussed herein, the MRC believes that this application meets all of the standards for public benefit determination in 38 M.R.S.A. § 1310-N-sub-3-A and §1310-AA and 06 096 CMR Chapter 400, Section 5, because the planned system set forth in the application:

- Meets immediate, short-term, or long-term capacity needs of the State;

- Is consistent with the State Plan, including the Maine solid waste management hierarchy, the recycling goals, and the objectives of promoting organics recovery, new technology, and increased beneficial use of waste materials; and

- Is not inconsistent with local, regional, or state waste collection, storage, transportation, processing, or disposal.

In addition, the MRC has properly complied with the application procedures for public benefit determination, including those related to notice of intent to file, preparation of the form of application, provision to provide the application and supporting documents to the appropriate agencies, and review of the appropriate state laws and regulations related to the planned project.

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SECTION 1.0 - PLANNED FACILITY DESCRIPTION

This document supports the *Application for a Determination of Public Benefit* submitted to the Maine Department of Environmental Protection (Maine DEP) showing that the solid waste disposal facility planned and described herein provides a substantial public benefit in accordance with 38 M.R.S.A. § 1310(3)(A) and § 1310-AA and 06 096 Code of Maine Rules (CMR) Chapter 400, Section 5. The application is part of a program to plan for and implement an integrated approach to ensure affordable, long-term and environmentally-sound management and disposal of municipal solid waste (MSW). Such system for management of MSW will comply with the *State of Maine Solid Waste Management Hierarchy* (38 M.R.S.A. § 2101), which consists of the following methods of solid waste management in order of priority:

1. Reduction of waste generated at the source;
2. Reuse of waste;
3. Recycling of waste;
4. Composting of biodegradable waste;
5. Waste processing that reduces the volume of waste needing land disposal;
6. Land disposal of waste.

To satisfy the requirements of the Maine DEP *Application for a Determination of Public Benefit*, this Section 1 is divided into two subsections.

The first subsection introduces the applicant, describes briefly the existing system for MSW management, introduces the rationale for redevelopment of the existing MSW management system to include new diversion facilities and a new secure landfill to be owned by the applicant, and summarizes actions taken by the applicant to date.

The second subsection describes the planned system of integrated MSW management, demonstrates how the planned system complies with the hierarchy of solid waste disposal methods, describes the proposed secure landfill that would be part of the overall system, discusses alternatives to the planned system; and provides other information required to complete the application.

Although a public benefit determination is not required for elements of the planned system other than the secure landfill component, information on each component of the system is provided herein (1) to demonstrate that the planned system would not be inconsistent with local, regional, or state waste collection, storage, transportation, processing, or disposal; (2) to demonstrate consistency with the *State Plan* and *State of Maine Solid Waste Management Hierarchy*; and (3) to provide the basis for understanding the need for the development of a new regional secure landfill to support the development of the planned system.

1.1 The Existing System for Solid Waste Management

1.1.1 The Applicant

The Applicant is the Municipal Review Committee, Inc. (the MRC), a non-profit corporation, the membership of which is comprised of Maine municipalities and regional associations representing groups of municipalities. It was formed in 1991 with a mission to ensure affordable, long term and environmentally sound methods of disposal of MSW for its members. The MRC members include 187 municipalities within the State of Maine that deliver MSW to the Penobscot Energy Recovery Company (PERC) facility under Waste Disposal Agreements that are scheduled to expire on March 31, 2018. A map of the 187 member municipalities served by the MRC is provided in **Appendix A**. A listing of these municipalities is provided in **Appendix B**.

The MRC's original membership was comprised of 78 members representing 90 municipalities. In 1996, new members joined MRC to comprise a new total of 86 members serving 118 municipalities. These members became Equity Charter Municipalities in 1998. Since 2000, another 47 members have joined the MRC serving an additional 69 municipalities. All municipalities have a right of equitable participation in any extension arrangement after 2018. All current MRC member municipalities historically delivered MSW to PERC under an independent arrangement before joining the MRC. The MRC has a standing "open door" policy regarding new members. The MRC is governed by a board of directors elected by the MRC membership.

1.1.2 The Existing Waste Management System

At present, the 187 municipalities represented by the MRC manage their MSW through a system that consists of the following three components:

- Local collection and diversion programs. The MRC member municipalities use a wide variety of programs and methods to collect and transfer, or sponsor collection and transfer of, MSW generated within their borders. Approximately half of the municipalities sponsor curbside collection of MSW from their residents and from certain commercial and institutional waste generators. Such collected MSW is either delivered directly to the PERC facility, or is delivered to a transfer station for consolidation into large trailer loads for delivery to the PERC facility. In municipalities without curbside collection, waste generators either contract with private haulers for MSW disposal or deliver their MSW to a transfer station made available by the municipality, where the municipality provides containers or trailers for delivery of the MSW to the PERC facility.

  The municipalities also sponsor programs to collect and process recyclables and organic materials, through a variety of waste reduction and reuse programs, curbside collection programs, drop-off programs, and operation of transfer stations and other facilities. Some municipalities sponsor curbside collection of pre-sorted or of commingled or "single-stream"

recyclable materials. Other municipalities provide access to drop-off centers, transfer stations, yard waste compost facilities or other locations where materials are received, undergo some level of initial processing, and then are consolidated for transport to markets. Municipalities often use methods to collect MSW that are different than the methods used to collect recyclable materials. The MRC represents municipalities that collect both MSW and recyclables at curbside; that collect MSW at curbside, but provide access to drop-off centers for recyclables; that collect recyclables at curbside, but provide access to drop-off centers or transfer stations for MSW; and that provide access to drop-off centers for MSW and/or recyclables without public sponsorship of curbside collection. These programs are not addressed in the present application other than through the requirement for the applicant to demonstrate that the proposed facility would not be inconsistent with them.

- The PERC Facility. MSW that is generated, but not diverted through re-use, recycling, or composting, is accepted at the PERC Facility, shredded, processed to recover ferrous materials for recycling, processed to remove glass and grit, then combusted in boilers to produce steam used to generate electricity. The MRC municipalities are recorded as having delivered 179,177 tons of MSW to the PERC Facility in 2013 and 180,456 tons of MSW to the PERC Facility in 2012. The recorded amount notwithstanding, MRC is aware that some MSW included in the 30,000 amount below was generated within the borders of MRC municipalities. **Appendix C** provides a list of the tons of MSW recorded by PERC as having been delivered to the PERC Facility in 2012 and 2013 by each of the 133 Charter Municipalities, which are the individual municipalities and other regional associations that are the signatories to waste disposal agreements with the PERC partnership and are the members of the MRC.

  The PERC Facility received a total of 306,875 tons of MSW in 2013 and 311,630 tons of MSW in 2012. In addition to the MSW delivered by Charter Municipalities, the PERC Facility also received approximately 30,000 tons per year of MSW collected by commercial haulers under contract with Maine municipalities in the general area of the PERC Facility; 13,000 tons per year of MSW delivered by other Maine municipalities in the general area of the PERC Facility; and, starting in 2013 additional MSW delivered from municipalities in southern Maine that had previously sent MSW to the Maine Energy Recovery Company facility in Biddeford, Maine. The remainder of the MSW received by the PERC Facility was imported from out-of-state sources to the extent capacity was available to accept such MSW.

- The Juniper Ridge Landfill, The Juniper Ridge Landfill accepts residual wastes for disposal from the PERC Facility that include front-end process residues (FEPR) and combustion ash. In 2013, the PERC Facility sent 53,617 tons of FEPR and 53,454 tons of combustion ash to the Juniper Ridge Landfill for disposal.

The existing MSW Management System is presented at the top of the Flow Diagram attached as **Exhibit A**.

The MRC does not have detailed data on the composition of the MSW delivered to the PERC Facility, nor does it have comprehensive data on the MSW that was diverted from the PERC Facility prior to delivery. Thus, this application is prepared on the assumption that MSW delivered to the PERC Facility has a composition that is consistent with a 2011 study[1] undertaken by the University of Maine, which identifies MSW material types disposed of in Maine (the 2011 Composition Study). The 2011 Composition Study, which is referenced in the *Maine Materials Management Plan-2014 State Waste Management and Recycling Plan Update & 2012 Waste Generation and Disposal Capacity Report* ("State Plan")[2], documents the following composition of MSW as it was received at disposal facilities in Maine:

- 43.3% Organics (food, cat litter, diapers, yard waste)
- 25.6% Paper (towels/plates, composites, newsprint, magazines, cardboard)
- 13.4% Plastic (film, composites, durables)
- 3.3% Metal (tin/steel, foil)
- 2.7% Glass (containers, composites, flat)
- 25.2% Other (textiles, construction and demolition wastes, household hazardous wastes, electronic wastes)

For 2012, the State Plan indicates that 753,562 tons of MSW were collected for disposal from waste generators in Maine. The State Plan further indicates that approximately 246,500 tons of materials were recycled, and that 37,051 tons of materials were composted, which materials otherwise might have been collected as MSW for disposal. Accounting for waste characterization data from 2011 as referenced in the State Plan, it follows that curbside and drop-off programs for collection of recyclables statewide resulted in the recycling of approximately 40 percent of the recyclables in MSW generated statewide. Similarly, reported drop-off programs for organics (mostly programs for composting of leaf and yard waste) statewide resulted in the composting of approximately 10.2 percent of the organic component of the MSW generated statewide. If these results are applicable to the MRC municipalities, then the MSW currently being delivered to the PERC Facility contains substantial quantities of recyclables and organic materials that might be diverted for recycling or composting. While not related to the standards of review that this application is subject to, the MRC is undertaking a comprehensive effort to collect data on MSW diversion by its municipalities in order to evaluate whether such diversion is consistent with the diversion data used in the State Plan.

[1] 2011 Maine Residential Waste Characterization Study-School of Economics Staff Paper #601; Criner, George K. and Blackmer, Travis L, University of Maine; http://umaine.edu/wcs/files/2012/02/2011-Maine-Residential-Waste-Characterization-Study1.pdf

[2] Maine Materials Management Plan, *2014 State Waste Management and Recycling Plan Update & 2012 Waste Generation and Disposal Capacity Report*, Maine Department of Environmental Protection, January 2014.

1.1.3 Rationale for Redevelopment of the Existing MSW Management System

The Waste Disposal Agreements between the MRC member municipalities and the entity that owns the PERC facility are scheduled to expire on March 31, 2018. Development of the successor arrangements to these agreements provides a rare opportunity to reconsider how the entire MSW system can be restructured and redefined after such date to best serve the MRC municipalities in compliance with the MRC mission and with the hierarchy of MSW management methods. In this context, the MRC seeks to develop a system involving facility component parts that comprise a holistic and integrated approach with a vision that:

- Complies with the state hierarchy of MSW management methods;
- Recognizes and supports the wide variety of local MSW materials management approaches used by the 187 communities in our service area, and by other Maine municipalities historically served by PERC that the MRC might reasonably serve;
- Is scaled to serve the needs of our member communities;
- Avoids imports of MSW from out of state;
- Can adapt over time to changes in waste generation and composition, and to changes in the markets for products derived from processed MSW;
- Is premised on self-reliance derived from appropriate ownership and control; and
- Does not rely on substantial, ongoing subsidies from the state or otherwise.

The MRC also seeks to incorporate emerging and new technology for MSW management into the system to the extent prudent; to ensure that facilities are developed at sizes and scales that are consistent with the quantities of material available for processing; and to avoid business arrangements, such as rigid minimum tonnage delivery guarantees set at levels that are too high or with insufficient flexibility, that might undermine or conflict with practical aspects of achieving the guiding principles of the state hierarchy.

In this context, after extensive discussions regarding the extension of disposal arrangements at PERC, the MRC concluded that there could be no assurance that the PERC Facility in its current configuration, and under current business arrangements extended as is, can continue to be a feasible component of a long-term system of MSW management that complies with the hierarchy and with the MRC vision as expressed above. Similarly, the MRC cannot rely on the Juniper Ridge Landfill, which cannot provide certainty that permitted capacity will be available for the types and quantities of waste and waste residuals to be managed by the MRC on either a short-term or long-term basis after 2018, nor can the MRC rely on other landfills due to the regional nature of the MSW management system and due to transportation distances and other factors. In any case, MRC needs to control landfill capacity to provide support for the planned system of diversion facilities that are at the heart of our plan to achieve maximum practical diversion.

The MRC fully recognizes that utilization of a secure landfill for solid waste disposal is the lowest order of priority pursuant to the hierarchy of management methods described above.

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Nonetheless, capacity for landfill disposal of waste materials is a necessary element to achieve financing for and otherwise provide support for the diversion facilities that are at the heart of any plan to achieve maximum practical diversion. Capacity is also necessary to provide the MRC the flexibility to accept a range of types and quantities of waste that might need to be land filled in the event that the measures for achieving the maximum practical level of diversion are less successful than had been projected.

Moreover, the MRC recognizes fully that its decision to implement a visionary system for integrated solid waste management in accordance with the hierarchy involves significant risk. The emerging technologies, collection protocols, and other diversion programs that form the backbone of the planned system might not be as successful as projected, and the vendors and suppliers of the emerging technology equipment will have limited capability to address the liabilities if their technology underperforms. The MRC system will face competition from alternatives involving less diversion and existing facilities that might also involve less effort or have the appearance of being less costly. Municipalities and their residents might not participate as fully in the system as we desire. Accounting for these factors, the inclusion of a secure landfill controlled by the MRC is the safety net that makes it possible for the MRC to proceed with its overall strategy for a system that maximizes diversion from the landfill. In this sense, the secure landfill is the key element that empowers the MRC to pursue maximum diversion strategies and to pursue strategies and take and manage risks that private developers would not assume.

Finally, since the MRC is a non-profit entity, the membership of which is comprised entirely of Maine municipalities and regional associations, it will have no incentive to maximize profit or to utilize secure landfill capacity if such use can be avoided. Rather, the MRC will have the incentive to divert as much material as possible from its secure landfill in order to extend the existing capacity for as long as possible, and to avoid to the extent practical the need for future landfill expansions. For these reasons, the MRC is committed to dedicating any and all of the disposal capacity it develops to meet the needs of those Maine municipalities comprising its membership.

The MRC recognizes that acquisition of the public benefit determination and other permits required to construct the secure landfill will require more elapsed time than the acquisition of the permits required to construct other elements of the system. The required components of the public benefit determination and licensing process for the secure landfill are outlined in the Table 1-1 below. For this reason, the MRC is submitting this application in advance of the full specification of the details of the other elements of the system that would be the subject of separate regulatory consideration under a separate application review process. Nonetheless, as a public sector non-profit entity committed to affordable, long-term and environmentally sound management of MSW in accordance with the hierarchy, the Maine DEP can be assured that the MRC is committed in its effort to implement all elements of the planned system in ways that achieve the maximum practical diversion of MSW from the landfill in accordance with the State Plan and policies.

Table 1-1
Public Benefit Determination and Licensing Schedule

Required Component	Estimated Timeframe
Public Benefit Determination	April to July 2014
Preliminary Information Report	July to August 2014
Site Specific Investigation	July 2014 to July 2015
Site Assessment Report	July to September 2015
Preliminary Design and Engineering Report	September to December 2015
Permit Application and Final Design	December 2015 to June 2017
Construction	June to October 2017

1.1.4 History of MRC Action on Existing System Redevelopment

The MRC has a history of taking formal public actions to reinforce the vision for redevelopment of the existing solid waste management system as described above. Such actions have included the following:

- Since 2007, the MRC has engaged in formal monitoring and research of emerging technologies for MSW processing that might be an alternative to the technology used at the PERC Facility. The MRC conducted such monitoring in order to identify and evaluate significantly in advance of 2018 the potential for new technologies that might increase diversion, reduce environmental impacts, reduce residual disposal needs and reduce overall net disposal costs while complying to the maximum practical extent with the hierarchy of solid waste management methods. An example of a presentation to the MRC Board addressing emerging technologies is provided in **Appendix D**.

- On December 16, 2009, the MRC Board passed a *Resolution to Promote the Advancement of Post 2018 Planning Process* which is included in **Appendix E**. As stated in the resolution, the preferred option at the time of the resolution was to extend the waste disposal agreements with PERC beyond 2018, provided that they could be implemented at an acceptable cost and on reasonable terms. The resolution provided a framework for MRC to explore options to purchase the PERC facility, extend the waste disposal agreements with their member communities, and to evaluate other options as necessary. Other options mentioned in the resolution included alternative waste disposal; emerging technologies for waste management; future trends in waste generation and recycling; and other factors.

- In October 2010, the MRC Board voted to approve a Target Value Step Increase Implementation Plan to position the MRC municipalities to realize the benefits of continuation of the MRC mission after 2018.

- In June 2013, the MRC issued a *Request for Expressions of Interest* (RFEI), which is included as **Appendix F** to this document, to solicit responses from vendors of new and emerging technologies to process MSW (see Section 1.2 below). The MRC also initiated a site screening and selection process for available sites within the membership communities to develop an integrated solid waste management facility.

- On December 11, 2013, the MRC Board of Directors passed another resolution, *Regarding Post 2018 Planning Process*, which is included in **Appendix E** to this document. This resolution provides a framework for the next steps to develop a potential integrated solid waste management and resource recovery facility to accommodate the disposal of MSW originating within the Charter Municipalities after March 31, 2018.

- Following the unanimous approval of the resolution Regarding Post 2018 Planning Process December 11, 2013, the MRC Board asked its member communities to consider the adoption of a resolution *To Continue the Advancement of Post 2018 Planning Process*. The form of resolutions considered for local adoption by the MRC membership is included in **Appendix E**. Approval of the resolution demonstrates support for the MRC Post-2018 Initiative, which specifically includes "preparing and filing an application with the Maine Department of Environmental Protection for a Determination of Public Benefit." A listing of the MRC communities that have adopted the resolution is also included in **Appendix E** to this document. Measured as a percentage of the total MSW delivered to the PERC facility in 2012, about 70% of the MRC member communities have adopted the resolution *To Continue the Advancement of Post 2018 Planning Process*. MRC has not heard from any member voicing concern with the resolution or the Post 2018 Planning Initiative.

1.2 The Planned System for Solid Waste Management

1.2.1 Elements of the Planned System

The system being planned by the MRC (depicted on the bottom of the Flow Diagram attached as **Exhibit** A) will be comprised of the following elements:

- Local collection and diversion programs. Continuation of, or successors to, the existing programs and systems by which municipalities sponsor collection and transfer of MSW, and sponsor collection and processing of recyclables and organic materials, through a variety of waste reduction and reuse programs, curbside collection programs, drop-off programs, and operation of transfer stations and other facilities.

- Diversion facilities. A facility or facilities to divert materials for recycling, beneficial use of organic materials and/or fuel production from collected mixed waste, which might consist of (a) continued use of the PERC Facility in a modified configuration involving a smaller scale and/or other changes; (b) a new regional facility developed by the MRC using emerging technology to recover recyclable materials, products derived from organic materials, and/or

processed engineered fuel (PEF) from collected mixed MSW; or (c) a strategy to maximize local diversion prior to MSW collection through a set of local processing facilities, organics composting or digestion facilities and non-traditional transfer stations to facilitate use of remote MSW processing, single-stream recycling and organics processing facilities by municipalities throughout the MRC service territory. Although the MRC is not required to obtain a public benefit determination in order to construct such processing facilities, information on the approach to design and potential performance in terms of anticipated diversion rates provided through such strategies is provided herein as the basis for understanding the need for the development of a secure landfill.

- A new secure landfill. A secure landfill for disposal of the waste for which diversion for recycling, composting, processing or other beneficial re-use is not practical, and which would only accept waste generated and originating within the State of Maine. A secure landfill controlled by the MRC is the safety net that makes it possible for the MRC to proceed with its overall strategy for a system that maximizes diversion from the landfill. In this sense, the secure landfill is the key element that empowers the MRC to pursue maximum diversion strategies and to pursue strategies and take and manage risks that private developers would not assume. The MRC is submitting this Application for a Determination of Public Benefit in accordance with 38 M.R.S.A. §1310-N(3)(A) and §1310-AA and 06 096 CMR Chapter 400, Section 5 to develop this secure landfill.

The secure landfill would be owned either by the MRC itself or by a successor entity with a comparable governance structure, the membership of which would be similarly comprised of Maine municipalities and regional associations (the MRC and its successors are referred to herein as "the MRC"). Decisions would be made by a Board of Directors elected by and accountable to the member municipalities. The diversion facilities would be developed on land owned by the MRC. The facilities would either be owned by the MRC, or would be developed by contracting with a private entity to build and operate the facilities on land leased from the MRC, which would also retain control of the technology selection and implementation process.

By maintaining public ownership of the secure landfill and of the land on which facilities are developed, the MRC can assure that (a) the secure landfill is used only to provide capacity for residuals from the mixed MSW processing facilities and other needs of the member municipalities while remaining closed in all instances to out-of-state waste; and (b) the capacity at the secure landfill is used as sparingly as possible.

1.2.2 Consistency of the Planned System with the Hierarchy

This planned system for management of MSW will comply with the *State of Maine Solid Waste Management Hierarchy* (38 M.R.S.A § 2101), which, as referenced above, consists of the following methods of solid waste management to the extent practical in order of priority:

1. Reduction of waste generated at the source;
2. Reuse of waste;

3. Recycling of waste;
4. Composting of biodegradable waste;
5. Waste processing that reduces the volume of waste needing land disposal;
6. Land disposal of waste.

The interrelationship of each of the management methods in the hierarchy with the three elements of the planned system are discussed in the sections that follow.

1.2.2.1 Reduction of waste generated at the source

Generally, programs to encourage waste reduction are implemented at the local level by municipalities in order to reduce the quantity of waste being generated and requiring collection. Such programs typically include education, outreach and technical assistance programs regarding direct actions to reduce waste creation, as well as pay-as-you-throw (PAYT) and other programs that provide financial incentives for generators not to generate waste.

The MRC proposes to support the incorporation of waste reduction into the planned system in the following ways:

- Appropriate contract terms, facility scale and processing capacities. It is a simple and undeniable fact that any processing facility that requires infusions of capital from lenders or equity investors as part of its development will need some level of assurance or guaranty regarding the quantities of MSW to be delivered to the facility. The MRC has deep knowledge of such assurances and guarantees by virtue of its long experience representing municipalities in discussions of the guaranteed annual tonnage requirements in the disposal contracts for the PERC facility. Stemming from that experience, the MRC is committed to ensure that agreements supporting the development of planned processing and recycling facilities will avoid business arrangements, such as minimum tonnage delivery guarantees set at levels that are too high or with insufficient flexibility, that might undermine or conflict with municipal efforts to reduce the amount of waste generated within their borders. Similarly, the MRC is committed to ensure that the planned processing and recycling facilities have capacities that can be reasonably supported by delivery commitments that are compatible with municipal waste reduction efforts, and are not so large as to undermine efforts at waste reduction.

- Appropriate technical support. The MRC will support the efforts of its municipalities to implement waste reduction programs as appropriate through efforts that might include inter-municipal coordination, technical assistance, and similar services.

1.2.2.2 Re-use of Waste

Generally, programs to encourage waste re-use are comparable to those that encourage waste reduction, in that they are implemented at the local level by municipalities in order to reduce the quantity of waste being generated and requiring collection. Such programs typically include education, outreach and technical assistance programs regarding direct actions for waste re-use, as well as establishment of local swap shops and forums to facilitate re-use.

The measures described above for the MRC to support the incorporation of waste reduction into the planned system, including designation of appropriate contract terms and facility processing capacities, as well as appropriate technical support from the MRC for local programs, will also serve to support the incorporation of local waste re-use programs into the planned system.

1.2.2.3 Recycling of Waste

As described previously, the MRC municipalities already sponsor a wide variety of local programs to collect and process recyclables through operation of collection programs, drop-off programs, and operation of transfer stations and other facilities. The measures described above for the MRC to support the incorporation of waste re-use and reduction into the planned system, including designation of appropriate contract terms and facility processing capacities, as well as appropriate technical support from the MRC for local programs, will also serve to support the incorporation of local recycling into the planned system. Depending on the type of facilities to be developed, as discussed below, the MRC might also encourage municipalities to commit to deliver recyclable materials generated or collected locally to a regional facility for conversion into high-value products.

As a regional entity positioned to act on a regional level, the MRC offers the capability to develop regional recycling facilities that can offer a level of service beyond what any individual municipality in its service territory would be likely to develop. In this context, the MRC is pursuing development of a mixed waste processing facility as one promising approach to implementation of a system to divert waste to the maximum practical extent. This subsection provides information on the status of the MRC's efforts to develop such a facility, and on its anticipated design and projected performance in achieving waste diversion. Note that the MRC considers these efforts to be recycling rather than processing, because the intent is to achieve conversion of waste materials into useful products, and not only to reduce the volume requiring landfill disposal. The MRC recognizes that certain elements of the facilities described herein, such as production of processed engineered fuel, might reasonably be considered "processing," but has included the description of those elements in this section for purposes of clarity.

Request for Expressions of Interest

The facility information provided in this section is based on the responses received by the MRC to a Request for Expressions of Interest (RFEI) that was originally issued in June 2013 and advertised nationally (see **Appendix F**). The RFEI solicited responses from vendors regarding

the design and performance of new and emerging technologies for MSW processing, recycling, and conversion to products. The RFEI also solicited information on the experience, qualifications and capabilities of the proposing vendors. The RFEI addressed approaches that might be practical for development in Maine by emphasizing the following criteria for evaluation of the responses:

- Facility conceptual design consistent with the waste management hierarchy for recovery of high-value recyclables, conversion of organics to compost or other products, and production of PEF for energy recovery, with residuals limited to materials not practical for recovery.

- Credible demonstration of the technology in reference facilities (which might be pilot or commercial demonstration facilities) that can support implementation of the technology at a commercial scale in Maine in light of potential issues with technology transfer and scale-up.

- Development that is feasible at a scale consistent with the quantities and composition of MSW generated in Maine municipalities that has been historically delivered to PERC.

- Affordability and competitiveness with other alternatives under projected conditions, including disposal in Maine facilities and long-haul disposal at remote facilities.

- Willingness to pursue opportunities for development under the market conditions and the requirements for facility development and environmental impact mitigation present in Maine.

- Resources to pursue development of a facility in Maine in addition to other pre-existing commitments.

The MRC received 13 responses to the RFEI in August 2013 proposing a range of technologies and approaches to development. The MRC continues to work with the vendors, but has not yet selected a specific technology or vendor for final development[3]. Thus, the MRC cannot yet provide a definitive description of the facility that will be developed, and cannot provide a firm commitment to a specific approach to facility design or a specific level of diversion or performance in this application.

In this context, what follows is a composite description and range of performance levels that might reasonably be anticipated based on the information provided from vendors both in their original responses to the RFEI and in subsequent communications.

[3] In January 2014, the MRC Board of Directors passed a resolution directing the MRC staff to work with one particular technology vendor, Fiberight, to investigate the technical and economic feasibility of developing a facility utilizing its technology to serve the MRC municipalities. A copy of that resolution is provided in **Appendix E**. Discussions with other vendors are also ongoing.

Facility design

The facility would be developed on a site having an area in the range of 10 to 15 acres, which would also include an enclosed building having an anticipated footprint on the order of 80,000 square feet. The building would include a receiving area for incoming mixed MSW, an initial mechanical processing area, an organics processing area and/or a PEF production area. The site might also include space for organics processing tanks or equipment, access roads, parking areas, and perimeter buffer space.

Incoming MSW would generally be processed on the day of receipt by loading into an inclined conveyor to feed the processing equipment. The initial mechanical processing functions would be designed to recover high-value recyclables such as cardboard, newsprint and other marketable recoverable papers; single-resin plastics; ferrous and non-ferrous metals, and glass. Process steps might include bag-opening, screening, initial size reduction, and multiple stages of subsequent separation and screening to separate organic materials and to separate materials appropriate to be included in PEF. Organic materials might be fed into tanks for anaerobic digestion, or might be processed in an enclosed washing and distillation process. PEF would be produced through additional screening and size reduction in a separate section of the enclosed building.

Facility performance

The actual level of diversion of MSW from a mixed waste processing facility, and the quantities of residuals requiring further management, will depend on a variety of factors that include the following:

- The quantities and composition of MSW that is generated in the municipalities that make the commitment to be served by the facility;
- The type and extent of materials that are diverted from MSW through source separation prior to collection of the MSW delivered to the facility;
- The rate of recovery of high-value recyclable materials from incoming MSW;
- The rate of separation of organic materials from other components of incoming MSW;
- The success in converting the separated organic materials to marketable products; and
- The rate of recovery of materials suitable for production of PEF from the materials stream that remains after recovery of high-value recyclable materials and separation of organic materials, and the success in marketing the PEF.

- Success in bringing the mixed waste processing facility into operation at the anticipated level of performance and on a schedule that provides service availability without interruption at the end of the current disposal arrangements.

For the purposes of this application, the MRC has evaluated a variety of approaches to mixed waste management for diversion and recycling. Each case assumes that the MRC would manage waste within a range of 158,000 to 180,000 tons per year of post-diversion MSW. This reduction is in two steps: (1) a reduction of approximately 5.5 percent (%) from 2013 deliveries to the PERC Facility by the MRC municipalities which is consistent with experience over the past 5 years; and (2) an additional allowance of 15 to 25 percent (%) for additional waste diversion and attrition from the system. Each case assumes that the MSW has a composition based on waste characterization data from 2011 as referenced in the State Plan.

For the cases involving development of a mixed waste processing facility, which might be similar in design to reference facilities described in responses to the RFEI[4], the MRC forecasts total diversion in the range of 45 percent to 75 percent of incoming post-diversion MSW . Such diversion rates, if attained, would reduce the rate of use of landfill capacity for facility residuals as compared to the existing system. The diversion would be achieved through the following:

- Recovery of 10 percent to 20 percent of incoming post-diversion MSW in the form of high-value recyclable materials such as single-resin plastics, ferrous and non-ferrous metals, and marketable paper grades.

- Diversion of organic materials, which constitute an additional 20 percent to 30 percent of incoming post-diversion MSW, through anaerobic digestion to create bio-gas for use as fuel and to create digestate for use as a fertilizer product.

- Conversion of an additional 15 percent to 35 percent of incoming post-diversion MSW into processed engineered fuel (PEF) that can displace conventional solid fuels in local biomass and industrial facilities.

At one extreme, the overall diversion rate might be increased to the range of 80 percent to 90 percent if the MRC is successful in sponsoring development of an emerging technology for converting the organic and fiber components of MSW to liquid fuel and chemical products. At the other extreme, the overall diversion rate might top out at less than 50 percent if the MRC supports local diversion programs without successful development of a regional facility. Such programs might include consolidation facilities to expand access to use of existing single-stream recycling facilities; enhanced diversion of organic materials to distributed local composting and farm-based anaerobic digestion facilities; and similar programs implemented locally rather than regionally.

[4] Including operating facilities in Medina County and Clyde, Ohio; City of Industry, San Jose and Sunnyvale, California; the metropolitan area of Toronto, Ontario; and Edmonton, Alberta; as well as numerous facilities in Europe that are often referred to as mechanical and biological treatment (MBT) facilities.

1.2.2.4 Composting of Biodegradable Waste

Generally, programs to encourage composting of bio-degradable waste are comparable to those that encourage waste reduction and re-use, in that they are implemented at the local level by municipalities in order to reduce the quantity of waste being generated and requiring collection. Such programs typically include education, outreach and technical assistance programs regarding direct actions for backyard and local composting, as well as diversion of compatible materials to existing operations for composting or digestion of farm wastes, agricultural wastes, or wastewater treatment facilities with appropriate capability.

The measures described above for the MRC to support programs for incorporation of local waste reduction and re-use programs into the planned system, including designation of appropriate contract terms and facility processing capacities, as well as appropriate technical support from the MRC for local programs, will also serve to support the incorporation of composting of biodegradable waste into the planned system. Depending on the type of facilities to be developed, the MRC might also encourage municipalities to commit to deliver organic materials generated locally to a regional facility for conversion into high-value products.

1.2.2.5 Waste Processing

The measures described above for the MRC to support programs for incorporation of local waste reduction and re-use programs into the planned system, including designation of appropriate contract terms and facility processing capacities, as well as appropriate technical support from the MRC for local programs, will also serve to support the incorporation of local programs for waste processing into the planned system. Depending on the type of facilities to be developed, the MRC might also encourage municipalities to commit to deliver materials generated locally to a regional facility for conversion into high-value products. The MRC's effort to pursue regional measures and facilities for waste processing are discussed in Section 1.2.2.3 in the section on waste recycling.

1.2.2.6 Land Disposal of Waste

The MRC notes that the development of a secure landfill is an integral part of development of the fully integrated system for solid waste management in accordance with the hierarchy of management methods described above. Capacity for landfill disposal of waste materials is a necessary element to achieve financing for and otherwise provide support for the diversion facilities that are at the heart of the plan to achieve maximum practical diversion. Capacity is also necessary to provide the MRC the flexibility to accept a range of types and quantities of waste that might need to be land filled in the event that the measures for achieving the maximum practical level of diversion are less successful than had been projected. For this purpose, the MRC cannot rely on the Juniper Ridge Landfill, which cannot provide certainty that permitted capacity will be available for the types and quantities of waste and waste residuals to be managed by the MRC on either a short-term or long-term basis after 2018, nor can the MRC rely on other

landfills due to the regional nature of the planned development and due to transportation distances and other factors. In any case, MRC needs to control the landfill capacity in order to provide support for the planned system of diversion facilities that are at the heart of our plan to achieve maximum practical diversion.

The integrated system would be designed to serve only Maine municipalities that have historically relied on PERC for disposal and which would comprise the membership of MRC or any successor organization to MRC. The sole mission of the MRC is to serve its membership, and it has no motivation for or interest in providing MSW management services for MSW originating outside of the State of Maine or residuals generated within the State of Maine from MSW originating outside of the State of Maine.

The MRC recognizes that acquisition of the public benefit determination and other permits required to construct the secure landfill will require more elapsed time than the acquisition of the permits required to construct the other elements of the system. For this reason, the MRC is submitting this application in advance of the full specification of the details of the other elements of the system. Nonetheless, as a public sector entity committed to affordable, long-term and environmentally sound management of MSW in accordance with the hierarchy, the Maine DEP can be assured that the MRC is committed to implement all elements of the planned system in ways that achieve the maximum practical diversion of MSW from landfill disposal.

1.2.3 Alternatives to the Planned System

As stated previously, development of a secure landfill publically planned for and controlled by the MRC municipalities, consistent with the State's declaration of policy, is the safety net that makes it possible for the MRC to proceed with its overall strategy for an integrated regional system to maximize diversion from the landfill. In this sense, the secure landfill is the key element that empowers the MRC to pursue maximum diversion strategies and to take and manage risks that private developers would not assume. A determination of public benefit for the landfill component of the system is a key early step in the implementation process for the system.

In the event that the determination of public benefit is not granted for the landfill component, then the MRC could not proceed with development of the proposed system. The MRC foresees that such an outcome would have the following consequences:

- A prime opportunity to pursue and implement an integrated approach to solid waste management will be lost as no other entity would develop and build a mixed MSW processing facility to serve the MRC municipalities.

- The MRC municipalities would continue to operate, and would attempt to enhance, their ongoing programs for waste reduction, re-use, local recycling and local composting. The MRC notes, however, that the municipalities are already undertaking substantial efforts to

implement such programs at the local level. Given the level of effort already being expended by its municipalities, the MRC does not anticipate that such efforts could achieve significantly more success in diversion of MSW than has already been achieved without some sort of regional facility or coordinated regional program. No local or regional entity other than the MRC has the capabilities and resources to develop such a regional facility or program successfully in the service territory served by the MRC.

- In this context, the MRC municipalities would be left to manage disposal of post-diversion MSW in approximately the quantities they are generating today, with alternatives that would vary depending on their location. A few MRC municipalities in the northern portions of the service territory might send MSW to the Tri-Community Landfill for disposal. A few MRC municipalities in the western and southern portions of the service territory might dispose of their MSW at the Crossroads Landfill in Norridgewock, or at the ecomaine waste-to-energy facility.

- As discussed in Section 2, however, all of the Maine disposal facilities expected to continue operations past 2018, taken together, could not provide sufficient disposal capacity to accept all of the post-diversion MSW from all of the MRC municipalities. An inevitable consequence would be that many of the MRC municipalities would have no alternative but to attempt to secure arrangements to haul their MSW to remote facilities in New Hampshire, Massachusetts and New Brunswick for disposal. In the absence of a planned regional solution, the vast majority of the MRC municipalities could be faced with returning to a diffused responsibility for municipal solid waste planning, processing and disposal among numerous and overlapping units of local government.

- Under these circumstances, the MRC anticipates that the PERC facility would close in 2018. The PERC facility could not attract sufficient MSW to operate economically at tip fees that would allow it to compete economically with long-haul disposal options available elsewhere at remote facilities.

There are, of course, unforeseen alternatives to this scenario. For example, the State might elect to approve the expansion of the Juniper Ridge Landfill or to construct and operate the Carpenter Ridge Landfill, and might allow unrestricted use of the airspace at either or both of these landfills to be made available for disposal of MSW from the MRC municipalities. Alternatively, a new MSW processing or disposal facility might be developed by an independent party to accept MSW from the MRC municipalities at tip fees that would be less than the cost of long-haul disposal at out-of-state facilities.

It is precisely because the MRC cannot rely on the occurrence of either of the aforementioned alternatives that the MRC is proceeding with development of its own integrated system for MSW management. Only with control of its own system, including a secure landfill component, can the MRC secure affordable, long-term and environmentally sound MSW disposal for its municipalities in accordance with the MRC mission and with state declaration of policy, including the State waste hierarchy.

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1.3 Waste Types, Major Sources and Estimated Annual Volumes

The major source of material for the planned integrated waste management system will be MSW collected by municipalities that have historically delivered, and currently deliver, MSW to the PERC Facility. As stated previously, the MRC municipalities are recorded as having delivered 179,177 tons of MSW to the PERC Facility in 2013 and 180,456 tons of MSW to the PERC facility in 2012 (see **Appendix E**). The recorded amount notwithstanding, MRC is aware that some MSW reported as delivered under commercial accounts was generated within the borders of the MRC municipalities. These values for MSW deliveries do not include MSW originating in municipalities having disposal arrangements with commercial haulers and delivered to the PERC facility under separate commercial accounts, which has been on the order of 30,000 tons per year, nor do they include approximately 13,000 tons per year of MSW delivered to the PERC facility by municipalities that are not members of the MRC. These sources, taken together, could provide approximately 223,000 tons of post-diversion MSW per year as of the present date.

By 2018, the MRC forecasts that such sources could provide approximately 158,000 to 180,000 tons per year of MSW, accounting for both (1) a reduction of approximately 5.5 percent from 2013 deliveries to the PERC Facility by the MRC municipalities which is consistent with experience over the past 5 years; and (2) an additional allowance of 15 to 25% for additional waste diversion and attrition from the system. In this context, the MRC proposes to design its system to process 180,000 tons per year of MSW. A system designed to accept 180,000 tons per year would be large enough to support a processing facility that uses a reasonable subset of the attractive emerging technologies to achieve economies of scale as required to maintain a competitive position in the MSW disposal marketplace, yet sufficiently within the range of available MSW quantities to allow for additional MSW diversion prior to delivery to the system.

The major type and source of waste for disposal at the proposed secure landfill will be the residuals that remain after the diversion of materials from MSW originating in MRC member municipalities and, to a lesser extent, from other municipalities that currently use the PERC facility and will be in need of disposal services after 2018. The types, sources and quantities of the residuals will vary depending on the type and capacity of the processing and facilities that are developed, the composition of the MSW delivered to such facilities, the degree of success in diverting each component of incoming MSW, and similar factors. Under cases discussed in Section 1.2. above (and assuming delivery of 180,000 tons per year to the system), capacity for land disposal would be needed as follows:

- 40,000 to 89,000 tons per year of residuals if the MRC is successful in sponsoring development of a mixed waste processing facility. The residuals would consist of unrecoverable plastics, paper, metals and glass; organic materials that resist processing through digestion or composting; and unrecoverable contaminants present in MSW such as household construction and demolition waste, household electronic waste, and other unrecoverable constituents of MSW.

- 16,000 to 32,000 tons per year of residuals if the MRC is successful in sponsoring development of an emerging technology for producing liquid fuel and chemical products from organic and fibrous materials. The residuals would consist of unrecoverable plastics, metals, and glass; organic materials removed as contaminants in other recovered materials; and unrecoverable contaminants present in MSW such as household construction and demolition waste, household electronic waste, and other unrecoverable constituents of MSW.

- 158,000 to 180,00 tons per year of post-diversion MSW for the Local Diversion Case.

The MRC anticipates the possibility of circumstances in which the secure landfill might need to be made available to accept post-diversion MSW for disposal either before or even if a processing facility is developed successfully. Examples of such circumstances include bypass events during facility outages for repairs or necessary maintenance; bypass events during summer peak waste delivery conditions; bypass events in the event a facility with an emerging technology does not perform as anticipated or has its operations disrupted due to unforeseen failure of the technology; temporary disruptions in the markets for recovered products; and casualty events and other uncontrollable circumstances. Moreover, the MRC anticipates that it might be prudent to design a processing facility that is consistent with a higher level of waste reduction, re-use and pre-collection diversion than is actually achieved, in order to reduce the level of waste delivery guarantees that will be imposed on municipalities to a level that provides comfortable margins against delivery shortfalls. In such event, some amount of MSW bypass would be a natural and direct result of designing the system for consistency with the highest priority-methods of management in the waste hierarchy. To account for these circumstances, the MRC has included an allowance for land disposal of 20,000 tons per year of MSW bypass in the estimated annual volumes for land disposal for those cases involving a centralized diversion facility.[5]

The MRC remains open to the alternative of continued use of the PERC Facility in a modified configuration involving operation at a reduced scale with updated technology to increase waste diversion. In such event, capacity might be needed for land disposal of up to 78,000 tons per year of residual materials, based on acceptance of 223,000 tons per year of MSW.

In addition to the land disposal of residual materials, post-diversion MSW, and MSW bypass, the secure landfill to be developed by the MRC would also provide capacity to meet other solid waste disposal needs of its members. In particular, the MRC proposes to have the secure landfill provide capacity to accept small amounts of construction and demolition debris (CDD), certain special wastes, oversized bulky wastes and wood waste from member municipalities. These materials are currently accepted by various other disposal facilities depending upon the proximity of the waste to the disposal facility. Some of the MRC municipalities currently dispose of CDD in less than six-acre attenuation landfills having varying amounts of remaining life.

[5] Again, as noted in Section 1.2.2.6 above, the sole mission of the MRC is to serve its Maine membership, and it has no motivation for or interest in providing MSW management services for MSW originating outside of the State of Maine or residuals generated within the State of Maine from MSW originating outside of the State of Maine.

When these attenuation landfills can no longer provide the necessary capacity for CDD, the MRC regional secure landfill will replace this necessary capacity. This secure landfill would also provide another option for CDD disposal for those communities that are currently operating less than six acre attenuation landfills and are finding the operation to onerous.

Accounting for all of the factors described above, the total amounts of waste of each type currently generated in the areas to be served by the integrated waste management system and secure landfill component are summarized in the following table.

Table 1-2. Annual Waste Quantities Currently Generated by Type

Waste Type	Quantity (tons/Year)
MSW	Up to 223,000
CDD	66,000
Special Waste	10,000
Oversized Bulky Waste (OBW)	10,000
Clean Wood Waste	10,000

The following table presents the total amount of material that might be accepted at the secure landfill on an annual basis accounting for disposal of residuals over the range of material diversion scenarios discussed above, as well as the disposal of CDD, special wastes and oversized bulky wastes.

Table 1-3. Annual Landfill Quantities for each Future Scenario

Scenario	Residuals[1] (Tons/year)	Small Amounts of other Waste[2] (Tons/year)	MSW[3] (Tons/year)	Total (Tons/year)
Mixed-waste processing facility (45% to 75% diversion)	40,000 to 89,000	15,000	20,000	75,000 to 124,000
Emerging technology case	16,000 to 32,000	15,000	20,000	51,000 to 67,000
Local-Diversion Case	Not applicable	15,000	158,000 to 180,000[4]	173,000 to 195,000
Continued used of the PERC Facility	78,000	15,000		93,000

1. The amount of residuals produced by each regional processing case is described in Section 1.2 and Table 1-2.
2. The small amounts of other waste include CDD, special waste, and OBW generated by member communities described above.
3. The estimate of MSW quantities provides an allowance for 20,000 tons per year of MSW bypass for cases involving a central diversion facility.
4. The MSW quantity for the local diversion and system attrition case represents a range of between 15% and 25%.

Based on an average in-place density within the secure landfill of all the waste types of 1,200 pounds per cubic yard, the MRC projects the need for land disposal of an annual landfill volume ranging from 85,000 cubic yards per year (based on 51,000 tons per year for the lower end of the range for the Emerging Technology Case) to 325,000 cubic yards per year (based on 195,000 tons per year for the upper end of the range for the Local Diversion Case).

1.4 Disposal Capacity and Projected Facility Life

The final design for the secure landfill to accept residual materials, post-diversion MSW, and MSW bypass, and to accept the other solid wastes for which disposal capacity is needed, will depend on a number of factors, including but not limited to, economic and technical feasibility, ownership agreements, and the extent of utilization by the municipalities. Based on the annual waste volumes presented in Section 1.3, and a 30-year service life, the MRC projects an ultimate disposal capacity for 2.55 to 9.75 million cubic yards of secure landfill disposal capacity. The low side of the range corresponds to landfill disposal of 51,000 tons per year, which is shown in Table 1-3 as the low-end range for disposal of residuals, and the allowance for other solid waste materials, for the Emerging Technology Case. The high side of the range corresponds to disposal of 195,000 tons per year, which is shown in Table 1-3 as the need for disposal of post-diversion MSW, and the allowance for other solid waste materials, for the Local Diversion Case.

1.5 Geographic Service Area

The Municipal Review Committee (MRC), Inc. represents 187 cities, towns and inter-municipal districts ("Charter Municipalities") in central and eastern Maine. Refer to **Appendix A** for a map of the geographic service area of the MRC municipalities.

1.6 Location

Currently, the MRC is planning the development of an integrated solid waste management system that includes a single proposed secure landfill in either Argyle or Greenbush, Maine. Refer to **Appendices H-1** and **H-2** for maps depicting the proposed alternative locations. The MRC has a preference for co-locating the mixed MSW processing facilities at the same site if possible.

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SECTION 2.0 - CAPACITY NEEDS

In accordance with the Maine DEP *Application for a Determination of Public Benefit*, this section identifies the immediate, short-term, and long-term capacity needs which this disposal facility will address, and whether the capacity of the proposed facility will exceed that required to meet the identified needs. As defined in 38 M.R.S.A. § 1310-AA(3)(A), "immediate" means within the next three (3) years, "short-term" means within the next five (5) years and "long-term" means within the next ten (10) years. This application presumes that the start date of the time frame is the year of application for the public benefit determination or 2014. The referenced statute also mentions that, when evaluating whether a proposed facility meets the capacity needs of the State, the Commissioner considers relevant local and regional needs as appropriate and the regional nature of the development and use of disposal capacity due to transportation distances and other factors.

The recently revised State Plan[6] provides data on MSW disposal capacity and disposal requirements for the State of Maine. According to the State Plan, **Appendix E**, Table 5, the current capacity for MSW disposal in Maine includes three waste-to-energy facilities (the MMWAC, ecomaine and PERC facilities); two large State-owned regional landfills (the Carpenter Ridge and Juniper Ridge Landfills), five small municipal MSW landfills, two municipal ash landfills, and one commercial landfill.

The State Plan indicates that the three waste-to-energy facilities provide approximately 544,000 tons per year of disposal capacity. However, as discussed in Section 1.3 above, after extensive discussions regarding the extension disposal arrangements at PERC, the MRC concluded that there could be no assurance that the PERC Facility in its current configuration, and under current business arrangements extended as is, can continue to be a feasible component of a long-term system of MSW management that complies with the hierarchy and with the MRC vision as expressed above. For these reasons, the MRC has not included the disposal capacity associated with the PERC Facility after the scheduled date for expiration of the Waste Disposal Agreements on March 31, 2018. Absent such capacity, the two remaining waste-to-energy facilities would provide only 240,000 tons per year of disposal capacity starting in 2019. The remaining two waste-to-energy facilities are not considered to be viable options for MRC members due to dedication of their capacity to existing suppliers, transportation distances and other factors.

Regarding the two State-owned regional landfills, the State Plan indicates that the Carpenter Ridge Landfill has not yet been developed, and that the Juniper Ridge Landfill will reach its capacity in 2017. Neither of these landfills can be projected to provide disposal capacity for 2018 or beyond for the purposes of this determination of capacity needs. The size and location of the Carpenter Ridge Landfill presents transportation challenges that are inconsistent with the MRC service area. Neither of these landfills provides an appropriate level of ownership and control needed to implement our vision and the continuation of the MRC mission interrelated

[6] Maine Materials Management Plan, *2014 State Waste Management and Recycling Plan Update & 2012 Waste Generation and Disposal Capacity Report*, Maine Department of Environmental Protection, January 2014.

with the state hierarchy. Moreover, use of such disposal capacity could not support the development and operation of the planned integrated system for solid waste management as described in Section 1.2.

The five small municipal landfills constitute closed systems that have dedicated their capacity to their current users, and are not licensed to accept the amount of MSW that is generated by the MRC membership. These landfills are not considered to be viable options for the MRC municipalities due to transportation distances and other factors.

The WM Crossroads-Norridgewock Landfill is located a considerable distance from many of the MRC municipalities. Although some MRC municipalities might utilize this facility for disposal, in general, such disposal is not considered to be a viable option for most MRC municipalities due to transportation distances and the lack of an appropriate level of ownership and control. Moreover, use of such disposal capacity would not support the development and operation of the planned integrated system for solid waste management as described in Section 1.2.

The State Plan also identifies approximately 20 municipally owned construction and demolition debris (CDD) landfills of which 13 are located within the MRC service area. Three of these landfills only have five to ten (10) years of capacity remaining. These landfills generally serve a limited geographic area and are not licensed or equipped to serve the State's or the MRC's total disposal needs. The MRC anticipates that these CDD landfills will continue to be used by the local permitted entities until their capacity is used or must be closed for other reasons. After closure, the materials currently being accepted at such landfills would likely be sent to the MRC secure landfill for disposal.

2.1 Immediate Capacity Needs

As defined above, "immediate" means within three years of the date of application or by 2017. Based on the information provided in the State Plan and as long as the MRC municipalities can continue to be served by the PERC Facility under the existing Waste Disposal Agreements until 2018, the State Plan does not show an immediate need for MSW disposal capacity.

2.2 Short Term Capacity Needs

As defined above, "short-term" means within five years of the date of application or by 2019. As noted above, the MRC cannot rely on the disposal capacity associated with the PERC Facility after the scheduled date for expiration of the Waste Disposal Agreements on March 31, 2018, and the remaining two waste-to-energy facilities are not considered to be viable options for MRC members due to dedication of their capacity to existing suppliers, transportation distances and other factors. These circumstances support the determination of a short-term capacity need starting in 2018. As described previously, the planned secure landfill would provide 85,000 to 325,000 cubic yards per year of disposal capacity to meet this short-term need.

The proposed disposal facility is planned to be permitted, designed, constructed, and operational by 2018 in order to address the "short-term" capacity needs outlined above. The facility will be constructed in phases and sized to address the actual need based on the actual success of the planned measures for waste reduction, reuse, recycling, processing and other diversion.

2.3 Long Term Capacity Needs

As defined above, "long-term" means within ten years of the date of application or by 2024. As noted above, the MRC cannot rely on the disposal capacity associated with the PERC Facility after the scheduled date for expiration of the Waste Disposal Agreements on March 31, 2018, and the remaining two waste-to-energy facilities are not considered to be viable options for MRC members due to dedication of their capacity to existing suppliers, transportation distances and other factors. These circumstances support the determination of a long-term capacity need starting in 2018. As described previously, the proposed secure landfill would provide 85,000 to 325,000 cubic yards per year of disposal capacity to meet this long-term need.

The proposed disposal facility is planned to be permitted, designed, constructed, and operational by 2018 to address the "long-term" capacity needs outlined above. The facility will be constructed in phases and sized to address the actual need based on the actual success of the planned measures for waste reduction, reuse, recycling, processing and other diversion.

SECTION 3.0 - CONSISTENCY

3.1 Consistency with the State Plan

The Maine Department of Environmental Protection (DEP) issued a final Maine Materials Management Plan in January, 2014, (the "State Plan") which is an update of the 2014 State Waste Management Plan and 2012 Waste Generation and Disposal Capacity Report as required under state law. The DEP views the State Plan as an opportunity to provide information to municipalities and other waste managers on current efforts and other activities supporting the state's solid waste management hierarchy. The information provided below serves to demonstrate that the approach outlined in this application is consistent with the State Plan in all material respects.

Section II of the State Plan articulates a vision of "movement toward comprehensive sustainable materials management in Maine, focus to adherence to the principles of the Solid Waste Management Hierarchy in the development and implementation of programs and waste management systems, and the expansion of waste reduction and diversion efforts." MRC's vision established in the executive summary of this application, restated below for convenience, is consistent with the vision set forth in the State Plan.

"The application is part of a program authorized by the MRC Board of Directors to plan for and implement an integrated approach to solid waste management to ensure affordable, long-term and environmentally-sound management of MSW by its membership after the Waste Disposal Agreements expire. Such system for management of MSW will comply with the *State of Maine Solid Waste Management Hierarchy* (38 M.R.S.A. § 2101), which consists of the following methods of solid waste management to the extent practical in order of priority:

1. Reduction of waste generated at the source;
2. Reuse of waste;
3. Recycling of waste;
4. Composting of biodegradable waste;
5. Waste processing that reduces the volume of waste needing land disposal;
6. Land disposal of waste.

The MRC has long recognized the interrelationship of the *State of Maine Solid Waste Management Hierarchy* with its mission to ensure affordable, long term and environmentally sound disposal of MSW. This interrelationship leads to our vision of a future solid waste materials management system involving facility component parts that comprise a holistic and integrated approach. Our vision recognizes and supports the wide variety of local MSW materials management approaches used by the 187 communities in our service area. Our vision includes facility components that are scaled to serve the needs of our member communities while avoiding the need to import MSW from out of state. Our vision includes a system premised on self-reliance derived from appropriate ownership and control. Our vision includes an economical system that that does not rely on substantial, ongoing subsidies from the state or otherwise. Our

vision includes facility components that can adapt over time to changes in waste generation and composition, and to changes in the markets for products derived from processed MSW. Finally, our vision sees change as an opportunity to improve our system."

Section III of the State Plan provides figures for solid waste generation and characterization. This application incorporates the figures for solid waste generation and characterization provided in the State Plan. The State Plan states that "Diversion of organics from disposal remains the largest opportunity to reduce Maine's waste stream." Our planned integrated solid waste management program described in Section 1.2 of this application describes approaches and opportunities for diversion of organics from disposal in all cases. Therefore, this application is consistent with Section III of the State Plan.

Section IV of the State Plan discusses managing Maine's solid waste and progress toward State Goals. This section specifically discusses Maine's solid waste reduction goal and states that MSW disposed by Maine residents decreased from 755,086 tons in 2008 to 713,713 tons in 2012. This is a 5.5% decrease in disposal of MSW in four years. MRC member municipalities delivered 197,677 tons to PERC in 2008 and 180,455 tons in 2012. This is a 9.1% decrease in MSW in four years, which exceeds the statewide trend relating to Maine's solid waste reduction goal. Also discussed, with a table provided as **Appendix C**, are a variety of options and opportunities for "moving up the hierarchy." with management focus on particular waste stream components. Our planned integrated solid waste management program described in Section 1.2 of this application describes approaches and opportunities for diversion of particular waste stream components from disposal in all cases. Section IV of the State Plan also devotes considerable attention to emerging technologies with future promise for significant increase of additional solid wastes from disposal in Maine. **Appendix D** provides a description of these technologies and materials utilization. Our planned integrated solid waste management program described in Section 1.2 of this application demonstrate our efforts to develop new conversion technologies that process organic wastes to create fuels. For these reasons, this application is consistent with Section IV of the State Plan.

Section V of the State Plan establishes priorities for Maine DEP's work on sustainable materials management over the next 5 years. The four **priorities** are as follows:

Priority: Encourage development of new infrastructure for separation from waste stream and utilization of organics, including composting technologies such as anaerobic digestion.

The development approach set forth in Section 1.2 of this application to integrate new conversion technology infrastructure is consistent with this priority

Priority: Encourage increased beneficial use and recycling of materials, including identification of incentives and removal of unnecessary barriers.

The development approach set forth in Section 1.2 of this application to integrate new regional recycling infrastructure is consistent with this priority.

Priority: Provide tools and assistance to municipalities and businesses to support waste reduction and diversion efforts.

Our efforts described in Section 1.2 of this application to support the communities' efforts at further waste reduction and diversion are consistent with this priority.

Priority: Continue refinement of data sources and data management systems to more accurately and consistently assess progress toward statewide reduction and recycling goals, and to evaluate the effectiveness of programs and strategies.

The MRC has relied upon and incorporated data sources from the State Plan into its planning process and as the factual foundation for portions of this application. Therefore, our efforts and this application are consistent with this priority.

Section V.A. of the State Plan sets forth Strategies and Actions to Promote Organics Management and New Technologies. The first two strategies focus on the provision of technical and regulatory assistance to support the development of regional and/or co-located processing facilities, including collection, sorting, composting and biological and chemical conversion technologies. Our planned integrated solid waste management program described in Section 1.2 of this application demonstrates our efforts to develop a regional and co-located new processing facility involving new conversion technologies that process organic wastes to create fuels. Our efforts to support a future management system involving further decentralized management of organics, including technical support to municipalities described in Section 1.2.5 of this application, are consistent with the remaining strategies outlined in Section V.A. of the State Plan.

Sections V.B. and C. of the State Plan set forth strategies and actions to increase beneficial reuse, recycling and toxicity reduction for municipalities and businesses. Our efforts to support a future management system involving source reduction, including technical support to municipalities described in Sections 1.2.3 and 1.2.4 of this application, are consistent with the related strategies outlined in Sections V.B. and V.C. of the State Plan.

Section V.D. of the State Plan sets forth strategies and actions to provide reliable data to support sustainable materials management. The MRC has relied upon and incorporated data sources from the State Plan into its planning process and as the factual foundation for portions of this application. Therefore, our efforts are consistent with the strategies and actions outlined in Section V.D. of the State Plan.

Section VI is the Conclusion of the State Plan. The State Plan concludes that, "The Department recommends that facilities currently producing large volumes of or managing waste materials explore opportunities to establish co-located conversion technologies to achieve the greatest efficiencies through fuel generation and minimization of transportation costs." Our integrated waste management facility approach outlined in Section 1.2 of this application is wholly consistent with the conclusion of the State Plan. Moreover, the locational analysis undertaken for the subject site was highly focused on minimizing transportation costs while staying consistent with the local and regional collection, transfer and transportation infrastructure

developed to transport MSW to the existing facility located in Orrington. This is discussed in more detail in Section 3.2 below.

3.2 Consistency with Local, Regional or State Waste Collection, Storage, Transportation, Processing or Disposal

The MRC proposes to develop an integrated solid waste management facility system at or adjacent to the existing Orrington location or a new facility would be developed at the new site. Both locations would be consistent with local, regional or state waste collection, storage, transportation or disposal. This integrated approach could include a new base case continuation of the PERC facility at a smaller scale combined with process changes coupled with residuals disposal at the new disposal site which would be publically owned and controlled. Other approaches include co-locating new recycling and processing facilities at the new disposal facility site. If necessary, new recycling and processing facilities could also be located separately at other locations. In all cases, careful consideration has been and will be given to facility(ies) location(s) and the potential impact on the local and regional infrastructure that "grew up" around transport of the region's MSW, CDD and special wastes to facilities in the greater Bangor area including Hampden, Old Town and Orrington.

The MRC has developed owner preference siting criteria recognizing that the new site or location needs to avoid the need for development of new collection or transfer infrastructure and avoiding locations that would render existing collection and transfer infrastructure obsolete. These parameters were established early on in the post-2018 planning process to ensure that any proposed solid waste facility or facilities would not be inconsistent with local, regional or state waste collection, storage, transportation or disposal. This proposal intends to, at a minimum, maintain consistency with the existing system of local, regional or state waste collection, storage, transportation and disposal that has historically served the needs of the municipalities we represent. Beyond changes that stay consistent, we see opportunity to realize new economic and environmental improvements to the local, regional or state waste collection, storage, transportation or disposal system.

3.2.1 PERC Extension at Reduced Scale for Maine MSW

If the MRC member communities consent to an extension arrangement involving continued operation of the PERC facility after March 31, 2018 at a reduced scale and with new processing technologies, the new disposal facility would accept: 1) PERC residuals, 2) CDD in cases where member municipalities sponsor collection, transfer or transportation, or disposal of this waste stream and 3) relatively small quantities of special wastes in cases where member municipalities sponsor collection, transfer or transportation of those waste streams. The continuance of this facility will not materially change the manner in which all of these waste streams are collected, transferred or transported as compared to existing collection, transfer and transport infrastructure and practices. MSW would be delivered to the PERC Facility in Orrington as has been the case for the last 26 years. Residuals and other waste streams delivered to the location of the secure landfill would be consistent with existing collection, transfer and transport infrastructure and

practices. Therefore, the proposed facility is not inconsistent with local, regional or state waste collection, storage, transportation or disposal.

3.2.2 Integrated Facility Development at the Proposed Project Location

If the MRC member communities consent to an extension arrangement involving the development of an integrated solid waste management facility, then the disposal facility would accept: 1) recycling and processing residuals, 2) CDD in cases where member municipalities sponsor collection, transfer or transportation of this waste stream and 3) special wastes in cases where member municipalities sponsor collection, transfer or transportation of those waste streams.

This project approach would change local, regional or state waste collection, storage, transportation or disposal in some respects. Some municipalities might choose to end sponsorship of local recycling collection and processing, thereby relying on the regional facility to remove recyclables, organics and/or PEF from 100 percent of the MSW they collect and deliver. In addition, transportation of residuals over public ways from Orrington to a disposal facility would be eliminated. These system changes would provide a significant environmental benefit and economic efficiency to the municipalities who choose to transition to this modified system of local, regional or state waste collection, storage, transportation or disposal. Where the waste collection, storage, transportation or disposal system changes are supported by the consent of the participating communities, those changes would constitute a new local, regional or state waste collection, storage, transportation or disposal system that would be consistent with itself.

3.2.3 Integrated Facility Development at Separate Site than Disposal Site

If the MRC member communities consent to an extension arrangement involving the development of an integrated solid waste management facility, with a second recycling system and MSW processing facility at a separate site or sites, then the disposal facility would accept: 1) recycling and processing residuals, 2) CDD in cases where member municipalities sponsor collection, transfer or transportation of this waste stream and 3) special wastes in cases where member municipalities sponsor collection, transfer or transportation of those waste streams.

For example, a new recycling system and MSW processing facility might be developed at a location remote from the regional facility in order to reduce transportation costs. In this case, this project approach would change local, regional or state waste collection, storage, transportation or disposal in some respects. Some municipalities might choose to end sponsorship of local recycling collection and processing, which would minimize transportation costs, thereby relying on the regional facility to remove recyclables, organics and/or PEF from 100 percent of the MSW they collect and deliver. Transportation costs would also be reduced by accepting MSW much closer to the source of generation.

Development of a remote second facility to receive, recycle and process MSW might reduce utilization of a few transfer facilities designed for one-way haul of more than one hour travel

time (trailers). However, if enough members consent to system changes that justify locating a second facility, it would mean less overall MSW transport to the Bangor area, but some residuals generated would still need to be transported to the Bangor area. In any case, changes to the existing waste collection, storage, transportation or disposal system would be supported by gains in economic efficiency and environmental benefit. Where the waste collection, storage, transportation or disposal system changes would be supported by the consent of the participating communities, those changes would mean the modified local, regional or state waste collection, storage, transportation or disposal system would be consistent with itself.

3.2.4 New Disposal Facility for MSW Post Local Recycling

If the MRC member communities consent to an extension arrangement that does not involve a transition from local recycling, then the facility would accept: 1) post-diversion MSW, 2) CDD in cases where member municipalities sponsor collection, transfer or transportation of this waste stream and 3) special wastes in cases where member municipalities sponsor collection, transfer or transportation of those waste streams. In this case, the change in MSW delivery locations between Orrington and the new site would not be significant enough to cause a new local regional or state waste collection, storage, transportation or disposal system need or render existing local regional or state waste collection, storage, transportation or disposal systems obsolete. Therefore, the changes would not be inconsistent with existing local regional or state waste collection, storage, transportation or disposal systems.

3.2.5 Summary

The MRC is keenly aware that today's fuel costs cause collection and transportation to be a major factor in the design of a successful integrated waste management system. This has been carefully accounted for in all of the locational scenarios above, to ensure that each scenario is not inconsistent with existing local regional or state waste collection, storage, transportation or disposal systems. In fact, we see opportunity to realize new economic and environmental improvements to the local, regional or state waste collection, storage, transportation or disposal system. Therefore, the proposed existing location and proposed facility location and all integrated components would not be inconsistent with existing local regional or state waste collection, storage, transportation or disposal systems.

Ensuring affordable, long term, environmentally sound disposal of MSW

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SECTION 4.0 - TITLE, RIGHT OR INTEREST

Documentation of MRC's title, right or interest in the property planned for facility development is included in **Appendices G-1** and **G-2**.

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SECTION 5.0 - TAX MAP AND ABUTTERS LIST

A map showing all abutters and a list of names and mailing addresses for all abutters are provided in **Appendices H-1** and **H-2**.

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SECTION 6.0 - PUBLIC NOTICE OF INTENT TO FILE

The MRC has within 5 days prior to filing: (1) published the public notice form once in a newspaper circulated in the area where the project is proposed to be located, (2) sent a copy of the public notice form by certified mail to the owners of property abutting the land upon which the project is located, (3) sent a copy of the public notice form by certified mail to the chief municipal officer and chair of the municipal planning board of the municipality in which the project is located, (4) filed a complete copy of this application, including all supporting documents and amendments, with the appropriate town clerk, city clerk or, county commissioner of the municipality in which the project is located, and (5) reviewed the appropriate state laws that relate to the proposed project. Copies of this documentation are included in **Appendix I**.

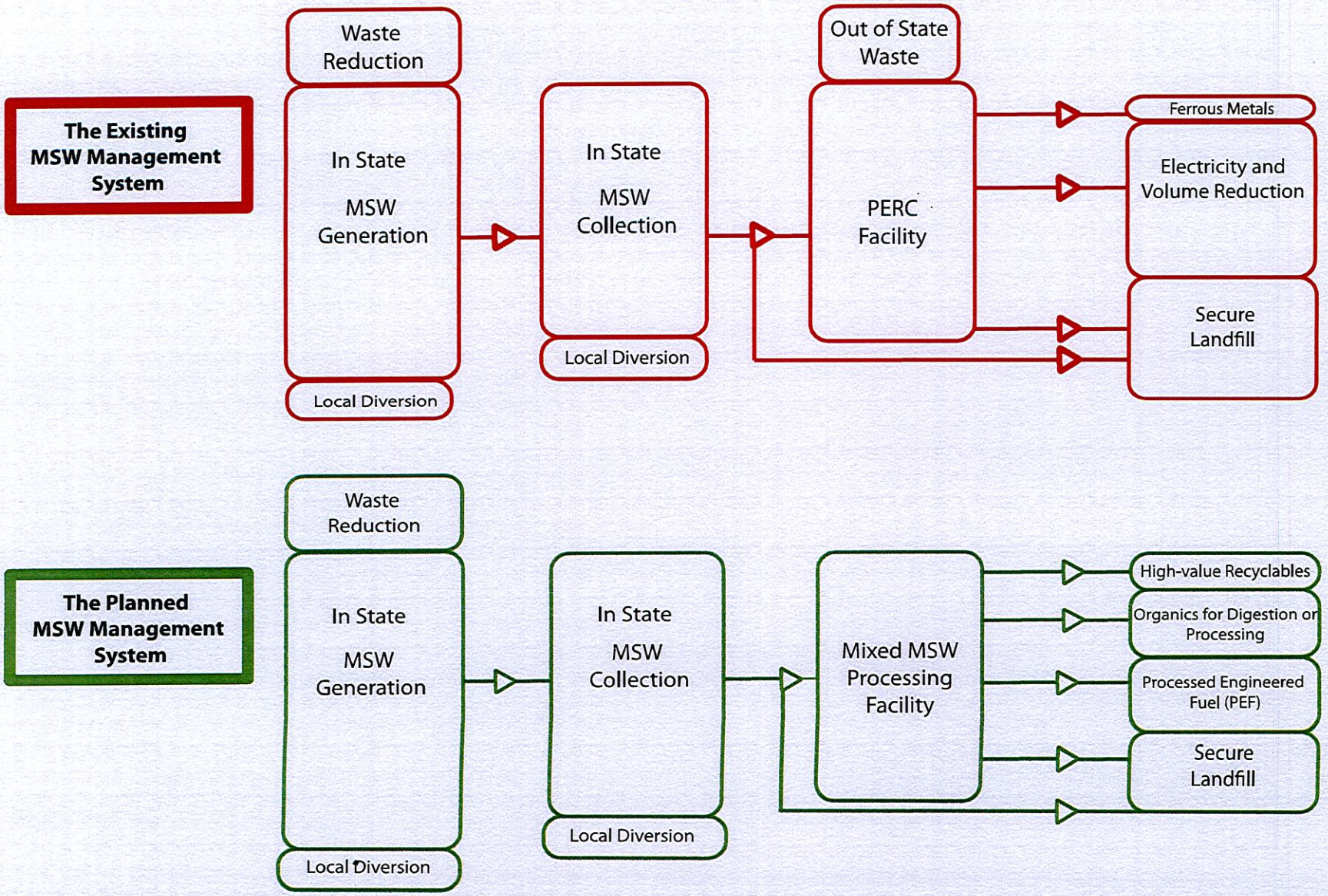
EXHIBIT A

MSW MANAGEMENT SYSTEMS

Municipal Review Committee, Inc.

Existing and Planned MSW Management Systems

EXHIBIT A



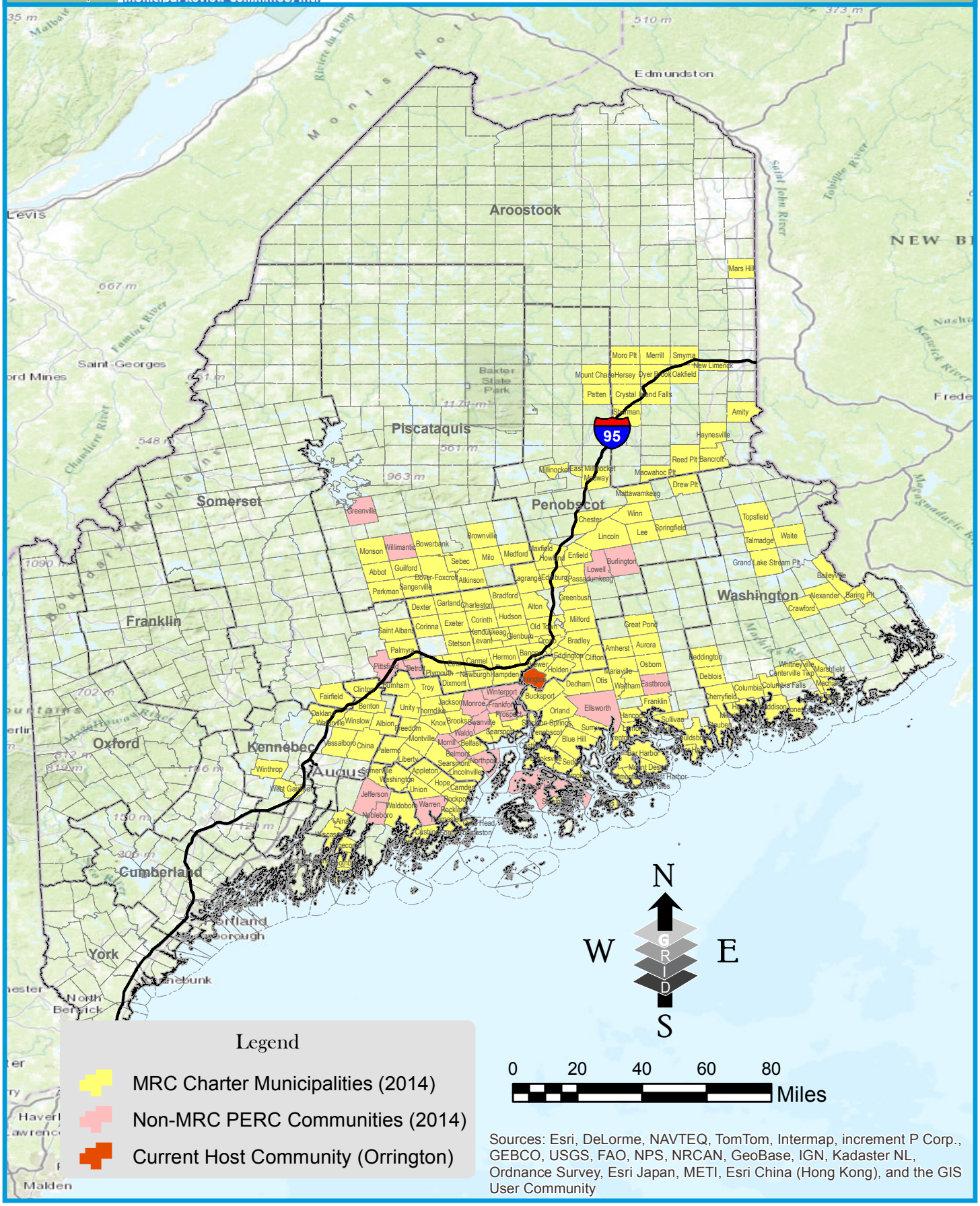
APPENDIX A

MAP OF THE MRC MUNICIPALITIES

PERC COMMUNITIES SERVED THE MUNICIPAL REVIEW COMMITTEE, INC.

MRC Municipal Review Committee, Inc.

Ensuring affordable, long term, environmentally sound disposal of MSW



Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community

APPENDIX B

LIST OF MRC MUNICIPALITIES

Municipal Review Committee, Inc.

3/20/2014

Charter Municipalities, Solid Waste Districts, and Other Municipalities Served

	Equity Charter Municipalities				**ECM solid waste districts**			**New Charter Municipalities**			**New CM Districts**		
1	Albion	44	Midcoast SWD	1	Boothbay RRDD	1	Boothbay	1	Abbot	1	N.Katahdin	1	Moro Plt
2	Alton	45	Mid-Maine SWD			2	Boothbay Harbor	2	Bancroft			2	Merrill
3	Atkinson	46	Milford			3	Edgecomb	3	Belfast			3	Smyrna
4	Baileyville	47	Millinocket			4	Southport	4	Bowerbank			4	Mt. Chase
5	Bangor	48	Milo	2	Central Penobscot	5	Bradford	5	Castine			5	hersey
6	Bar Harbor	49	Monson			6	Charleston	6	Cherryfield			6	Dyer Brook
7	Blue Hill	50	Mt. Desert			7	Corinth	7	Chester			7	Patten
8	Boothbay RRDD	51	Newburg	3	Mid-Coast SWD	8	Camden	8	Cranberry Isles			8	Crystal
9	Bradley	52	Old Town			9	Rockport	9	Dixmont			9	Island Falls
10	Brewer	53	Orland			10	Lincolnville	10	Drew Plt			10	Amity
11	Brooks	54	Orono			11	Hope	11	East Millinocket			11	New Limerick
12	Brownville	55	Otis	4	Mid-Maine SWD	12	Corinna	12	Edinburg	2	TCSWMO	12	Union
13	Bucksport	56	Owls Head			13	Dexter	13	Etna			13	Appleton
14	Burnham	57	Palmyra			14	Exeter	14	Franklin			14	Liberty
15	Carmel	58	Parkman			15	St. Albans	15	Freedom			15	Washington
16	Central Penobscot	59	Penobscot Co.	5	Pleasant River SWD	16	Addison	16	Garland			16	Palermo
17	China	60	Pleasant River SWD			17	Beals	17	Harrington			17	Somerville
18	Clifton	61	Plymouth			18	Centerville	18	Haynesville		**Others served by New CMs**		
19	Clinton	62	Reed Plt			19	Columbia	19	Howland				
20	Cushing	63	Rockland			20	Columbia Falls	20	Hudson	1	Cherryfield	1	Deblois
21	Dedham	64	Sangerville			21	Jonesport	21	Kenduskeag			2	Beddington
22	Dover-Foxcroft	65	Searsport	6	Union River SWD	22	Amherst	22	Knox	2	Machias	3	Marshfield
23	Eddington	66	South Thomaston			23	Aurora	23	LaGrange			4	Whitneyville
24	Enfield	67	Southwest Harbor			24	Great Pond	24	Machias			5	Rouge Bluffs
25	Fairfield	68	Stetson			25	Osborn	25	Macwahoc Plt	3	Wiscasset	6	Alna
26	Friendship	69	Steuben			26	Waltham	26	Maxfield			7	Westport
27	Glenburn	70	Stonington			26		27	Medford				
28	Gouldsboro	71	Surry		**Other municipalities served by ECMs**			28	Medway				
29	Greenbush	72	Thomaston	1	Baileyville	1	Alexander	29	Milbridge				
30	Guilford	73	Thorndike			2	Crawford	30	Montville				
31	Hampden	74	Tremont			3	Talmadge	31	N.Katahdin				
32	Hancock	75	Trenton			4	Grand Lake Stream	32	Oakfield				
33	Hermon	76	Troy			5	Topsfield	33	Passadumkeag				
34	Holden	77	Union River SWD			6	Baring	34	Piscataquis Co.				
35	Jackson	78	Unity			7	Waite	35	Penobscot Town				
36	Lamoine	79	Vassalboro	2	Blue Hill/Surry	8	Brooksville	36	Searsmont				
37	Lee	80	Veazie			9	Brooklin	37	Sebec				
38	Levant	81	Verona			10	Sedgewick	38	Sherman				
39	Lincoln	82	Waldoboro	3	Clinton	11	Benton	39	Sorrento				
40	Lucerne-in-Maine	83	Waterville	4	Waterville	12	Oakland	40	Springfield				
41	Mariaville	84	Winslow					41	Stockton Springs				
42	Mars Hill	85	West Gardiner					42	Sullivan				
43	Mattawamkeag	86	Winthrop					43	Swans Island				
								44	TCSWMO				
		86	Equity Charters					45	Winn				
		-6	Districts included above					46	Winter Harbor				
		26	Municipalities in Equity Charter Districts					47	Wiscasset				
		12	0ther municipalities served										
		118											
		47	New Charters										
		-2	Districts included above										
		17	Municipalities in New Charter Districts										
		7	0ther municipalities served										
		187	**Total municipalities served by the MRC**										

Municipal Review Committee, Inc.
Listing of Municipalities Delivering MSW to PERC that are not MRC Members

Belmont	376.8
Burlington/Lowell	253
Deer Isle	888.75
Detroit	358.68
Eastbrook	169.2
Ellsworth	6966.9
Frankfort	318.94
Greenville	821.52
Monroe	176.34
Morrill	353.6
Nobleboro/Jefferson	3625.99
Northport	760
Orrington	1,686.96
Pittsfield	2,553.51
Prospect	320.75
Swanville	555.2
Waldo	304.8
Warren	874.25
Willamantic	47.06
Winterport	1,272.76
	22685.01

APPENDIX C

TONS OF MSW DELIVERED TO THE PERC FACILITY IN 2013 AND 2012 BY CHARTER MUNICIPALITY

Municipal Review Committee,Inc.
Tons of MSW Delivered by Charter Municipalities to the PERC Facility

	2013	2012
Abbot	152.53	146.76
Albion	913.23	912.53
Alton	361.28	332.10
Atkinson	131.06	128.81
Baileyville	1,751.90	1,679.70
Bancroft	21.56	21.88
Bangor	27,751.75	28,963.69
Bar Harbor	5,172.21	5,119.09
Belfast	742.91	821.38
Blue Hill/Surry	3,942.41	3,954.60
Boothbay RRDD	4,476.53	4,476.05
Bowerbank	33.41	32.72
Bradley	543.74	530.47
Brewer	5,176.09	5,142.90
Brooks	485.76	375.19
Brownville	551.10	561.81
Bucksport	1,551.28	1,692.66
Burnham	619.55	625.05
Carmel	1,156.78	1,230.11
Castine	239.11	250.03
Central Penobscot	2,479.63	2,582.32
Cherryfield	464.21	456.52
Chester	387.12	417.24
China	1,404.48	1,334.38
Clifton	458.37	489.04
Clinton	2,409.61	2,286.65
Cranberry Isles	56.95	49.88
Dedham	380.50	386.90
Dixmont	146.63	159.08
Dover-Foxcroft	2,272.44	2,229.44
Drew Plt	19.18	19.46
East Millinocket	805.31	763.08
Eddington	908.60	973.03
Edinburg	39.11	41.33
Enfield	777.16	789.72
Etna	472.72	462.56
Fairfield	5,258.78	5,178.03
Franklin	188.26	229.14
Freedom	246.52	187.84
Garland	224.27	223.95
Glenburn	2,577.95	2,593.50
Gouldsboro	450.66	456.01
Greenbush	622.51	633.00
Guilford	1,258.04	1,257.23
Hampden	3,525.18	3,255.57
Hancock	402.28	412.44
Harrington	408.07	415.54
Haynesville	52.74	53.44
Hermon	3,522.84	3,637.65
Holden	1,001.59	979.73

Howland	278.91	273.79
Hudson	140.90	139.55
Jackson	215.45	197.58
Kenduskeag	390.13	376.55
Knox	479.08	431.69
LaGrange	294.82	314.13
Lamoine	591.96	579.13
Lee	491.45	465.39
Levant	1,059.75	1,059.02
Lincoln	3,319.45	3,429.55
Lucerne	311.31	316.56
Machias	2,009.86	2,031.90
Macwahoc Plt	57.53	58.26
Mariaville	160.30	144.88
Mars Hill	937.28	967.28
Mattawamkeag	307.04	324.68
Maxfield	44.21	46.80
Medford	98.59	95.49
Medway	692.68	727.34
Midcoast SWD	6,787.13	6,748.80
Mid-Maine SWD	4,211.69	4,208.98
Milbridge	627.68	615.09
Milford	943.09	925.99
Millinocket	2,801.58	2,472.87
Milo	1,378.97	1,395.24
Monson	214.72	216.55
Montville	200.48	177.91
Mt. Desert area ADD	5,649.25	5,559.37
N.Katahdin	1,181.92	1,132.09
Newburgh	970.45	881.19
Oakfield	329.17	288.40
Old Town	3,233.92	4,138.19
Orland	287.24	294.26
Orono	3,956.55	3,895.26
Otis	189.29	181.58
Palmyra	1,085.39	1,103.01
Parkman	205.63	193.05
Passadumkeag	168.61	170.42
Penobscot Co.	858.01	876.74
Penobscot Town	526.62	522.71
Piscataquis Co.	336.03	287.22
Pleasant River SWD	512.67	590.55
Plymouth	517.43	508.98
Reed Plt	88.73	90.62
Rockland	5,104.91	4,951.83
Sangerville	622.91	614.42
Searsmont	193.89	191.87
Searsport	901.01	918.73
Sebec	196.62	190.66
Sherman	795.52	700.04
Sorrento	63.87	58.43
Springfield	136.48	138.39
Stetson	564.18	546.16
Steuben	583.94	555.89
Stockton Springs	378.33	388.89

Stonington	1,117.33	1,110.06
Sullivan	113.58	108.11
Swans Island	139.49	132.45
TCSWMO	1,821.22	1,928.27
Thomaston Group	4,039.78	4,032.89
Thorndike	141.32	211.93
Troy	154.78	153.65
Union River SWD	400.09	385.31
Unity	963.67	922.04
Vassalboro	1,316.32	1,407.54
Veazie	600.29	673.37
Verona	306.28	312.00
Waldoboro Group	3,295.93	3,327.16
Waterville	8,352.70	8,357.92
West Gardiner	804.84	827.51
Winn	205.82	205.03
Winslow	2,985.56	3,042.94
Winter Harbor	149.04	136.32
Winthrop	2,856.59	2,780.23
Wiscasset	1,731.61	1,739.71
	179,176.75	180,455.62

APPENDIX D

PRESENTATION TO THE MRC BOARD OF DIRECTORS ON EMERGING TECHNOLOGIES, 2007

CommonWealth
Resource Management Corporation

Solid Waste Conversion Technologies: An Initial Overview

Presented to
the Board of Directors of the
Municipal Review Committee, Inc.

October 24, 2007

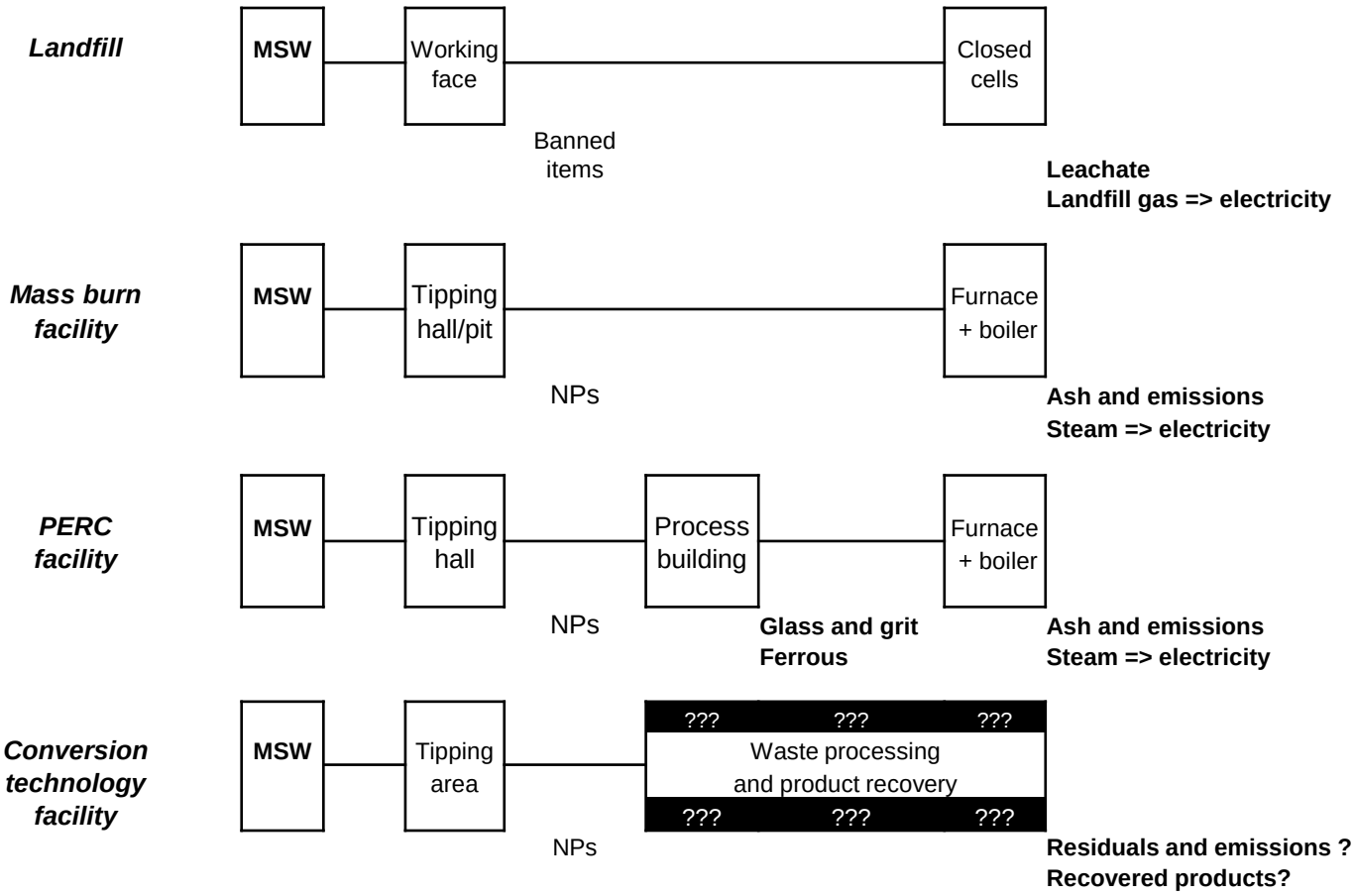
Initial Overview of Solid Waste Conversion Technologies: MRC Board meeting on July 25, 2007

Objective:	Evaluate waste management technologies for 2018 and beyond
Focus:	"Conversion technologies" that are alternatives to RDF/MSW combustion
Goals:	Reduce environmental impacts Reduce overall net disposal costs Reduce residual disposal needs

Sources: Investigations and procurements in Los Angeles (City and County), Sacramento, CA; New York City, Florida (St. Lucie County), etc., and private initiatives in the US and Canada

Initial Overview of Solid Waste Conversion Technologies: MRC Board meeting on July 25, 2007

Process: convert MSW into products, residuals and emissions



CommonWealth
Resource Management Corporation

Technology Inventory

Conventional Technologies Operating in Maine	***Alternative Technologies ("Conversion Technologies")***
Existing facilities • **RDF combustion (PERC)** • **Mass burn combustion (RWS)** • **Landfills (Juniper Ridge)** **Potential facility upgrades** • **Refine source separation** • **Modify fuel production process** • **Modify fuel combustion process**	**Plasma arc reduction** **Gasification** **Pyrolysis** **Thermal depolymerization** **Anaerobic digestion** **Mixed waste composting**

Conversion Technology Evaluation Matrix

Materials flow

- Process description
- Acceptable waste definition
- Marketable products
- Residuals requiring disposal

Performance risk

- Technology experience
  - Comparable waste streams
  - Comparable scale
  - US vs other countries
- Acceptable Waste
- Product sales experience
- Residuals management record

Environmental impact

- Air quality: process and fugitive emissions
- Water quality: use, discharge, run-off
- Land use and siting restrictions
- Nuisances: odors, noise, traffic, vectors

Economics

- Initial and ongoing capital cost
- Operating and maintenance costs
- Product quantity and value
- Residuals quantity and cost
- Cost certainty and assurance

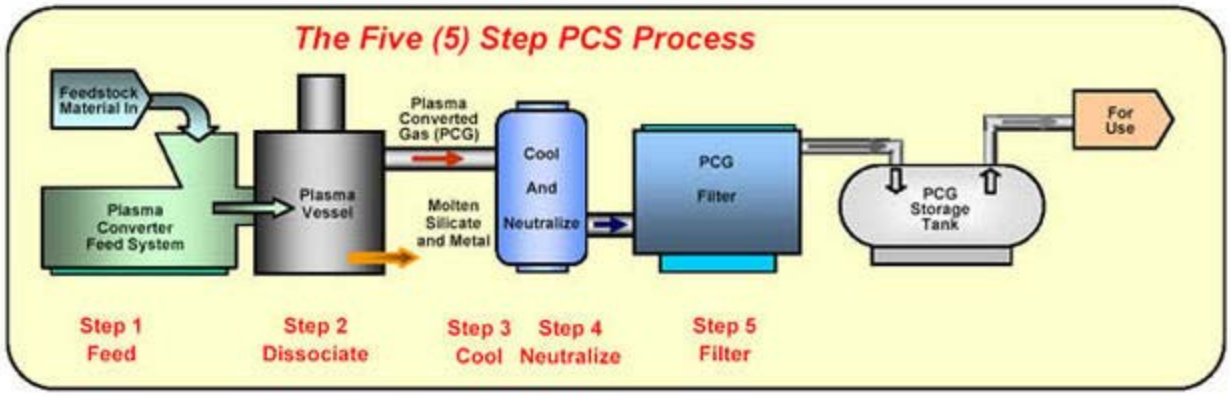
Conversion Technologies: Process Descriptions

Technology	*Description*	*Nickname*
Plasma arc reduction	Use electrical discharge to vaporize waste into elemental form and melt inorganics at 4000-9900 deg F, then quench to form gas and slag	Zap
Gasification	Convert organic waste to gaseous fuel through partial slow oxidation by heating at 1400- 2500 deg F	Bake
Pyrolysis	Convert organic waste to liquids and gaseous fuels by heating with no oxygen at 750-1400 deg F	Steam
Thermal depolymerization	Pulp/slurry organics, then heat to 950 deg F and inject steam to accelerate decomposition to liquid and gaseous products	Mix and mash
Anaerobic digestion	Use microbes in absence of oxygen to convert organic waste to sugars, then acids, then compost, biogas and/or green fuel products, all at < 160 deg F	Bugs in tanks with gas, no air
Mixed waste composting	Use microbes in presence of oxygen to convert organic waste to compost at < 160 deg F	Bugs in vessels with air, no gas

Plasma arc reduction ("Zap")

Process mechanically to reduce size
Apply plasma torch at up to 10,000 deg F
Produce syngas and slag (17%of MSW per Plasco))
Cool and clean up products
Burn syngas to make steam/electricity
Small project in Japan for MSW/coal/coke
Small project in Ottawa, ON, under construction
No press releases since August 20, 2007

Plasco facility, Ottawa, Canada, 85 tpy
Claim 4 MW (1400 kWh/ton) "in combined cycle mode"



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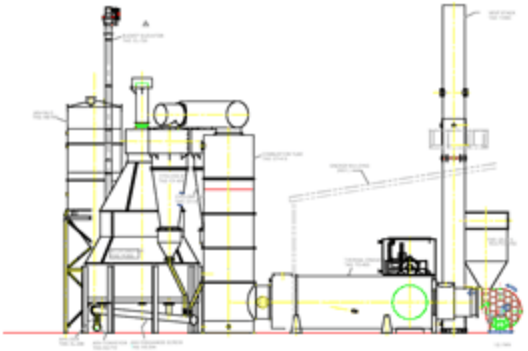
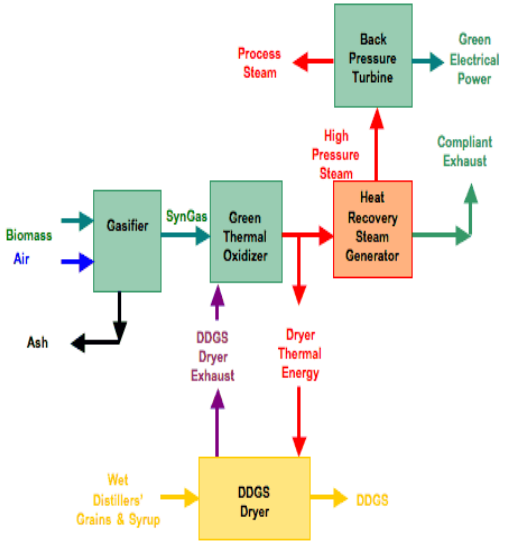
Gasification ("Bake")

Heat in gasifier to 1400- 2500 deg F
Produce syngas and slag
Burn syngas to make steam/electricity
US experience on biomass/coal, not MSW
Ze-gen gasifying C&D wood in New Bedford, MA: no recent press

Primenergy facility, Stuttgart, Germany





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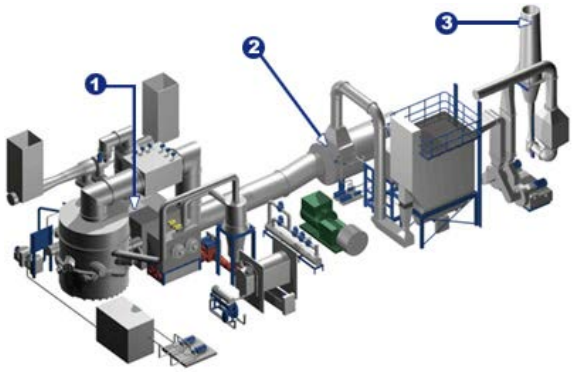
Pyrolysis ("Steam")

Heat without oxygen to 750 to 1400 deg F
Produce syngas, liquids, chars/tars and ash
Refine liquids to fuel products (biodiesel, etc.)
Burn syngas to make steam/electricity
US experience with pre-sorted organic waste



Brightstar facility, Wollongong, Australia

Emissions data, Romeoville, CA, 32 tpd MSW for 18 days

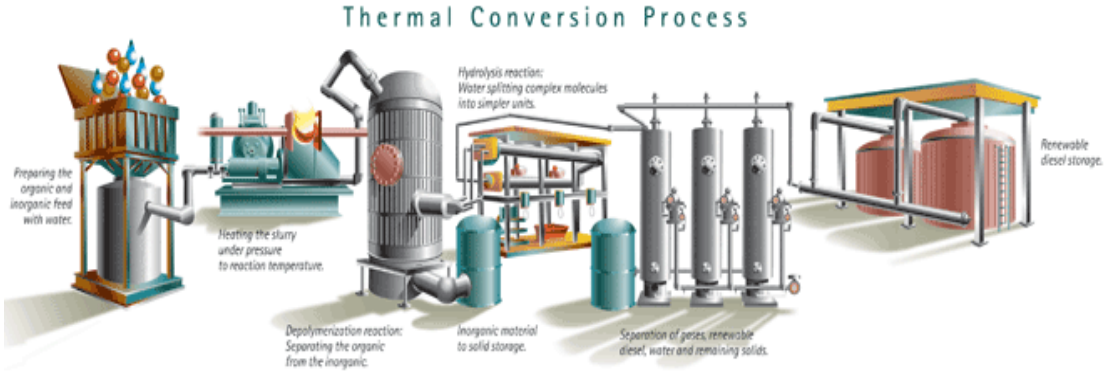
Pollutant (data in lbs/ton MSW)	**IES Romoland**	**WTE average per SCAQMD**
CO	0.17	0.45
NOx	2.35	1.78
Dioxins/furans	40 x 10(-9)	18 x 10(-9)

PERC (2006): 1.74x10(-6) lbs/hr or 0.02x10(-9) lbs/ton MSW

Thermal depolymerization ("Mix and mash")

Process organics into a pulp/slurry
Inject steam and heat to ~ 950 deg F
Hydrolyze and refine to produce liquid and gaseous products
Burn syngas to make steam/electricity
US experience with turkey litter/waste

Changing World Technologies,
Carthage,MO



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Resource Management Corporation

Anaerobic digestion (**"Bugs in tanks with gas, no air"**)

Load organics into tanks without oxygen
Mix with sewage sludge
Use microbes to convert waste to sugars, then acids (one- and two-stage systems)
Create biogas, green fuel products, solid cake
US experience with small-scale source-separate organics and sludges

Onsite Power Systems, Davis, CA

Source-separated food waste
Stored/tipped outdoors
Loaded by Bobcats to conveyor

CommonWealth
Resource Management Corporation

Mixed waste composting ("Bugs in vessels with air, no gas")

Load organics into rotating drum or other vessel
Heat and mix to accelerate decomposition
Screen, trommel, then move through windrow bins to complete decomposition
Manage and dispose of residuals
US facilities with mixed record on compost sales, odor control and economics

Conporec composting drum

Conporec Sorel—Tracy, Quebec
35,000 tpy MSW+SSO since 1993,
70+% diversion

Agitated bins, Delaware Co., NY

CommonWealth
Resource Management Corporation

Conversion Technologies: chemistry, not mystery

Technology	*Temperatures*	*Oxygen*	*Products*
Plasma arc reduction ('Zap')	4000-9900 deg F	Available	NPs, syngas, slag
Combustion (PERC)	1800-2200 deg F	Excess	NPs, exhaust gas, G&G/ash
Gasification ('Bake')	1400-2500 deg F	Limited	NPs, sungas, tars, ash/slag
Pyrolysis ('Steam')	750-1400 deg F	None	NPs, syngas, liquids,tars,ash
Thermal depolymeri-zation ('Mix and mash')	Up to 950 deg F	Available	NPs, syngas, liquids,tars,ash
Anaerobic digestion (Bugs in tanks with gas, no air)	Up to 160 deg F	None	NPs, biogas, cake, residue
Mixed waste composting (Bugs in tanks with air, no gas)	Up to 160 deg F	Excess	NPs, compost, residue

Conversion Technologies: common elements

- Convert **organic fraction** of waste to liquid and gaseous hydrocarbon products
- Must remove non-processible materials (**NPs**) from incoming wastes
- Control **tars and condensates** that contaminate products
- Create **inert residuals** from the inorganic fraction of waste (but to what regulatory standard of inertness?)
- Most experience is on **pure or source-separated or non-US organic** wastes: front-end needs are unknown

Conversion Technologies: US commercial experience

Technology	*Description of experience*
Plasma arc reduction ('Zap')	Westinghouse/Hitachi facility in Japan treating 83 tpd MSW and auto shredder residue since 2003. 85 tpy facility in Ottawa in start-up. 3000 tpd facility under development in St. Lucie County, Florida
Gasification ('Bake')	US experience limited to coal and biomass (e.g., wood, rice hulls) Extensive experience at scale on MSW in Europe/Asia Ze-gen facility in New Bedford, MA, in start-up on C&D wood
Pyrolysis ('Steam')	No successful US commercial experience on MSW. Extensive experience at scale on organic wastes in Europe/Asia
Thermal depolymeri-zation ('Mash')	US experience on turkey and agricultural waste since 2004 (Carthage, MO). No successful US experience on MSW.
Anaerobic digestion (Bugs with gas)	Extensive US experience with sewage sludge and special organic waste. Pilot facilities in Davis, CA, and Toronto, CN, on source-separated organic waste (SSOW) and agricultural waste. Extensive experience at scale in Europe/Asia.
Mixed waste composting (Bugs, no gas)	Substantial US experience at scale. Mixed record for compost marketing

Concern with emerging technologies:

They work overseas. Will they work in the US ?

The unknowns include:

- Restrictions on incoming materials to protect equipment
- Level of pre-processing
- Success in removing tars and condensates from gaseous and liquid products
- Residuals composition and management requirements
- US construction costs, US O&M costs, US product values, US regulatory compliance

Conversion Technologies: Recent Developments

City of Los Angeles short-listed 5 vendors for proposals due 6-7-2007

- Interstate Waste Technologies (IWT): 7 pyrolysis/gasification plants in Japan
- Primenergy LLC: 4 biomass gasification plants in the US
- Ntech Environmental: 12 gasification plants in Asia, Australia, Poland
- GEM America: flash pyrolysis pilot-scale facility in England

Anaerobic digestion technology was rejected as requiring too much pre-processing to cause sufficient diversion from landfill disposal

St. Lucie County, FL, selected GeoPlasma LLC to build a $425M 3000-tpd plasma arc gasification plant at its landfill

- Site lease executed April 2007: permitting in progress

Technology indicative costs

Technology	***Information***
Plasma arc reduction (‘Zap’)	St. Lucie County, Florida: $425M for 3,000 tpd (1M tpy) facility Assumes reclamation of 4.3M tons from landfill, and 20% slag production. No tip fee projections available Source: Misc. press releases and reports
Gasification (‘Bake’)	IWT: $75M for 300 tpd (100,000 tpy) facility; $186/ton Ntech: $19.4M for 100 tpd (33,000 tpy) facility: $129/ton Primenergy: $15.5M for 100 tpd (33,000 tpy) facility: $ 87/ton Source: City of Los Angeles Conversion Technology Demonstration Project

Conversion Technologies: Talking points

Similarities of conversion technologies to the PERC Facility

- Two-stage processes involve waste pre-processing prior to conversion
- Pre-processing of waste is critical to success
- There will be non-processibles (NPs) and residuals
- Basic infrastructure is needed for waste delivery and residuals disposal

Key points of potential differences

- Range of materials deemed “Acceptable Waste”
- Efficiency and marketability of products
- Amount, composition and physical form of emissions and residuals
- Operating track record
- Economics
- Business arrangements available

APPENDIX E

RESOLUTIONS OF THE MRC BOARD OF DIRECTORS: 2009, 2013, 2014

Resolution
To
Promote the Advancement of Post 2018 Planning Process

Municipal Review Committee Board of Directors
December 16, 2009

WHEREAS, USA Energy Group, LLC (aka SET PERC Investment, LLC) and PERC Holdings, LLC (together, the "Private Partners") are privately-owned entities that own partnership interests in the Penobscot Energy Recovery Company, LP ("PERC"); and

WHEREAS, PERC owns and operates a facility (the Facility) located in Orrington, Maine, that generates electricity from the processing and combustion of municipal solid waste; and

WHEREAS, there are 133 municipalities, solid waste districts, and other public entities (known collectively as the "Charter Municipalities") that have entered into long-term waste disposal agreements (the "Waste Disposal Agreements") to deliver their MSW to the Facility; and

WHEREAS, there are 86 Charter Municipalities (known collectively as the "Equity Charter Municipalities") that own limited partnership interests in PERC; and

WHEREAS, pursuant to the Waste Disposal Agreements, the Charter Municipalities established the Municipal Review Committee, Inc. (the "MRC") to represent the Charter Municipalities as to matters that arise under the Waste Disposal Agreements and to represent the Equity Charter Municipalities as to partnership matters; and

WHEREAS, the mission of the MRC is to ensure the affordable, long-term, environmentally-sound disposal of the MSW of its membership; and

WHEREAS, the State of Maine has established a solid waste management hierarchy set forth in 38 MRSA §2101 for an integrated approach to solid waste management in the following order of priority: A) reduction; B) reuse; C) recycling; D) Composting; E) waste processing which reduces the volume of waste needing land disposal, including incineration; and F) land disposal of waste; and

WHEREAS, the Private Partners and the MRC have developed a strong public/private partnership through the joint oversight of the operation of PERC and continue to maintain an

effective working relationship which both the MRC and the Private Partners wish to preserve and strengthen; and

WHEREAS, the Waste Disposal Agreements, the Power Purchase Agreement, the Residuals Disposal Agreements, and other agreements that PERC has entered into in order to facilitate waste disposal at the Facility all expire on or around March 31, 2018, unless extended; and

WHEREAS, the PERC Partnership Agreement expires in December of 2018 unless extended; and

WHEREAS, the MRC wishes to explore continuation of its mission beyond 2018 by either extending or restructuring its existing relationships with the Private Partners and/or by exercise by the Equity Charter Municipalities of their existing option to purchase the partnership interests of the Private Partners (the "Purchase Option"), and the Private Partners have indicated a desire to work with the MRC to jointly explore these and any other potential alternatives; and

WHEREAS, continuation of the MRC mission beyond 2018 will require restructuring and/or extension of the existing Waste Disposal Agreements and could require extension of the PERC partnership beyond 2018, all of which will require the approval of each Charter Municipality participating in any such extension or restructuring; and

WHEREAS, determining the advisability of either extending the Waste Disposal Agreements or exercising the Purchase Option will, among other things, require a detailed assessment of the feasibility of operating the Facility after 2018 as a scaled down facility accepting waste primarily from the Charter Municipalities; and

WHEREAS, if the Facility is to continue operations beyond 2018, certain decisions with respect to capital and major maintenance projects need to be made over the next several years; and

WHEREAS, for all of the foregoing reasons, and in order to preserve maximum flexibility for all parties with respect to continuation of the Facility and the PERC partnership, the Board of Directors believes it to be in the best interests of the MRC to begin analyzing its future options now with a view to making a final recommendation as to its future course of action as soon as is feasible;

NOW THEREFORE, in recognition of the above, the Board of Directors of the MRC hereby resolves as follows:

RESOLVED: That extension of the Waste Disposal Agreements beyond 2018 is the preferred option of the MRC, provided that it can be implemented at acceptable cost and on reasonable terms.

RESOLVED: That, in furtherance of the above stated preferred objective, the Board is ready and willing to accept a proposal from the Private Partners with respect to the potential extension of the life of the Facility as a basis for discussion.

RESOLVED: That, in recognition of the fact that exercise of the Purchase Option is a potentially viable means by which the Equity Charter Municipalities could effectuate extension of operation of the Facility beyond December 31, 2018, the Board will proceed on a parallel path to analyze the feasibility of exercising the Purchase Option and operating the Facility as a publicly owned facility beyond 2018 and, dependent on the outcome of that analysis, as well as consideration of other relevant factors, may advance a proposal to the Private Partners with respect to purchase by some or all of the Charter Municipalities of the partnership interests of the Private Partners.

RESOLVED: That the Board, acting on behalf of the Charter Municipalities, and working closely with the Private Partners, proceed to evaluate the potential economic arrangements that could be implemented as part of an extension of the Waste Disposal Agreements or in connection with exercise of the Purchase Option, including review and analysis of factors that might include, among other things, the long-term technical performance and operating costs of the Facility, including analysis of the feasibility of operating the Facility on a scaled down basis to serve only the Charter Municipalities; capital and major maintenance projects at the Facility that might maintain or improve its condition and performance; future electricity prices; availability and cost of capacity for disposal of residuals; alternatives to the Facility for waste disposal; emerging technologies for waste management; future trends in waste generation and recycling; and other factors.

RESOLVED: That the foregoing evaluation begin immediately with a target for completion by the end of 2010 in support of the goal of presenting to the Charter Municipalities a set of recommendations with respect to long-term waste disposal arrangements as soon as is feasible but not later than the end of 2012.

RESOLVED: That, beginning in 2010, the MRC develop and implement a proactive outreach program with an objective of educating and receiving input from the Charter Municipalities as to the proposed alternative paths for extension of the facility beyond 2018, including discussion of the likely end to disposal cost rebates after 2018 and the potential for increasing the target values for disposal costs as part of a transition to an extension of the existing Waste Disposal Agreements.

RESOLVED: That either the President or the Treasurer, acting singly, hereby is authorized to execute and deliver on behalf of the MRC a confidentiality agreement in such form as the MRC Board may approve, together with such other documents as he may deem advisable, in order to facilitate implementation of the foregoing resolutions.

Approved by 7-0 voted decision of the MRC Board at a special meeting December 16, 2009

Final - MRC Board Adopted 12.11.13 By 7-0 Vote

Resolution
Regarding Post 2018 Planning Process
December 11, 2013

WHEREAS, the Municipal Review Committee, Inc. ("MRC") represents approximately 187 municipalities or groups of municipalities (the "Charter Municipalities") all of which have entered into long term Waste Disposal Agreements with the Penobscot Energy Recovery Company ("PERC") providing for waste disposal needs through March 31, 2018; and

WHEREAS, the mission of the MRC is to ensure the affordable, long-term, environmentally-sound disposal of the municipal solid waste ("MSW") of its members; and

WHEREAS, the Waste Disposal Agreements expire on or about March 31, 2018, unless extended; and

WHEREAS, the MRC, pursuant to a Resolution adopted by its Board of Directors on December 10, 2009, has been actively engaged in investigating alternative waste disposal arrangements to replace the existing Waste Disposal Agreements after March 31 2018; and

WHEREAS, in furtherance of its mission, the MRC proposes to continue its efforts to extend its mission beyond 2018 by developing one or more alternative solid waste management and disposal solutions for consideration by the legislative bodies of the Charter Municipalities, which alternatives may include potential development of an integrated solid waste management and resources recovery facility to be owned and controlled either by the Charter Municipalities or in partnership with other private partners; and

WHEREAS, the MRC has issued a Request for Expressions of Interest soliciting proposals for alternative technologies for the sorting, recycling, processing and disposal of MSW and is exploring several alternative sites for such a facility within the MRC Region with a view to securing options on one or more potential sites for this purpose;

NOW THEREFORE, in recognition of the above, it hereby is:

RESOLVED: That the MRC take steps to further develop a potential integrated solid waste management and resource recovery facility to accommodate the management and disposal of MSW originating in the Charter Municipalities at PERC or other facilities after March 31, 2018 including, without limitation, (i) exploring available alternative technologies for the sorting, recycling, processing and disposal of MSW originating in the Charter Municipalities; (ii) engaging in discussions with possible joint venture partners or other third parties with respect to the potential financing, development and/or ownership of an alternative facility

either under the control of the MRC or under shared control with other private partners; (iii) securing options or other rights in land on one or more potential sites for such a facility, and (iv) preparing and filing an application with the Maine Department of Environmental Protection for a Determination of Public Benefit in connection therewith (the foregoing elements being referred to collectively in the following resolutions as the "MRC Post-2018 Planning Initiative"); and

RESOLVED: That the actions taken to date by the MRC Board and staff in furtherance of the MRC Post-2018 Planning Initiative hereby are ratified and confirmed, and MRC staff hereby is authorized and directed to take additional appropriate action in furtherance of the MRC Post-2018 Planning Initiative; and

RESOLVED: That the reasonable expenditure of additional funds to support the foregoing efforts and other extraordinary technical, legal, engineering and other necessary advisory costs related to those efforts to be funded from an Operating Budget Stabilization Fund established and administered by the MRC for this purpose hereby is approved.

RESOLVED: That the MRC will present the results of and a recommendation related to the MRC Post-2018 Planning Initiative to the MRC membership for consideration as soon as practicable but in any event not later than January 1, 2017.

Adopted December 11, 2013 Unanimous Voted Decision (7-0)

Present and Voting
Cathy Conlow - Bangor
Karen Fussell - Brewer
Elery Keene - Winslow
Chip Reeves – Bar Harbor
Joshua Reny - Fairfield
Tony Smith – Mount Desert
Sophie Wilson - Orono

Excused Absent
Phil McCarthy – Clinton
Bob Peabody - Rockland

Resolution
To Continue the Advancement of Post 2018 Planning Process
December 11, 2013

WHEREAS, the Charter Municipality of _____ is one of approximately 187 municipalities or groups of municipalities (the "Charter Municipalities") all of which have entered into long term Waste Disposal Agreements with the Penobscot Energy Recovery Company ("PERC") providing for waste disposal needs through March 31, 2018; and

WHEREAS, pursuant to the Waste Disposal Agreements, the Charter Municipalities established the Municipal Review Committee, Inc. (the "MRC") to represent them as to matters that arise under the Waste Disposal Agreements and as to other matters related to PERC; and

WHEREAS, the mission of the MRC is to ensure the affordable, long-term, environmentally-sound disposal of the municipal solid waste ("MSW") of its members; and

WHEREAS, the Waste Disposal Agreements expire on or about March 31, 2018, unless extended; and

WHEREAS, the MRC, pursuant to a Resolution adopted by its Board of Directors on December 10, 2009, has been actively engaged in investigating alternative waste disposal arrangements to replace the existing Waste Disposal Agreements after March 31 2018; and

WHEREAS, in furtherance of its mission, the MRC proposes to continue its efforts to extend its mission beyond 2018 by developing one or more alternative solid waste management and disposal solutions for consideration by the legislative bodies of the Charter Municipalities, which alternatives may include potential development of an integrated solid waste management and resources recovery facility to be owned and controlled either by the Charter Municipalities or in partnership with other private partners; and

WHEREAS, the MRC has issued a Request for Expressions of Interest soliciting proposals for alternative technologies for the sorting, recycling, processing and disposal of MSW and is exploring several alternative sites for such a facility within the MRC Region with a view to securing options on one or more potential sites for this purpose; and

WHEREAS, the MRC Board of Directors, serving the interests of the Charter Municipalities at large, has unanimously adopted a Resolution at its annual membership meeting held on December 11, 2013 pursuant to which it plans to take steps to further develop a potential integrated solid waste management and resource recovery facility to accommodate the disposal of MSW originating in the Charter Municipalities after March 31, 2018 including, without

limitation, (i) exploring available alternative technologies for the sorting, recycling, processing and disposal of MSW originating in the Charter Municipalities; (ii) engaging in discussions with possible joint venture partners or other third parties with respect to the potential financing, development and/or ownership of an alternative facility either under the control of the MRC or under shared control with other private partners; (iii) securing options or other rights in land on one or more potential sites for such a facility, and (iv) preparing and filing an application with the Maine Department of Environmental Protection for a Determination of Public Benefit in connection therewith (the foregoing elements being referred to collectively in the following resolutions as the "MRC Post-2018 Planning Initiative"); and

WHEREAS, the MRC is seeking an indication of support from its existing membership before proceeding further with its proposed course of action.

NOW THEREFORE, in recognition of the above, the Charter Municipality of _____ hereby resolves as follows:

RESOLVED: That the Charter Municipality of _____ supports the MRC's efforts to continue the MRC mission by providing a regional solid waste solution beyond 2018 for the benefit of the Charter Municipalities, including the MRC Post-2018 Planning Initiative; and

RESOLVED: That the Charter Municipality of _____supports the reasonable expenditure of funds as may be approved by the MRC Board of Directors to support the foregoing efforts and other extraordinary technical, legal, engineering and other necessary advisory costs related to those efforts to be funded from an Operating Budget Stabilization Fund established and administered by the MRC for this purpose; and

RESOLVED: That, in recognition of the fact that the Charter Municipality of _____ is a member of the MRC which is working actively on alternative waste disposal and recycling alternatives for the collective benefit of its members for the period beginning in April of 2018, it hereby declares it to be its policy not to enter into any agreement prior to January 1, 2017, that would conflict with or preclude consideration by it of any solid waste management and disposal solution for the post-March 31, 2018 time period that may be developed by the MRC for its membership as an outgrowth of the MRC Post-2018 Planning Initiative.

MRC Member Communities Supporting

Resolution to Continue the Advancement of Post 2018 Planning Process
December 11, 2013

Baileyville
Bangor
Bar Harbor
Blue Hill/Surry
Bradley
Brewer
Brooks
Brownville
Central Penobscot SW
Clinton
Cranberry Isles
Dedham
Dover-Foxcroft
Drew Plantation
Eddington
Etna
Fairfield
Franklin
Freedom
Glenburn
Gouldsboro
Hancock
Hermon
Howland
Kenduskeag
LaGrange
Lamoine
Lee
Levant
Lincoln
Mariaville
Mars Hill
Mattawamkeag
Lincolnville
Rockport
Mid-Maine SW
Milbridge
Milford
Millinocket
Monson
Mt. Desert
Parkman
Penobscot, Town
Piscataquis Cty Unorganized
Searsmont
Searsport
Sherman
Sorrento
Southwest Harbor
Springfield
Stockton Springs
Sullivan
Swans Island
Thomaston (So. Thom OH)
TCSWMO Inc.-Tri County
Tremont
Trenton
Troy
Union River District
Vassalboro
Veazie
Verona
Waldoboro
Waterville
Winn
Winslow
Wiscasset

Resolution

To proceed work with Fiberight, LLC to develop a municipal solid waste processing facility using Fiberight technology to serve the MRC communities

January 23, 2014

WHEREAS, the Municipal Review Committee, Inc. ("MRC") represents approximately 187 municipalities or groups of municipalities (the "Charter Municipalities") all of which have entered into long term Waste Disposal Agreements with the Penobscot Energy Recovery Company ("PERC") providing for waste disposal needs through March 31, 2018; and

WHEREAS, the mission of the MRC is to ensure the affordable, long-term, environmentally-sound disposal of the municipal solid waste ("MSW") of its members; and

WHEREAS, the Waste Disposal Agreements expire on or about March 31, 2018, unless extended; and

WHEREAS, the MRC, pursuant to a Resolutions adopted by its Board of Directors on December 10, 2009 and December 11, 2013, has been actively engaged in investigating alternative waste disposal arrangements to replace the existing Waste Disposal Agreements after March 31 2018; and

WHEREAS, in furtherance of its mission, the MRC proposes to continue its efforts to extend its mission beyond 2018 by developing one or more alternative solid waste management and disposal solutions for consideration by the legislative bodies of the Charter Municipalities, which alternatives may include potential development of an integrated solid waste management and resources recovery facility to be owned and controlled either by the Charter Municipalities or in partnership with other private partners; and

WHEREAS, the MRC has issued a Request for Expressions of Interest soliciting proposals for alternative technologies for the sorting, recycling, processing and disposal of MSW and is exploring several alternative sites for such a facility within the MRC Region with a view to securing options on one or more potential sites for this purpose; and

WHEREAS, the MRC has resolved to take steps to further develop a potential integrated solid waste management and resource recovery facility to accommodate the management and

disposal of MSW originating in the Charter Municipalities at PERC or other facilities after March 31, 2018 including, without limitation, (i) exploring available alternative technologies for the sorting, recycling, processing and disposal of MSW originating in the Charter Municipalities; (ii) engaging in discussions with possible joint venture partners or other third parties with respect to the potential financing, development and/or ownership of an alternative facility either under the control of the MRC or under shared control with other private partners; (iii) securing options or other rights in land on one or more potential sites for such a facility, and (iv) preparing and filing an application with the Maine Department of Environmental Protection for a Determination of Public Benefit in connection therewith (the foregoing elements being referred to collectively in the following resolutions as the "MRC Post-2018 Planning Initiative")

NOW THEREFORE, in recognition of the above, it hereby is:

RESOLVED: That the MRC staff hereby is directed to proceed to work with Fiberight LLC to investigate the technical and economic feasibility (including projected revenues, expenses, capital costs and tip fees) of developing a municipal solid waste processing facility using Fiberight technology to serve the MRC communities.

Adopted January 23, 2014 Unanimous Voted Decision (8-0)

Present and Voting

Karen Fussell - Brewer
Jim Guerra – Mid Coast Solid Waste Corp
Elery Keene - Winslow
Phil McCarthy – Clinton
Chip Reeves – Bar Harbor
Joshua Reny - Fairfield
Tony Smith – Mount Desert
Sophie Wilson - Orono

Excused Absent

Cathy Conlow - Bangor

APPENDIX F

REQUEST FOR EXPRESSIONS OF INTEREST

Ensuring affordable, long term, environmentally sound disposal of MSW

MRC
Municipal Review Committee, Inc.

395 State Street
Ellsworth, ME 04605
www.mrcmaine.org

866-254-3507
207-664-1700 Voice
207-667-2099 Fax
glounder@mrcmaine.org E-mail

Request for Expressions of Interest

for vendors of emerging technologies
to process municipal solid waste
via retrofit or re-development
of an existing RDF combustion
and electric generation facility

Municipal Review Committee, Inc.
395 State Street
Ellsworth, Maine 04605
(207) 664-1700
www.mrcmaine.org

June 2013

Request for Expressions of Interest

1.0 Overview

This request for expressions of interest (RFEI) is being issued by the Municipal Review Committee, Inc. (the MRC), to solicit responses from vendors of technologies to process municipal solid waste (MSW). The MRC seeks to utilize new or emerging technology for the retrofit or re-development of an existing refuse-derived fuel (RDF) combustion and electric generation facility (the Facility) owned by the Penobscot Energy Recovery Company, L.P. (PERC) and located in Orrington, Maine. This RFEI offers an exciting opportunity for the vendor of an emerging technology to serve an established supply of MSW, with the potential to benefit from infrastructure, facilities and equipment already in place.

The MRC seeks information regarding the design and performance of the proposed MSW processing technology as it has been applied at scale in commercial settings and in operating facilities. The MRC also seeks information on the experience, qualifications and capabilities of the proposing vendors. Vendors meeting the minimum requirements and submitting the most attractive responses will be selected either for the opportunity to submit a detailed proposal or for conduct of direct negotiations regarding the re-development of the Facility. The target date for commercial operation of the re-developed facility is April 1, 2018.

Sealed responses to this RFEI (Responses) will be accepted until 2:00 p.m. on Thursday, August 15, 2013, at the MRC offices at 395 State Street, Ellsworth, Maine, 04605. All Responses must be provided in accordance with the instructions for respondents as described herein. A briefing session regarding this RFEI will be held on Thursday, July 25, at 10:00 a.m. at the PERC Facility administration building, 29 Industrial Way (off State Route 15), Orrington, Maine. The briefing session will be followed by a tour of the PERC Facility. Although attendance at the briefing is not mandatory, all potential respondents to this RFEI are advised to attend. Potential attendees of the briefing are requested to advise the MRC of their interest in advance of the day of the briefing by contacting the MRC Executive Director, Greg Lounder, as follows:

Greg Lounder, Executive Director, MRC
395 State Street, Ellsworth, Maine 04605
Tel.: (207) 664-1700
Email: glounder@mrcmaine.org

The remainder of this document provides additional information on the MRC, PERC and the Facility; describes the approaches and technologies of most interest to the MRC; provides instructions for respondents; and describes the process to be used to evaluate the Responses.

2.0 Background: the MRC, the PERC Facility and the PERC Partnership

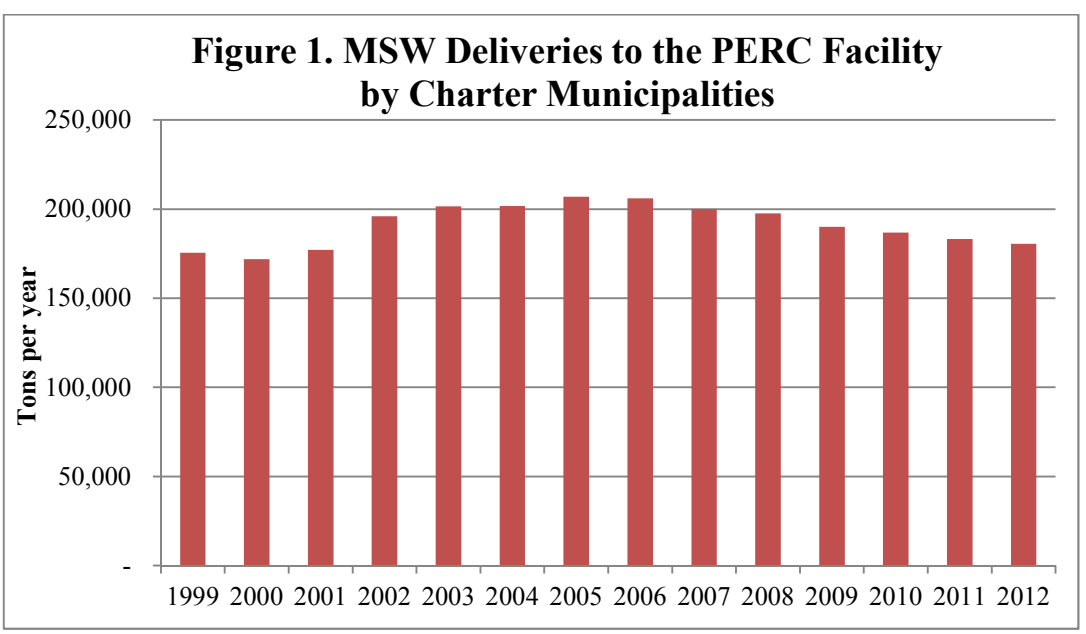
2.1 The MRC

The MRC has a mission to ensure affordable, long-term, environmentally sound disposal of MSW for its members, which include 187 municipalities and public entities located in central and eastern Maine known as Charter Municipalities (see Appendix A). The Charter Municipalities are required by Maine law to provide service for disposal of MSW originating within their borders from commercial and residential sources, which they do through waste disposal agreements with PERC. These agreements are scheduled to expire on March 31, 2018. Also scheduled to expire early in 2018 is the existing agreement for sale of the electricity from the Facility, which includes above-market pricing favorable to PERC. If the existing waste disposal agreements are extended beyond 2018, tip fees for MSW disposal at the Facility would need to be increased in order to replace revenue lost when the existing electricity sales agreement is replaced by an arrangement at market prices. Thus, the MRC is currently evaluating alternatives to the Facility for disposal of MSW after the existing contracts expire. The MRC seeks an alternative for MSW disposal at lower tip fees than would be needed for extension of the existing arrangement, and involving facilities or arrangements that would be no less reliable and environmentally sound than the existing PERC Facility.

MSW quantities

In 2012, the Charter Municipalities delivered 180,456 tons of MSW to the Facility. Figure 1 presents data on past deliveries of MSW to the Facility by the Charter Municipalities. Appendix B provides an MSW characterization study performed on Maine residential MSW in 2011.

Figure 1. MSW Deliveries to the PERC Facility by Charter Municipalities



As shown, MSW deliveries from the Charter Municipalities have declined in recent years. The declines can be attributed to a variety of factors, including low growth of the Maine population and economy; implementation of new pay-as-you-throw and other waste reduction programs; and expansion of recycling and other diversion programs. Also, some of the MSW originating within the Charter Municipalities is not included above, because it is collected by commercial waste haulers that either deliver it to the Facility under separate commercial accounts or divert it to competing MSW disposal facilities.

The MRC anticipates that MSW quantities will continue to decline in the next few years, such that a re-developed Facility might attract in the range of 100,000 to 150,000 tons of MSW per year from Charter Municipalities after 2018. This anticipated range is well below the levels of actual historical deliveries. A re-developed Facility that also provides capability to accept and manage recyclable materials, and that is sufficiently competitive to attract materials from remote locations despite the associated transportation costs, might attract over 200,000 tons per year of materials from the Charter Municipalities.

MRC resources to support the re-development process

The MRC offers a broad set of political, financial and administrative resources to support the re-development of the Facility. As a regional organization with a pro-active approach to governmental affairs, the MRC is very visible state-wide and maintains good working relationships with the executive and legislative branches of state government and the Maine Department of Environmental Protection (Maine DEP). Thus, the MRC is well-positioned to support the process of regulatory approvals and/or changes in law necessary for the re-development of the Facility.

The MRC has financial resources available to support its redevelopment efforts. The MRC controls an Operating Budget Stabilization Fund with a balance of over $2.0 million, which it uses to supplement municipal member dues assessments in order to cover the costs of administrative and staff services. The MRC also controls and manages on behalf of the Charter Municipalities a Tip Fee Stabilization Fund with an existing balance in excess of $20 million, a portion of which could be available to support re-development and financing of a replacement facility.

The MRC has a Board of Directors, staff and professional support team that offers a long record of experience with the day-to-day technical, economic, regulatory and political realities of the operation of the Facility. The MRC was created as part of the first renegotiation of long-term waste disposal agreement with PERC in 1991. The role of the MRC was expanded when the agreements were amended and extended as part of a re-financing effort in 1998. The amended

agreements allow the Charter Municipalities to share in the cash profits distributed by the PERC partnership, and to purchase ownership positions in the PERC partnership by paying to retire portions of PERC's outstanding debt. As a result of decisions to make such payments over an extended period, 86 entities, known as the Equity Charter Municipalities, together own 25.5214 percent of the limited partnership interests in the PERC partnership, which constitutes ownership of 22.9693 percent of the overall partnership equity. The MRC represents these Charter Municipalities, and exercises their rights as limited partners, through the MRC's role on the Facility Oversight Committee. In this role, on a regular basis, the MRC team reviews Facility operational performance; reviews line-item budgets and actual revenues and expenses; reviews cash flows and distributions from the PERC partnership; reviews and votes on approval of capital expenditures and major maintenance projects for the Facility; and participates in plans and decisions regarding regulatory affairs, waste acquisition, and public positions of the Facility.

Additional information on the MRC is available through its web-site at www.mrcmaine.org.

2.2 The PERC Facility

The Facility, which began commercial operations in 1988, is located on a 42-acre site in Orrington, Maine. The Facility incorporates 1980s technology to convert incoming MSW into RDF with the use of primary and secondary shredders for size reduction, trommels and disk screens to remove glass and grit, and magnets to remove ferrous materials. The RDF is combusted in either of two Riley travelling-grate waterwall boiler units to produce steam. The steam drives a single 25-MW turbine-generator that generates electricity for export to the electric transmission system. Air emissions are controlled with the use of dry scrubbers to remove acid gas precursors, and with the use of fabric filters to remove particulates.

The main structures that comprise the Facility include a tipping hall with roll-up doors at each end; a processing area that hold the RDF production equipment; a reclaim area for RDF storage; a power house that holds the boilers, the turbine and the control room; and ancillary equipment that includes the scrubbers, fabric filters, the stack, a lime silo and the cooling tower. The Facility site also holds an administration building, a warehouse, maintenance shops, an engineering office and a cold storage barn. Access roads on the site connect the scale house, which has two scales and ample queuing space for incoming and outgoing truck traffic, with Maine Route 15 in Orrington. Route 15 connects with interstate highways I-395 and I-95.

Appendix C contains additional information on the Facility. Further information on the design and technical performance of the Facility is available at www.percwte.com and at www.mrcmaine.org.

In recent years, the Facility has processed more than 310,000 tons per year of MSW and exported more than 160,000 MWh per year of electrical energy to the grid. MSW in excess of that provided by the Charter Municipalities is delivered by commercial haulers operating in areas of Maine remote from the Facility; by Maine municipalities outside the area of the Facility that are not Charter Municipalities; and by long-distance transport from out-of-state transfer stations. Residual materials generated by the Facility, including glass and grit removed during production of RDF and combustion ash from the boilers, are sent to the Juniper Ridge Landfill for disposal.

The Facility has maintained a strong environmental record. Emissions have almost always complied with permit limits. The site is in an industrial area with few neighboring residences. Generally, the Facility has a strong and supportive relationship with the host community of Orrington.

A key reason for the Facility's ongoing strong performance has been PERC's continued investment in maintenance of Facility buildings, equipment and components. PERC performs major maintenance on the process lines and boilers at the start of each calendar year, and performs major overhauls at longer intervals as appropriate and necessary. As one example, PERC just completed a major inspection and outage of the turbine, which is performed every six years. PERC reviews and repairs the building roof, walls and structures on an ongoing basis.

PERC employs a staff of approximately 75 full-time employees, many of whom are skilled workers that have been with PERC since its construction. The level of staff expertise and training is very high, and the rate of staff turnover has been very low.

Indeed, given the history and projected levels of Facility investment in scheduled, preventative and major maintenance there is no technical or environmental reason why the Facility could not be capable of continuing to operate at current performance levels well beyond 2018. The MRC's concern is not with the potential level of technical or environmental performance for the existing Facility, but with the cost of maintaining that performance over the next term of years.

2.3 The PERC Partnership

The PERC Partnership is a unique public-private partnership that includes both public and private entities in ownership roles of the partnership. The general partner of PERC is USA Energy Group LLC (USA Energy), which is headquartered in Minneapolis, Minnesota. USA Energy also has limited partnership interests in the PERC partnership, as does PERC Holdings LLC (PERC Holdings), which is a separate entity headquartered in Eden Prairie, Minnesota (together, USA Energy and PERC Holdings constitute the Private Partners). The remaining limited partners are the 86 Equity Charter Municipalities represented by the MRC.

3.0 Approaches to Re-development of the Facility

The existing Facility involves use of a known and proven technology (RDF production and combustion with energy recovery) to process MSW into a readily-sold commodity product (electricity). The Facility is owned and operated by a public-private partnership. Construction financing was initially provided through industrial revenue bonds, which were subsequently refinanced through a commercial bank loan. MSW is delivered to the Facility by municipalities under long-term contracts and by commercial entities under a mix of long-term contracts, short-term contracts and ad hoc arrangements. The Charter Municipalities are responsible for the delivery of the MSW generated within their borders to the Facility and PERC is responsible for sourcing the remaining MSW quantities needed to operate at capacity.

The MRC is receptive to a wide variety of approaches to the re-development of the Facility. Generally, we seek to manage MSW in accordance with the hierarchy of waste disposal options as codified in Maine law and regulations. An ideal approach would involve programs to maximize waste reduction (e.g. pay-as-you-throw), recycling, and recovery of other material or fuel value from the MSW in order to minimize the volume of material being landfilled. In this context, the MRC prefers that new or extended waste disposal agreements not contain provisions that conflict with measures to reduce the amount of MSW sent to the facility through waste reduction, recycling and similar programs.

Our views on the following elements of the waste management system are discussed below:

- Technology
- Acceptable waste
- Products
- Residuals materials and emissions
- Use of the existing Facility and site
- Ownership, financing and business terms

Technology

The MRC is open to a wide variety of MSW processing and management technologies, including emerging technologies, provided that the respondent can demonstrate that the response offers a reliable and economic method for managing MSW at the scale described herein with a minimum impact on the environment, and that the products of the facility can be readily marketed. The technologies for consideration (in alphabetical order) include, but are not limited to, the following:

Anaerobic digestion
Chemical de-polymerization
Composting
Dirty MRF processing and product recovery
Gasification
Mass-burn combustion
Pelletization
Plasma arc treatment
Production of compressed natural gas (CNG)
Production of liquid fuels (e.g., by Fischer-Tropsch synthesis or otherwise)
Pyrolysis
RDF combustion via alternative processes

Ideally, the MRC would prefer technologies that offer significant experience as evidenced by:

- Commercial operation of multiple reference facilities in the United States.
- History of processing of solid waste having a composition comparable to what might be acquired in Maine.
- History of operating at a scale comparable to what would be proposed.
- Design that meets and is compatible with applicable Maine regulatory requirements and U.S. standards and codes.
- History of selling the products that would be produced.
- Evidence that the residual materials to be produced can be readily managed.

The MRC recognizes that emerging technologies are unlikely to offer experience in each of these areas. Thus, the MRC will evaluate carefully the basis for projecting that the technology will perform successfully in the absence of demonstrated operating experience in the applicable area.

Acceptable waste

The existing Facility accepts MSW, which is defined to include all ordinary household, municipal, institutional, commercial and industrial materials that consist primarily of non-hazardous solid materials with insufficient liquid content to be free-flowing. The existing Facility does not accept construction or demolition debris (C&D) waste; liquid wastes, fuels, lubricants or sludges; junk cars; hazardous wastes; pathological or regulated medical wastes; water treatment facility residues; wastewater treatment plant biosolids; tree stumps; discarded white goods; or other wastes that could not be processed safely or efficiently or that are precluded from being accepted at the Facility by applicable law or regulation.

The MRC seeks a new arrangement for managing all components of MSW that are being managed by the existing Facility, but it would not be necessary for all such management to occur at one central processing facility. The MRC member communities span a wide and sparsely-populated geographic area from Aroostook and Washington Counties in the north and east to Wiscasset to the south and Winthrop to the southwest. It follows that the current arrangements for MSW disposal require many of the MRC communities to incur significant costs for MSW transportation. In this context, the MRC has an interest in arrangements that reduce costs and impacts through local management of certain MSW components (e.g., glass) that add no value to the ultimate product. The MRC would consider any credible alternative mix of local and central separation and processing of MSW components, provided that, taken together, these the arrangements would address all of the components of MSW. On the other hand, respondents must account carefully for the work, time and level of success that could reasonably be anticipated in order to implement and enforce proposed changes in the nature of what is included in the MSW being sent to the regional facility[1].

As one example, the MRC would consider arrangements for central processing of source-separated food and other organic waste that have been diverted from a separate, single-stream of materials comprised mostly of dry recyclable materials and non-recyclable wastes. As a second example, the MRC would consider arrangements for transport of waste paper, plastics and other recyclable and non-recyclable materials to a central processing facility or dirty MRF, while diverting food and other organic components to local composting facilities.

Furthermore, the MRC would consider proposed arrangements for co-processing of MSW with other types of waste not currently being accepted by the PERC Facility (e.g., biosolids or C&D waste), provided that the materials are available on the terms proposed and that all of the MRC concerns with reliability, environmental soundness and control of impacts are addressed.

Products

The existing Facility generates electricity for delivery and recovers ferrous materials from incoming MSW for recycling. Both products are commodities that are easily marketed and sold and whose quality is readily controllable to meet the specifications of the purchasing entities.

The MRC will consider carefully the marketability, quality requirements and value of products that might be produced by a new technology. The MRC understands through experience that commodities such as electricity or recovered ferrous materials can be readily marketed and sold.

[1] Note that approximately half of the MSW sent to the Facility is delivered by residents to local transfer stations without curbside collection.

For other products less familiar to the MRC, however, including liquid fuels, gaseous products, and innovative solid products such as fuel pellets, organic products, aggregate products or industrial feedstocks (e.g., waxes, carbon black), the burden will be on the respondent to demonstrate that such products can meet quality requirements and can be readily sold. Respondents intending to produce and sell such unfamiliar products are requested to provide supporting information on the potential markets and standards for their products. Respondents are also requested to address whether long-term purchase arrangements for such products are available from creditworthy purchasers on terms that might provide credit support for financing of a facility.

Residual materials and emissions

All systems for managing MSW create residual materials and emissions. The MRC has a preference for systems that create relatively small quantities of residual materials and the fewest possible emission in forms that can be readily managed or controlled with minimal adverse environmental or nuisance impacts.

The residual materials from the PERC Facility consist of (a) glass and grit materials removed prior to combustion; and (b) ash removed from the boiler and air pollution control equipment gas streams after combustion. These residuals materials are sent to the Juniper Ridge Landfill in Old Town, Maine, for disposal under contracts that expire early in 2018[2]. The emissions from the PERC Facility include combustion products that have been treated in the dry scrubbers and fabric filters, and modest process water discharges.

The MRC is confident that reasonable arrangements can be made for disposal of the residual materials, and for acquisition of an air emissions license, from any new MSW processing facility that might be developed with an appropriate design and acceptable performance.

In this context, vendors are advised to be very careful about claims that their proposed technology would create zero residual materials or zero emissions. Such claims will undermine the credibility of the Responses unless supported with hard data on actual results of actual commercial operations of facilities employing their proposed technology at the full scale that would be proposed and under regulatory conditions comparable to those present in Maine[3].

[2] The Facility separates certain incoming bulky materials for separate size reduction in a mobile grinder, which material is then processed with other incoming waste. Almost none of the incoming MSW to the Facility requires landfill disposal by virtue of being non-processible.

[3] Respondents should be aware that the Maine DEP has precedents for rejecting applications for beneficial re-use of combustion ash from municipal waste combustion facilities outside of landfills and other controlled settings.

Use of the existing Facility and site

The MRC would consider approaches to re-development of the Facility that would involve either (a) retrofit of the Facility and the existing site; or (b) development of a new facility at a different site.

A retrofit of the Facility could take advantage of the existing access roads, scales and other infrastructure; the tip hall and other buildings; and perhaps even some of the existing process equipment. This approach might involve the respondent acting as (a) a technology licenser or supplier of equipment and services; (b) a full-service developer that would design, finance, construct and operate the retrofitted Facility, and subsequently provide disposal services to municipalities and other entities; or (c) a hybrid option involving a negotiated allocation of roles. This approach would also need to provide for disposal of MSW delivered by Charter Municipalities during the transition period leading up to the completion of the retrofit process.

Development of an entirely new facility on a new site, if completed by April 2018, would avoid the need to provide for disposal of MSW delivered by Charter Municipalities during the transition period. The MRC would consider a wide range of roles in a new facility, from acting as the owner and developer to being merely a representative of the suppliers of MSW.

Note that the MRC is in the process of investigating and securing alternative sites that would be suitable and appropriate for such development on an economic basis. More information on potential alternative sites will be provided at the pre-proposal briefing session.

Ownership, financing and business terms

The MRC is open to arrangements involving ownership of the new facilities either by the responding vendor or by the MRC. Similarly, the MRC is flexible regarding proposed sources of financing for the new facilities, provided that the proposal is supported with an acceptable guarantee structure and approach to risk allocation.

The MRC is open to arrangements involving long-term waste disposal agreements that would serve as security for financing. Generally, the MRC would prefer arrangements that accommodate a range of delivery quantities. If delivery guarantees would be required, the MRC prefers arrangements that minimize the risk of shortfall penalties, and that do not provide economic disincentives to implement waste reduction and recycling programs. Finally, the MRC would prefer arrangements that avoid reliance on deliveries of out-of-state MSW in order to meet economic objectives.

4.0 Instructions for Respondents

4.1 The Response Process

Responses to this RFEI will be accepted until **2:00 p.m. on Thursday, August 15, 2013**, at the MRC offices at 395 State Street, Ellsworth, Maine. Responses will be logged, but will not be opened publicly. All Responses must be provided in accordance with the instructions for respondents as described herein.

A briefing session regarding this RFEI will be held on **Thursday, July 25, at 10:00 a.m**. at the PERC Facility administration building, 29 Industrial Way (off State Route 15), Orrington, Maine. The briefing sessions will be followed by a tour of the PERC Facility. Although attendance at the briefing is not mandatory, all potential respondents to this RFEI are advised to attend. Potential attendees of the briefing are encouraged to advise the MRC of their interest in advance of the day of the briefing by contacting the MRC Executive Director, Greg Lounder, as follows:

Greg Lounder, Executive Director, MRC
395 State Street, Ellsworth, Maine 04605
Tel.: (207) 664-1700
Email: glounder@ mrcmaine.org

Questions regarding this RFEI will be answered orally at the briefing session. Questions can also be submitted in writing or by email to the MRC. Questions will be answered in writing by email with copies to entities that have attended the briefing session or that otherwise indicated interest in providing a response. Changes that are made to the RFEI will also be distributed be email. Answers to submitted questions and changes to the RFEI will be posted on the MRC website at www.mrcmaine.org.

The MRC reserves the right to cancel this RFP at any time and to reject in whole or in part any and all Responses if the MRC determines in its sole discretion that cancellation or rejection serves the best interests of the MRC. The MRC will assume no liability whatsoever for any costs of preparation or submittal of the Response, or for other costs associated with interactions with the MRC.

4.2 Contents of the Responses

Respondents shall submit a total of five (5) hard versions of the Response (one signed original and four copies), each clipped and/or bound separately, and one electronic version of the

response on a USB memory stick. To facilitate review, please use a minimum of 12-point font for the text of the Response, paginate each page of the Response and include a descriptive header or footer identifying the respondent and proposal section. For the hard copies, respondents are encouraged to submit written text utilizing both sides of each page and on paper with recyclable content. For the electronic version, respondents are encouraged to provide files in Microsoft Word or pdf format that are less than 5 MB in size to facilitate email sharing among the evaluation team.

Respondents are advised that all Responses, once opened, are considered public information.

The contents of the Response shall include the following components:

1. Transmittal Letter
2. Technology Description
3. Technology Experience and Reference Facility
4. Approach to Facility Development
5. Respondent Qualifications and Experience

The form of Transmittal Letter, which is available in Microsoft Word format, is provided as Attachment A. Respondents are encouraged to use this Transmittal Letter as the cover letter for their Responses. The Transmittal Letter can be provided on the Respondent's letterhead with appropriate insertions in the blank spaces as indicated, and with the italicized instructions removed.

The technology description section shall provide basic descriptive information on the design, performance and operation of the facilities or equipment that would be developed or installed. The description shall address

- Technology type, with discussion of how the process would work, process flow diagrams and equipment to be installed.
- Size of a typical unit in terms of daily processing capacity (in tons per day of incoming material) and tons per year (with reference to a typical annual capacity factor). Include a general discussion of the unit's ability to operate at less than full capacity.
- The sources, nature and composition of the incoming MSW or other feedstocks that would be processed, as well as anticipated materials that might comprise acceptable and unacceptable waste. If the proposed facility would accept anything other than mixed MSW in the form currently accepted at the existing Facility, then the respondent is requested to address measures to be taken to change how MSW is collected, and the methods for managing any components of MSW that would no longer be collected.

- Products to be produced, with discussion of product markets, potential purchasers, product quality standards and requirements, and potential product value.
- Quantities and composition of residuals materials and any special handling requirements.
- Sources and composition of air emissions or wastewater discharges and any special pollution control equipment or other handling requirements.
- Statement of whether the concept would involve retrofit of the existing Facility or development of a new facility on a different site. If applicable, discuss preliminary concepts for incorporating the proposed technology by retrofitting the Facility.

Respondents are requested to identify the basis for ownership or access to the technology being described. Such basis might include patent or other intellectual property protection; licenses or other agreements to market, develop or otherwise provide services regarding the technology from the primary owner or supplier; or comparable basis.

The technology experience section shall identify one or more reference facilities that serve as the basis for the proposed concept in the Response. Respondents are requested to provide at least one completed Reference Facility Summary Information Sheet to provide the basis for the Response. Respondents are encouraged to submit information on additional reference facilities and on the performance of the technology through its development as helpful to understand the basis for projected design and performance.

The section on the approach to facility development shall address the respondent's preferred approaches to facility design, permit acquisition, financing, construction, operation, maintenance, sale of products and management of residuals. Respondents are requested to address the expected roles and responsibilities of the MRC during all phases of the proposed re-development. Respondents are further requested to provide specific concepts on the sources of debt and equity financing that might be required both for the development period and for construction. Information on financial capability should be supported with financial statements, letters of interest from potential investors, and other appropriate documentation to support the case that the project proposed in the Response can achieve financing.

Respondents shall also provide information on their qualifications and experience. Respondents are requested to provide resumes for key individuals and firms on the respondent's project team, as well as descriptions of the role of both the responding entity and the key individuals related to the reference projects and other project situations relevant to the Response.

5.0 Response Review Process

The Responses will undergo an initial review by the MRC staff and consulting team with support from a subcommittee of the MRC Board of Directors. The initial review will focus on the whether the Response addresses the concerns set forth in Sections 3.0 and 4.0 of this RFEI in a matter that is complete, credible, internally consistent, and well-supported. The information provided on the design and performance of reference facilities, and of the applicability of the respondent's qualifications and experience as a basis for the MRC's circumstances, will be critical to the evaluation. The review will also address whether the MRC is comfortable with the proposed concepts for the allocation of risks and responsibilities for the project development. Finally, the reviewers will address the organization, clarity, responsiveness and completeness of the Response as an indication of management's capability to implement what has been presented.

As part of the review, the MRC reserves the right to issue written questions requests to the respondents for clarification and additional information; to speak with references; to request interviews with the respondent's project development team; and to visit reference facilities.

Respondents meeting the minimum requirements and submitting the most attractive proposals will be selected either for the opportunity to submit a detailed proposal or for conduct of direct negotiations regarding the re-development of the Facility. The MRC aims to complete this level of review in time for discussion and vote of the MRC Board of Directors at its scheduled quarterly meeting on October 23, 2013. The MRC would then proceed with further procurement and negotiation as appropriate.

Ultimately, any decision on extending solid waste agreements would require ratification by the Charter Municipalities. The MRC was successful in securing votes of the legislative bodies of the Charter Municipalities in order to provide authorization for the extension of the waste disposal agreements in 1998 at the time of the previous re-financing of the Facility's outstanding bonds. That effort was completed over a nine-month period that spanned the conduct of spring town meetings. To achieve a target date for commercial operation of the re-developed Facility by April 1, 2018, the MRC anticipates that such authorization for extension of waste disposal agreements would need to be in place no later than the end of 2015.

Appendixes

A The Charter Municipalities
B 2011 Maine Residential Waste Characterization Study
C Information on the Facility

Attachments

A Form of Transmittal Letter
B Reference Facility Summary Information Sheet

Ensuring affordable, long term, environmentally sound disposal of MSW

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Request for Expressions of Interest
Appendix A

Charter Municipalities and Reference GATs
Revised Effective January 1, 2013

Charter Municipality	Reference GAT
Abbot *	150
Albion	1,000
Alton	340
Atkinson	110
Baileyville (Alexander, Crawford, Talmadge, Grand Lake Stream, Topsfield, Baring, Waite)	1,350
Bancroft *	25
Bangor	30,500
Bar Harbor	4,850
Belfast *	900
Blue Hill/ Surry (Brooksville, Brooklin, Sedgwick)	3,985
Boothbay Reg.(Boothbay, Boothbay Harbor, Edgecomb, Southport)	4,500
Bowerbank *	34
Bradley	500
Brewer	6,373
Brooks	375
Brownville	650
Bucksport	1,850
Burnham	500
Carmel	1,050
Castine *	270
Central Penobscot (Bradford, Charleston, Corinth)	2,825
Cherryfield * (Deblois, Beddington)	549
Chester *	400
China	1,764
Clifton	400
Clinton (Benton)	2,350
Cranberry Isle *	128
Dedham	375
Dixmont *	147
Dover-Foxcroft	2,200
Drew Plantation *	17
East Millinocket *	800
Eddington	850
Edinburg *	38

Enfield	700
Etna *	450
Fairfield	3,500
Franklin *	260
Freedom *	248
Garland *	255
Glenburn	2,000
Gouldsboro	742
Greenbush	550
Guilford	1,200
Hampden	3,481
Hancock	400
Harrington *	400
Haynesville *	50
Hermon	3,500
Holden	1,095
Howland *	280
Hudson *	150
Jackson	150
Kenduskeag *	350
Knox *	350
LaGrange *	300
Lamoine	600
Lee	375
Levant	975
Lincoln	3,600
Lucerne	300
Machias * (Marshfield, Whitneyville ,Rouge Bluffs)	1,600
Macwahoc *	56
Mariaville	160
Mars Hill	800
Mattawamkeag	375
Maxfield *	45
Medford *	80
Medway *	700
Mid-Coast (Camden, Rockport, Lincolnville, Hope)	6,585
Mid-Maine (Corinna, Dexter, Exeter, St Albans)	4,150
Milbridge *	610
Milford	1,051
Millinocket	2,699
Milo	1,320
Monson	230
Montville *	139
Mt. Desert EMR Group (MtDesert, Tremont, Trenton, S. Harbor)	6,436
Newburgh	650
Northern Katahdin * (Moro Plt.,Merrill, Smyrna, Mt. Chase, Hersey, Dyer Brook, Patten, Crystal,Island Falls, Amity,New Limerick)	1,000

Oakfield *	200
Old Town	4,692
Orland	350
Orono	4,258
Otis	158
Palmyra	900
Parkman	200
Passadumkeag *	160
Penobscot *	550
Penobscot County	885
Piscataquis County (Orneville) *	171
Pleasant River SWD (Addison,Beals,Centerville, Columbia,Columbia Falls)	1,600
Plymouth	500
Reed Plantation	100
Rockland	5,200
Sangerville	600
Searsmont *	150
Searsport	605
Sebec *	170
Sherman * (Stacyville)	700
Sorrento *	65
Springfield *	165
Stetson	768
Steuben	609
Stockton Springs *	425
Stonington	1,000
Sullivan *	121
Swans Island *	150
Thomaston Group (Owls Head, Thomaston, S. Thomaston)	3,730
Thorndike	275
Tri-County * (Union, Appleton, Liberty, Washington, Palermo, Somerville)	1,450
Troy	220
Union River SWD (Amherst, Aurora, Great Pond, Osborn, Waltham)	400
Unity	800
Vassalboro	1,440
Veazie	798
Verona	300
Waldoboro Group (Cushing, Friendship, Waldoboro)	3,363
Waterville (Oakland)	9,356
West Gardiner	800
Winn *	230
Winter Harbor *	110
Winslow	3,327
Winthrop	3,100
Wiscasset * (Alna, Westport)	1,999
	184,252

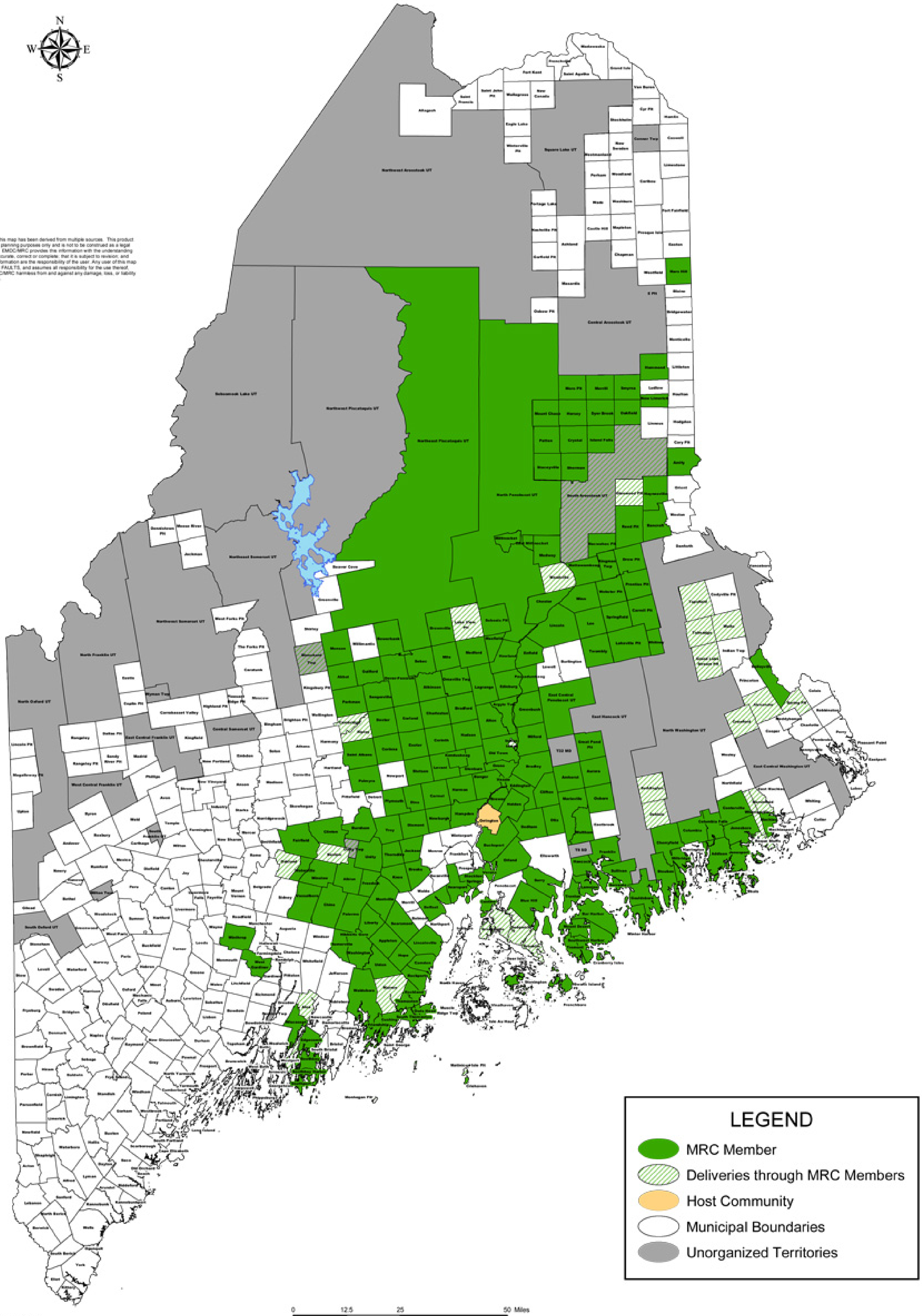
MUNICIPAL REVIEW COMMITTEE

Member Communities ~ 2007

Ensuring affordable, long term, environmentally sound disposal of MSW

MRC Municipal Review Committee, Inc.

The information used to create this map has been derived from multiple sources. This product as provided is for reference and planning purposes only and is not to be construed as a legal document or survey instrument. EMDC/MRC provides the information with the understanding that it is not guaranteed to be accurate, correct or complete; that it is subject to revision; and conclusions drawn from such information are the responsibility of the user. Any user of this map accepts same AS IS, WITH ALL FAULTS, and assumes all responsibility for the use thereof, and further agrees to hold EMDC/MRC harmless from and against any damage, loss, or liability arising from any use of this map.



Sources: MRC and MEGIS
Map revised: April, 2007

Prepared by Eastern Maine Development Corporation

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Appendix B

Characterization Study Performed on Maine Residential MSW in 2011

2011 Maine Residential Waste Characterization Study

School of Economics Staff Paper #601

by Professor George K. Criner and student Travis L. Blackmer
(contact information: george.criner@umit.maine.edu; 207-581-3154)

of the School of Economics

The University of Maine

Acknowledgments

The researchers would like to thank George MacDonald and Lana LaPlant-Ellis of the Maine State Planning Office for their generous cooperation with this project. We would also like to thank our trash sorting team, especially student project leader Spencer Hathaway, and fall sort leader Karl Chandler. We wish to thank David Silver for helping write the project grant, being liaison with the Maine Department of Environmental Protection, and providing valuable advice. We also acknowledge Greta Schroeder for her editorial assistance, as well as thank reviewers Jeff Jones, Manager of Transmission Services at Bangor Hydro Electric Co, and Ross Nason, Environmental Planner for Kennebec Valley Council of Governments. We are grateful for funding from the Maine State Planning Office, the College of Natural Sciences, Forestry and Agriculture, and the Maine Agricultural and Forest Experiment Station which made this study possible. The researchers would especially like to thank the following municipal programs, whose kind participation was vital for this study: Bath, Boothbay, Central Penobscot, ecomaine, Hatch Hill, Houlton, Lincoln, Lisbon Falls, Mid Maine, Ogunquit, Old Town, Orono, Paris-Norway, Pittsfield, Pleasant River, Scarborough, Skowhegan, and St. George.

Foreword

By George MacDonald, Maine State Planning Office Program Manager

Maine communities have been providing recycling programs for their residents since the early 1990's, and some have been providing them for longer than that. Municipalities and businesses are currently recycling 38.7% of their solid wastes, which is less than the State's 50% recycling goal.

The objective of the Waste Characterization Study was to observe and quantify the impacts of a variety of municipal recycling program styles. By identifying which recyclable materials and products are still being thrown away by Maine residents, we can discover aspects of our solid waste programs that are working well, and those that need improvement.

The municipal solid wastes examined in this study are typical of what would be found in a thirty-gallon plastic trash bag. Larger, "bulky" items, such as furniture, electronics, appliances and corrugated cardboard boxes were not usually found, nor were they expected to be.

The State Planning Office Waste Management & Recycling Program wishes to thank: the municipalities and their staff for assisting with this study, Professor George Criner and Travis Blackmer for undertaking the study, and the members of the two "sorting teams" for their diligence in completing the study.

Background

The handling of waste has changed through the generations as our knowledge, technology, and economic well-being has improved. As a necessary consequence of the production and consumption of food, consumer goods, and other products, our current society generates a substantial volume of material. Most of this material is ultimately discarded and requires collection, re-use or recycling, or disposal.

This report summarizes and discusses the results of two 2011 waste sorts conducted on Maine residential waste, and makes comparisons with previous research. In the discussion of the various waste components, comments on ease of recycling or composting are included. We hope that this report will be useful for state and municipal officials as they design recycling and disposal systems that balance environmental and economic concerns.

Procedure

Municipality Selection

Seventeen municipal waste programs, representing a wide range of community size, geographic location, and solid waste program type, were selected to participate in this study. Table 1 lists the seventeen municipal programs with the approximate population served and county location of each.

This sample represents twelve of Maine's sixteen counties and approximately 11% of the state's total population. Most of the waste programs selected provide service to an individual town or city. Some, however, represent more than one municipality. In these cases, we have listed the facility and municipality in which the facility is located. The population service size ranged from Ogunquit with 892 to Hatch Hill (Augusta region) with 41,326. Waste from the University of Maine was sampled for demonstration purposes, but was not considered when performing statistical analysis.

Table 1. Municipality, service population, and county.

Municipality, facility	Approximate 2010 Service Population	County
Bath	8,514	Sagadahoc
Boothbay	3,120	Lincoln
Central Penobscot (Dexter area)	6,531	Penobscot
Hatch Hill (Augusta region)	41,326	Kennebec
Houlton	6,123	Aroostook
Lincoln	5,085	Penobscot
Lisbon Falls	9,009	Androscoggin
Mid Maine (Corinth region)	9,306	Penobscot
Ogunquit	892	York
Old Town	7,840	Penobscot
Orono	10,362	Penobscot
Paris-Norway	10,197	Oxford
Pittsfield	4,215	Somerset
Pleasant River (Columbia Falls)	1,072	Washington
Scarborough (ecomaine[1])	18,919	Cumberland
Skowhegan	8,589	Somerset
St. George (Tenants Harbor)	2,591	Knox
Total	153,691	

Note: Numbers obtained from 2010 Census data.

Table 2 lists the solid waste management system characteristics of each of the municipalities sampled. Eight of the municipalities had full or partial curbside garbage collection, and eight also had curbside collection of recyclables. Some of the municipalities had PAYT (pay-as-you-throw) programs where residents pay for each bag they discard. Under these programs residents buy specially marked garbage bags, or tags to affix to the garbage bags at retail outlets or the town office.

Regarding recycling programs, "single stream" refers to residents placing all of their recyclable material in one bin rather than separating these recyclables by material (which is known as source separated). The single stream method is gaining proponents because it simplifies the work required by residents. It can also allow for economies in sorting, which is often done with mechanization at large centralized facilities. Three participating municipalities used single stream recyclable collection.

[1] The facility ecomaine is a regional nonprofit waste management company owned by Southern Maine communities. The facility is located in Portland, Maine and offers single stream recycling, Waste-to-Energy, and a landfill/ashfill site.

Table 2. Municipal solid waste system characteristics.

Municipality	Curbside Garbage Collection	Curbside Recyclable Collection	Single-Stream	Pay-as-you-throw (PAYT)	Mandatory Recycling Ordinance
Bath	Yes	Yes	Yes	Yes	Yes
Boothbay	Yes (Partial)	Yes (Partial)	No	No	Yes
Central Penobscot (Dexter area)	No	No	No	Yes	No
Hatch Hill (Augusta region)	Yes (Partial)	Yes (Partial)	No	No	No
Houlton	No	No	No	No	No
Lincoln	Yes (Partial)	No	No	No	Yes
Lisbon Falls	No	No	Yes	No	No
Mid Maine (Corinth region)	No	No	No	No	Yes
Ogunquit	Yes (Partial)	Yes (Partial)	No	No*	No
Old Town	Yes	Yes	No	No	No
Orono	Yes	Yes	No	No	Yes
Paris-Norway	No	No	No	No	Yes
Pittsfield	No	Yes	No	No	Yes
Pleasant River (Columbia Falls)	No	No	No	Yes	No
Scarborough (at ecomaine)	Yes	Yes	Yes	No	Yes
Skowhegan	No	No	No	No	Yes
St. George (Tenants Harbor)	No	No	No	No	No

*One free bag a day then $1.00 per bag beyond that.

Waste Sample Selection

The waste sample selection process was designed to ensure as much random selection as possible, while matching the collection system used by each municipality. At facilities where residents dropped off their garbage, the project team requested that every n^{th} individual include their trash in the sample. The number between individuals sampled (n) was determined by the expected amount of total trash that would be dropped off that day, as predicted by the site's facility manager. In municipalities where trash was collected curbside, an attempt was made to select from multiple neighborhoods, and again, trash from every n^{th} household was collected. Usually this was from residencies at least five houses apart. In total, ten tons of trash were collected and sorted.

A more detailed discussion of the waste sorting procedure is available upon request.

Sort Dates

The waste sorts were conducted in two seasons (summer and fall) to allow for seasonal variation. The summer sort began August 8 and ran through September 10. The fall sort began October 14 and ran through November 14. Although not part of the municipal sort, the University of Maine waste

was sampled for demonstration purposes on November 17, 2011. The following table shows the dates in which the sorts were completed for each municipality.

Table 3. Municipality and sort dates.

Municipality	Sort 1, Summer	Sort 2, Fall
Bath	8/27/2011	11/2/2011
Boothbay	8/12/2011	11/1/2011
Central Penobscot (Corinth region)	8/15/2011	10/21/2011
Hatch Hill (Augusta region)	8/21/2011	11/10/2011
Houlton	9/10/2011	11/14/2011
Lincoln	9/5/2011	10/29/2011
Lisbon Falls	9/3/2011	11/3/2011
Mid Maine (Dexter region)	8/14/2011	10/17/2011
Ogunquit	8/29/2011	11/4/2011
Old Town	8/13/2011	10/20/2011
Orono	8/8,9/2011	10/14/2011
Paris-Norway	8/26/2011	11/8/2011
Pittsfield	8/22/2011	10/18/2011
Pleasant River (Columbia Falls)	8/23/2011	10/26/2011
Scarborough (at ecomaine)	8/28/2011	11/9/2011
Skowhegan	9/9/2011	10/25/2011
St. George (Tenants Harbor)	9/1/2011	10/24/2011
University of Maine	N/A	11/17/2011

Waste Composition

The waste examined in this study is typical of what would be found in a regular thirty-gallon plastic trash bag and does not include larger "bulky" items such as furniture, appliances, car tires, and corrugated cardboard boxes. This non-bulky waste stream is often referred to as "baggable trash".

The project team sorted the baggable trash into nine major categories and over sixty subcategories. These classifications correspond to those used by other states in recent waste characterization studies, allowing for possible comparisons. As is the convention with waste management studies, all measurements were made by weight.

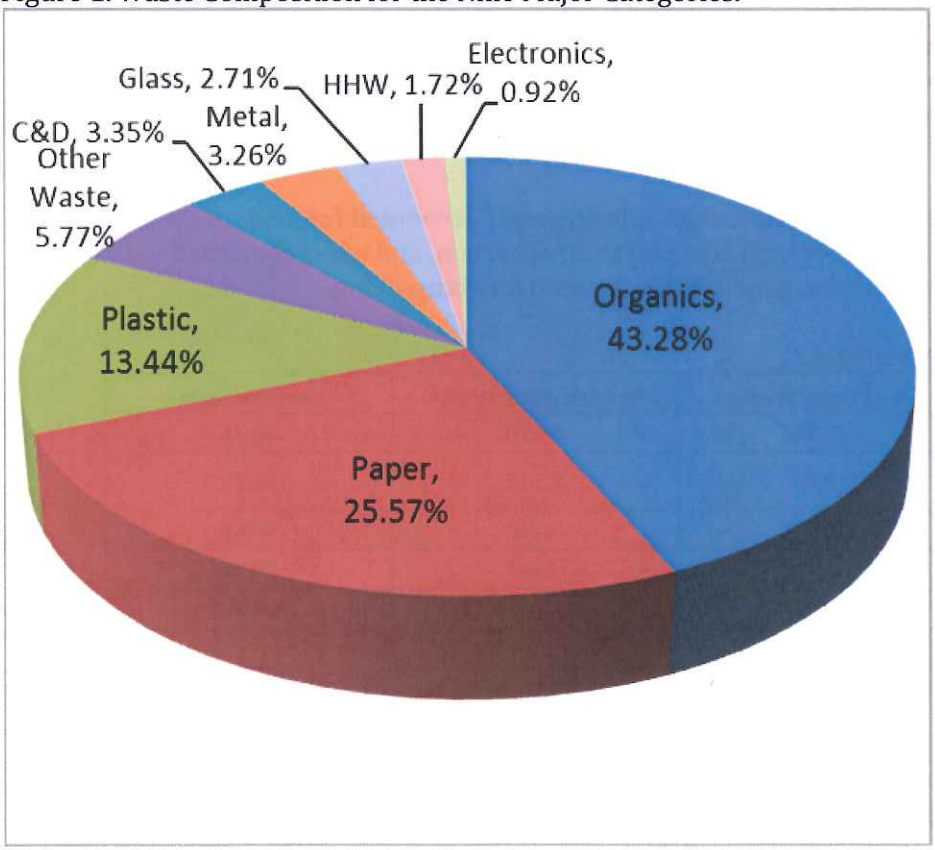
Table 4 below shows the percent of all waste sampled for the nine major waste categories. The largest component was Organics with 43.28%, and the smallest component was Electronics with 0.92%. Figure 1 below shows these percentages. Next, we will discuss each category, from the largest component to the smallest.

Table 4. Waste Composition for the Nine Major Categories.

Major Category	Category %
Organics	43.28
Paper	25.57
Plastic	13.44
Other Waste	5.77
Construction and Demolition Debris (C&D)	3.35
Metal	3.26
Glass	2.71
Household Hazardous Waste (HHZ)	1.72
Electronics	0.92

Note: See Appendix A for a complete category breakdown.

Figure 1. Waste Composition for the Nine Major Categories.



Organics

The phrase "organic" has different meanings depending on usage. From a chemistry standpoint, "organic" technically includes all carbon-based materials such as food, paper, leaves and grass, and even plastics, as plastics are made from and contain hydrocarbons. However, following the convention of others, our Organics category includes only the subcategories: Food Waste, Diapers, Leaves & Grass, Prunings & Trimmings, and Other Organics. Paper and plastic materials comprise their own categories. Table 5 contains a brief description of the five Organics subcategories.

Table 5. Organic waste subcategories and description.

Subcategory	Description
Food Waste	Material resulting from the storage, preparation, and consumption of food. Discarded meat scraps, dairy products, eggshells, coffee grounds, and fruit or vegetable peels.
Other Organics	Organic material that cannot be classified in any other category. Feces-soiled cat litter, cork, hemp rope, cigarette butts, sawdust, bath and body products.
Diapers	All diapers.
Leaves & Grass	All plant material except woody plant material. Fresh grass clippings, leaves, and small plants.
Prunings & Trimmings	All woody plant material up to four inches in diameter. Plant and tree prunings and small branches.

As shown in Table 6, food waste made up 27.78% of the total waste sampled. Food waste, which is nitrogen-rich and highly compostable, is sometimes referred to as a "green waste".

The other four Organics subcategories accounted for 15.42% of the total waste stream. The two largest of these subcategories were Other Organics, comprised mainly of cat litter and animal feces, and Diapers. For health and sanitation reasons these materials are not included in composting programs.

The Leaves & Grass and Prunings & Trimmings subcategories accounted for 1.5% of the trash sampled. This waste has a relatively high concentration of carbon, and when combined with food waste yields a carbon-nitrogen ratio generally well-suited for composting.

Table 6. Organic waste percentages.

Sub-Category	% of Total Waste	% of Organic Waste	Cumulative %
Food	27.86	64.38	64.38
Remainder/Composite Organic	10.97	25.35	89.73
Diapers	2.97	6.86	96.58
Leaves & Grass	1.16	2.68	99.26
Prunings & Trimmings	0.32	0.74	100.00

Paper

Paper accounted for just over a quarter of the total waste collected. Paper was sorted into nine subcategories, as described in Table 7.

Table 7. Paper waste subcategories and description.

Subcategory	Description
Compostable Paper	Contaminated food containers or low-grade paper not capable of being recycled. Paper towels, paper plates, waxed paper, and tissues.
Other Recyclable	"Mixed Paper" including manila folders and envelopes, index cards, notebook paper, construction paper, cereal boxes, paperboard glossy containers, and coated cardboard.
Remainder/ Composite Paper	Items made mostly of paper but combined with other materials. Plastic-coated cardboard, polycoated cartons, frozen juice containers, fast-food wrappers, carbon paper, photographs, and books.
Magazines/Catalogs	Items made from glossy coated paper. Magazines, catalogs, brochures, and pamphlets.
Newsprint	Uncoated ground wood paper, mainly in the form of printed newspapers.
High Grade Office	Standard paper free of ground wood fibers. Office paper, envelopes, computer paper, stationary-grade paper.
Uncoated Corrugated Cardboard/Kraft Paper	Boxes and paper bags made from Kraft paper and uncoated corrugated cardboard. Paper towels, grocery bags, fast food bags, cardboard containers, computer packaging cartons.
Phone Books & Directories	Thin paper between coated covers. Yellow Pages, real estate listings, and some non-glossy mail order catalogs.
Offshore Cardboard	Similar to uncoated corrugated cardboard, but lighter in color with a yellow tint.

As shown in Table 8, the two largest paper subcategories were Compostable Paper and Other Recyclable. Together, these subcategories accounted for just over half of the paper waste. Trash sorters observed that paper towels and plates made up the greatest volume of compostable paper, reporting that it was not unusual to receive a garbage bag with over half of its volume consisting solely of these two items. Remainder/Composite Paper, the third largest subcategory, includes items that cannot be easily diverted from the normal waste stream due to their heterogeneity and complexity (i.e. two materials fused together). Examples include foil-covered paperboard and wax-coated paper.

Table 8. Paper waste percentages.

Subcategory	% of Total Waste	% of Paper Waste	Cumulative %
Compostable Paper	7.93	31.02	31.02
Other Recyclable	4.90	19.15	50.17
Remainder/Composite Paper	4.08	15.95	66.12
Magazines/Catalogs	2.88	11.25	77.37
Newsprint	2.43	9.51	86.88
High Grade Office	1.64	6.41	93.29
Uncoated Corrugated Cardboard/Kraft Paper	1.61	6.29	99.58
Phone Books & Directories	0.11	0.42	100.00
Offshore Cardboard	0.00	0.00	100.00
Total Paper	25.57	100.00	

Plastic

Items made of plastic accounted for 13.44% of the total waste stream. Plastic was sorted into eleven subcategories, as listed and described in Table 9.

Table 9. Plastic waste subcategories and description.

Subcategory	Description
All Plastic Film	Contains both food-soiled and non food-soiled film. Also includes shrink wrap, bubble wrap, garbage bags, small plastic bags, and metalized film.
Remainder/Composite Plastic	All plastic that does not fit into the other subcategories or items primarily composed of plastic but combined with other materials. Auto parts, plastic straws, vinyl, linoleum, plastic lids, CDs.
Durable Plastic Items	Items meant to last a few months to many years. Children's toys, furniture, mop buckets, sporting goods.
#3 - #7 Plastics	Items made of Polyvinyl Chloride, Polyethylene, Polypropylene, or non-expanded Polystyrene.
HDPE Bottles	Containers made of high-density polyethylene plastic (a cloudy white or solid-colored plastic). Includes milk jugs and bottles for shampoos and lotions.
Grocery/Merchandise Bags	Bags meant for transporting merchandise from place of purchase. Also includes dry-cleaning bags.
PET Containers (non-bottles)	All Polyethylene Terephthalate containers that are not meant to hold liquids. Mainly food storage units, including peanut butter jars.
Styrofoam	All expanded polystyrene.
PET Bottles	Clear or colored PET bottles used for liquids such as bottled water or salad dressing.
Redeemable Plastic Beverage Containers	Plastic beverage containers subject to Maine's bottle bill.
HDPE Containers (non-bottles)	Buckets and pails made of high density polyethylene plastic, not including mop buckets.

The most common Plastic subcategory was Plastic Film, which constituted over one-third of the plastic waste and nearly 5% of the total waste (see Table 10). While it is possible to recycle non-food plastic film, less than 5% of Maine municipalities currently offer this type of recycling. The second and third largest plastic subcategories were Remainder/Composite Plastic and Durable Plastic. Many durable plastics have the potential to be recycled, although recycling programs for these plastics are not generally available.

The remaining plastic subcategories accounted for roughly 5% of the total waste sampled. Many of these materials are recyclable. The combined amount of recyclable #1-#7 plastics and Styrofoam accounted for 4.74% of the waste stream. Only 0.36% of the waste stream was made up of plastic beverage containers redeemable under Maine's "bottle bill" legislation. A 2011 Container Recycling Institute publication reports that on average only 24% of bottles eligible for deposit are recycled in states without a bottle bill, while over two-thirds are recycled in states like Maine, where bottle bill legislation is long-established.[2]

[2] Container Recycling Institute. March 2011. "CRI Comments on Natural Logic's White Paper on EPR for Packaging."

Table 10. Plastic waste percentages.

Subcategory	% of Total Waste	% of Plastic Waste	Cumulative %
All Plastic Film	4.78	35.61	35.61
Remainder/Composite Plastic	1.68	12.50	48.12
Durable Plastic Items	1.41	10.48	58.59
#3 - #7 Plastics	1.38	10.25	68.85
HDPE Bottles	1.01	7.50	76.35
Grocery/Merchandise Bags	0.82	6.10	82.45
PET Containers (non-bottles)	0.71	5.31	87.76
Styrofoam	0.67	4.99	92.75
PET Bottles	0.47	3.50	96.25
Redeemable Plastic Beverage Containers	0.36	2.68	98.93
HDPE Containers (non-bottles)	0.14	1.07	35.61
Total Plastic	13.44	100.00	

Other Waste

Materials that could not be sorted into any other category were classified as "Other Waste". Other Waste accounted for 5.77% of the trash sampled. This category was separated into four subcategories, as described in Table 11.

Table 11. Other Waste subcategories and description.

Subcategory	Description
Textiles (non-carpet)	All items (excluding carpet) made of natural or synthetic textiles. Fabric, clothing, curtains, blankets, stuffed animals, and cotton q-tips.
Other Miscellaneous	Any type of waste not listed elsewhere, such as rubber or ceramic items.
Bottom Fines & Dirt	Homogenized granulated residue including dirt, sand, tiny bits of paper, and crumbs.
Bulky Items	Any large item not typical of baggable trash.

Table 12, below, shows percentages for the four Other Waste subcategories. Bottom fines and dirt accounted for less than one-half of a percent of the total waste stream. Only one bulky item was found; this was a suitcase weighing 7.8 pounds. The largest component of the Other Waste category was Textiles, which made up 4.26% of the total waste sampled. Many of the clothing items found were in wearable condition, and some in new condition. While some textile recycling programs exist, Maine municipalities may wish to increase their textile recycling options.

Table 12. Other Waste Percentages.

Subcategory	% of Total Waste	% of Other Waste	Cumulative %
Textiles (non-carpet)	4.26	73.86	73.86
Other Misc	1.01	17.50	91.36
Bottom Fines & Dirt	0.46	7.94	99.29
Bulky Items	0.04	0.71	100.00
Total	5.77	100.00	

Construction and Demolition

The total Construction and Demolition (C&D) waste comprised 3.35% of all waste sampled. In accordance with other studies, an initial seven C&D categories were utilized (as described in Table 13). For households, C&D waste is normally generated with home construction projects.

Table 13. Construction and Demolition waste subcategories and description.

Subcategory	Description
Wood	All treated or untreated wood. Does not include particle board, plywood, or yard waste.
Asphalt, Brick, & Concrete	Items made of asphalt, brick, or concrete. Includes pieces of building foundations, cinder blocks, and pavement.
Asphalt Roofing	Asphalt shingles and other attached roofing material such as roofing tar and tar paper.
Drywall/Gypsum Board	Broken or whole pieces of sheetrock, drywall, gypsum board, plasterboard, Gyproc, and wallboard.
Carpet	Flooring applications consisting of various natural or synthetic fibers bonded to a backing material.
Carpet Padding	Plastic, foam, felt, or other material used under carpet to provide insulation and padding.
Remainder/ Composite C&D	Construction and demolition debris that cannot be included in any other subcategory. Includes composite materials that would be hard to separate, such as linoleum glued to plywood.

Perhaps as a result of only collecting and sorting "baggable" waste, a large volume and variety of C&D was not found. In fact, asides from wood wastes, very few items were found that did not belong in the Wood or Remainder/Composite subcategories. To simplify and make weighing manageable, an "All Other C&D" subcategory was created to encompass all of the non-wood C&D waste. These condensed C&D waste percentages are shown in Table 14.

Table 14. Construction and Demolition waste percentages.

Subcategory	% of Total Waste	% of C&D Waste	Cumulative %
All other C & D	2.21	65.93	65.93
Wood	1.14	34.07	100.00
Total C&D Waste	3.35	100.00	

Metal

Metal accounted for 3.26% of the total waste stream. Metal items were sorted into eight subcategories, as listed and described in Table 15.

Table 15. Metal waste subcategories and description.

Subcategory	Description
Tin/Steel Containers	Magnetic metal containers, such as those used for soup, vegetable, and coffee cans, that are made mainly of steel but with a thin coating of tin on the inside.
Other Ferrous	Other magnetic metal items including clothes hangers, empty paint cans, metal pipes, nails, and some cookware.
Other Non-Ferrous	Nonmagnetic metal items including those made of stainless steel, copper, brass, bronze, and lead. Examples include copper wire, shell casings, and brass pipes.
Remainder/Composite Metal	Items made mostly of metal but combined with other materials such as motors, insulated wire, and food-soiled kitchen foil.
Redeemable Aluminum Beverage Containers	Aluminum containers, such as soda and beer cans, that are Maine deposit refundable.
Appliances	Small metal household appliances such as toasters.
Compressed Fuel Containers	Compressed fuel containers such as propane tanks.
Non-Redeemable Aluminum Beverage Containers	Aluminum containers that are not Maine deposit refundable, such as cans brought into Maine from out of state.

Tin/Steel Containers made up almost half of the metal waste sorted. Food-soiled aluminum foil, not deemed recyclable, was the largest component of the Remainder/Composite Metal subcategory. Redeemable Aluminum Beverage Containers, suitable for redemption under Maine's bottle bill, accounted for less than one-tenth of a percent of the total waste sample. Table 16 lists percentages for all metal subcategories.

Table 16. Metal waste percentages.

Subcategory	% of Total Waste	% of Metal Waste	Cumulative %
Tin/Steel Containers	1.45	44.38	44.38
Other Ferrous	0.93	28.58	72.96
Other Non-Ferrous	0.42	12.85	85.81
Remainder/Composite Metal	0.28	8.69	94.51
Redeemable Aluminum Beverage Containers	0.10	3.22	97.72
Appliances	0.04	1.28	99.01
Compressed Fuel Containers	0.03	0.87	99.87
Non-redeemable Aluminum Beverage Containers	0.004	0.13	100.00
Total Metal	3.26	100.00	

Glass

Glass accounted for 2.71% of the waste stream. Glass was sorted into six subcategories, which are described in Table 17.

Table 17. Glass waste subcategories and description.

Subcategory	Description
Clear Glass Containers	Includes all non-redeemable clear wine bottles and beverage containers, mayonnaise jars, salsa jars, and jelly/jam jars.
Redeemable Glass Beverage Containers	Any glass beverage container subject to Maine deposit law.
Green & Other Glass Containers	Green or other colored bottles including wine, beer, and nonalcoholic beverage containers.
Remainder/Composite Glass	Items made primarily of glass but combined with other materials. Examples include crystal tableware, mirrors, non-florescent light bulbs, car windshields, and curved glass.
Flat Glass (uncoated)	Uncoated, flat glass such as that used for windows, doors, and tabletops, and some auto glass (side windows).
Amber Glass Containers	Amber-colored containers not including alcoholic beverage containers.

The top two glass subcategories in Table 18, Clear Class Containers and Redeemable Glass Beverage Containers, are easily recyclable and accounted for 2.38% of the baggable trash sampled. Redeemable Glass Beverage Containers made up only 0.41% of the waste sampled.

Table 18. Glass waste percentages.

Subcategory	% of Total Waste	% of Glass Waste	Cumulative %
Clear Glass Containers	1.96	72.48	72.48
Redeemable Glass Beverage Containers	0.41	15.23	87.71
Green & Other Glass Containers	0.13	4.84	92.55
Remainder/Composite Glass	0.11	4.00	96.54
Flat Glass (uncoated)	0.07	2.69	99.24
Amber Glass Containers	0.02	0.76	100.00
Total Glass	2.71	100.00	

Household Hazardous

The Household Hazardous waste category includes unwanted residential products that exhibit one or more of the following qualities: flammable, corrosive, reactive, or toxic. [3]Household Hazardous waste accounted for 1.72% of the total trash sampled. Table 19 describes the seven subcategories used to classify the Household Hazardous waste.

[3] These are the same qualities that determine hazardous waste under Maine's hazardous waste rules.

Table 19. Household Hazardous waste subcategories and description.

Subcategory	Description
Other Hazardous Waste	All products characterized as "toxic", "flammable", or "corrosive". Also includes waste contaminated with bodily fluid and discarded needles.
Paint	Items containing oil-based, latex, or fine art paint. Does not include dried paint or empty paint cans.
Batteries	Household batteries such as AA, AAA, D, button cell, 9 volt, and rechargeable.
Vehicle & Equipment Fluids	Containers holding fluids, such as antifreeze or oil , that are used in vehicles or engines.
Empty Metal, Glass, & Plastic Containers	Empty containers that once held toxic or hazardous materials such as antifreeze, oil, or lye.
Pesticides & Fertilizers	Products used to control pests or enhance plant growth.
Ballasts, CFLs, & Other Fluorescents	Includes ballasts (devices that electrically control fluorescent light fixtures), compact fluorescent lamps, and other fluorescent lighting such as tubular lamps.

Other Hazardous Waste, the largest subcategory, consisted mainly of items contaminated with bodily fluids. Paint and batteries were also found in large amounts. Items in the Other Hazardous Waste, Paint, and Batteries subcategories accounted for over 81% of the hazardous waste found. Table 20 shows the percentages of all Household Hazardous waste subcategories.

Table 20. Household Hazardous waste (HHZ) percentages.

Subcategory	% of Total Waste	% of HHZ Waste	Cumulative %
Other Hazardous Waste	0.80	46.50	46.50
Paint	0.37	21.70	68.21
Batteries	0.23	13.39	81.59
Vehicle & Equipment Fluids	0.14	8.09	89.69
Empty Metal, Glass, Plastic Containers	0.10	5.54	95.23
Pesticides & Fertilizers	0.07	3.87	99.10
Ballasts, CFLs, & Other Fluorescents	0.02	0.90	100.00
Total Household Hazardous	1.72	100.00	

Electronics

The smallest of the nine major categories was Electronics, accounting for just 0.92% of waste stream. Electronics were sorted into four subcategories, which are listed and described in Table 21.

Table 21. Electronics waste subcategories and description.

Subcategory	Description
Small Consumer Electronics	Hand-held devices such as cellphones, iPODs, and PDAs.
Computer-Related Electronics	Personal computers and related equipment such as processors and keyboards. Does not include hand-held devices such as calculators.
Other Large Electronics	Larger electronic equipment not related to computers. Stereos, DVD players, VCRs.
TVs and Computer Monitors	Any stand-alone display system including CRT, plasma, and LCD units.

Small consumer electronics made up 73.66% of the Electronics category. No TVs or computer monitors were found, which was expected as these are bulkier items not typical of baggable trash. All electronics percentages can be found in Table 22.

Table 22. Electronics waste percentages.

Subcategory	% of Total Waste	% of Electronic Waste	Cumulative %
Small Consumer Electronics	0.67	73.66	73.66
Computer-Related Electronics	0.13	14.26	87.91
Other Large Electronics	0.11	12.09	100.00
TVs & Computer Monitors	0.00	0.00	100.00
Total Electronics	0.92	100.00	

Comparison to 1991/1992 Data

Prior to this analysis, no large-scale survey of Maine's residential waste had been conducted since 1991/1992. The previous study by Criner, Kaplan, Juric, and Houtman analyzed baggable trash collected at fourteen Maine municipalities in fall, winter, spring, and summer waste sorts. The following section compares data from these sorts with data from our current study in an attempt to identify the changes that have occurred to our waste stream over time. Appendix A and Appendix B contain tables of both waste sorts data.

Some waste components cannot be directly compared between 1991/1992 and 2011, as the studies used slightly different trash classification systems. A note of caution is also needed in regard to comparing changes in composition percentages. Percentages of all subcategories must always sum to 100, so an increase or decrease in the weight of one subcategory will alter the percentages of all other subcategories. However, as percentage comparisons should provide some useful information on changes in the composition of our baggable trash, several materials are discussed below.

Selected Comparisons

Paper

The total amount of paper in Maine's residential waste stream decreased considerably, from 33.04% in 1991/1992 to 25.57% in 2011. Percentages of all comparable paper types also decreased, as shown in Table 23.

Table 23. Comparable paper types percentages, 1991/1992 and 2011.

Type of Paper	1991/1992 % of Total Waste Stream	2011 % of Total Waste Steam
Corrugated cardboard	2.92	1.61
High grade office	3.04	1.64
Magazines/ catalogs	2.92	2.88
Newsprint	9.88	2.43
Telephone books	0.19	0.11
Total of all paper	33.04	25.57

Note: The paper types listed above do not sum to total, as not all paper subcategories are included.

The greatest decrease was in the Newsprint subcategory, which made up 9.88% of waste sampled in 1991/1992 but just 2.48% of the 2011 waste. There were also decreases (by roughly one-half each) in amounts of high grade office paper, corrugated cardboard, and telephone books. Improved recycling programs have no doubt contributed to these decreases, but another factor is the overall movement away from printed media (e.g. more people are reading the newspaper online).

Plastic

In the last two decades, the percentage of plastic in Maine's residential waste stream has more than doubled. Many plastic types cannot be directly compared between the studies, as four subcategories were used to classify plastic in 1991/1992 and eleven were used in 2011. However, Table 24 presents the comparisons that are possible.

Table 24. Comparable plastic types percentages, 1991/1992 and 2011.

Type of Plastic	1991/1992 % of Total Waste Stream	2011 % of Total Waste Stream
Plastic bags	1.59	0.82
All HDPE	1.23	1.15
Rigid plastics	1.12	2.92
Total of all plastic	6.69	13.44

Note: The plastic types listed above do not sum to total, as not all plastic subcategories are included.

Between 1991/1992 and 2011 there was an increase by almost two percentage points in the amount of rigid plastics (which here includes the 2011 subcategories #3-#7 Plastics, PET Bottles, PET Containers, and Redeemable Plastic Beverage Containers) in the total waste sampled. There were decreases, however, in percentages of HDPE plastics and plastic bags.

The overall increase in plastics in baggable trash supports the perception that more and more items are being made from, or wrapped in, plastics. Plastic film, which was included in the 1991/1992 Other Plastic subcategory, has since become the principal plastic component of the waste stream. In 2011, plastic film accounted for 35.61% of all plastic waste and nearly 5% of the total trash sorted.

Metal

The percentage of metal was similar in both studies at 3.29% of the waste stream in 1991/1992 and 3.26% of the waste stream in 2011. However, percentages of various metal subcategories changed (see Table 25). There was a decrease in the percentage of tin/steel containers, but an increase in the percentage of other ferrous and non-ferrous metals. The percentage of aluminum also decreased substantially, although at 0.39% in 1991/1992 and 0.10% in 2011, it was not a significant portion of the waste stream in either sort.

Table 25. Comparable metal types percentages, 1991/1992 and 2011.

Type of Metal	1991/1992 % of Total Waste Stream	2011 % of Total Waste Stream
Tin/steel containers	2.28	1.45
Ferrous	0.55	0.93
Non-ferrous	0.07	0.42
Aluminum	0.39	0.10
Total of all metal	3.29	3.26

Note: The metal types listed above do not sum to total, as not all metal subcategories are included.

Food Waste

Food waste accounted for 27.81% of the sampled baggable trash in 1991/1992 and 27.86% in 2011, remaining essentially unchanged between the two studies. However, food has surpassed paper as the largest major component of the residential waste stream. This change may be the result of the considerable increases in paper recycling since the mid-1990s.

Glass

The percentage of glass in the residential waste stream decreased from 4.06% in 1991/1992 to 2.71% in 2011. A significant reduction can be seen in the Clear Glass Containers subcategory, which accounted for 3.39% of the trash sampled in 1991/1992 and only 1.96% in 2011. This may be due not only to the increased availability of glass recycling but also the general shift away from using glass containers towards using plastic.

Other Waste

Some materials, such as textiles, made up similar percentages of the residential waste stream in 1991/1992 and 2011. Textiles accounted for 4.24% of the trash sorted in 1991/1992 and 4.26% of the trash sorted in 2011. The percentages of hazardous materials in the residential waste stream also did not change significantly. At 1.32% in 1991/1992 and 1.72% in 2011, they stayed within the 1-2% expected range for baggable waste.

Cat litter, the primary component of the Cat Litter/ Pet Bedding subcategory in 1991/1992, and the Other Organics subcategory in 2011, was a noticeable component of the waste stream in both trash sorts. While a perfect comparison between the two studies is not possible, the amount of cat litter in our baggable trash seems to have increased as Cat Litter/ Pet Bedding accounted for 3.86% of the waste stream in 1991/1992, and Other Organics accounted for 10.97% in 2011. Although cat litter

has the potential to be composted, care must be taken as it can contain certain bacteria and parasites harmful to humans, particularly pregnant women.

Variation in Recyclable Material

State policy makers, local solid waste managers, and those with environmental concerns would like to know what potential exists for removing more recyclables from the residential waste stream. They would also like to evaluate the effectiveness of different waste management programs such as single-stream recycling and pay-as-you-throw initiatives. To begin this assessment, the variation in the amount of recyclable materials found in municipal waste streams is examined.

We chose two materials, Clear Glass Containers and Newsprint, to begin this analysis. These were selected because the vast majority of Maine residents know that these materials can be recycled and almost all Maine municipalities have some recycling program for them. To explore the variation of these materials, the summer and fall sort data were averaged for each of the seventeen municipalities. In an effort to eliminate accidental extreme data points and make an easy comparison by thirds, municipalities with the highest and lowest percentages were removed from the analysis. The remaining fifteen municipalities could then be organized into low, medium, and high groups of five municipalities each.

Figure 2 illustrates variation in the percentage of Clear Glass Containers in the municipalities' baggable trash. Averages for the low, middle, and high groups are provided. The difference between the low (1.50%) and high (2.48%) averages shows that some municipalities could be recycling more Clear Glass Containers.

Figure 2. Clear Glass Containers Low, Mid, High Averages.

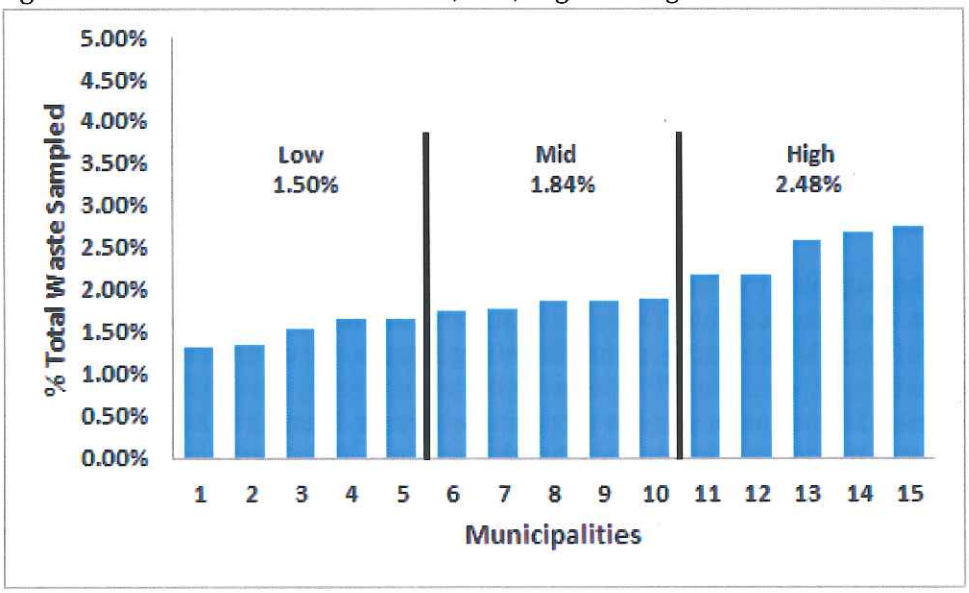
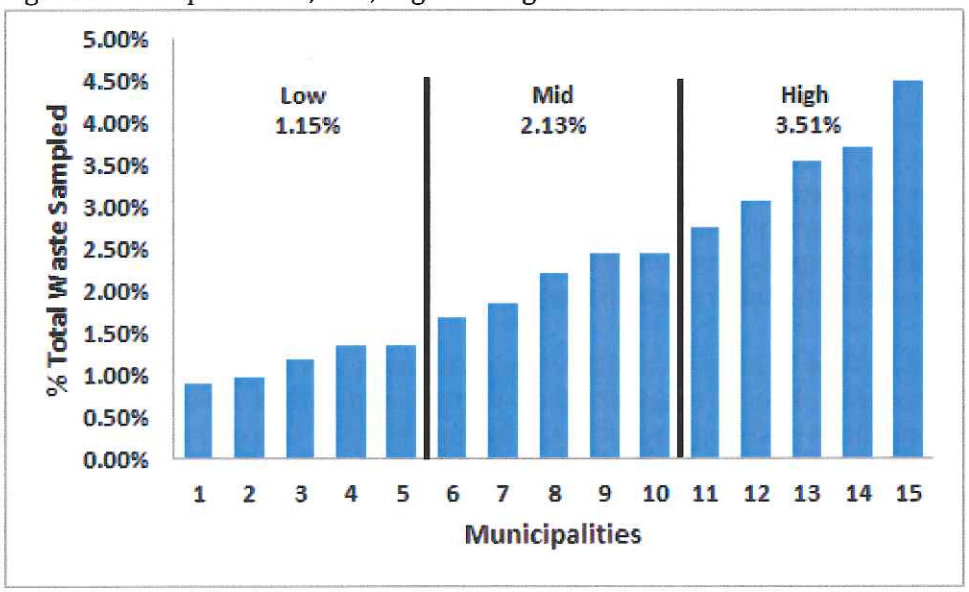


Figure 3 presents a similar graph, illustrating variation in the percentage of Newsprint in the municipalities' baggable trash. Differences between the high, middle, and low averages are greater for this material, with Newsprint comprising 3.51% of the waste stream of the high group, and only 1.15% of the waste stream of the low group.

Figure 3. Newsprint Low, Mid, High Averages.



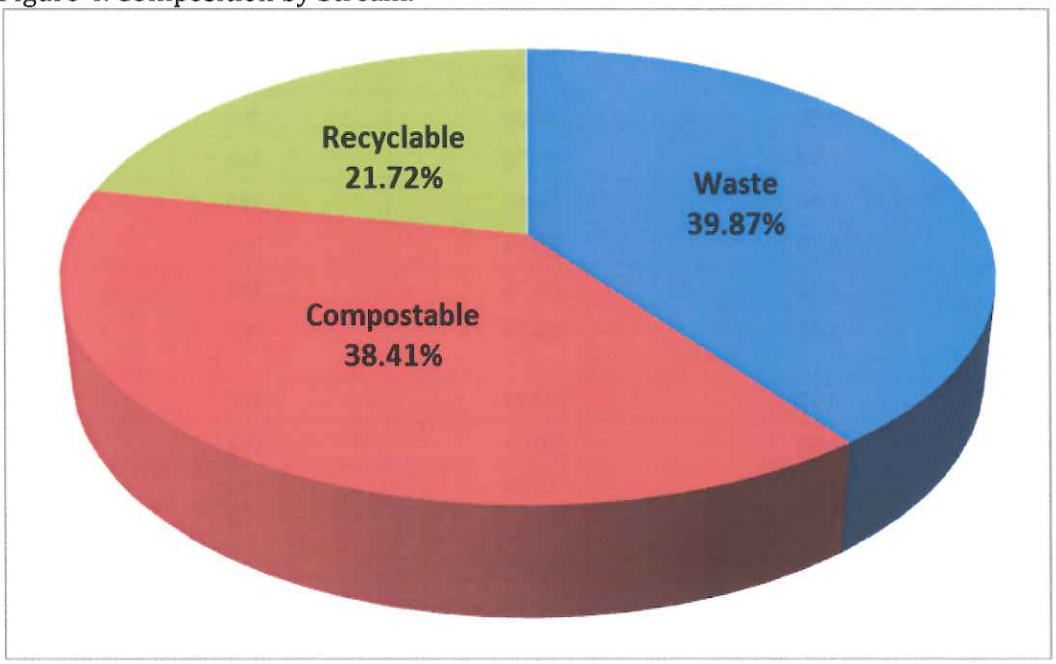
Many factors likely contribute to these variations, including program design (such as pay-as-you-throw and single stream recycling), community involvement and municipal commitment. A preliminary study of the waste/recycling municipal programs supports this conclusion: program design and management appears to make a difference in recycling. Future reports will analyze these factors more closely. However, the variation in the presence of recyclable materials in the waste stream shown above demonstrates the potential for underperforming municipalities to improve their recycling efforts.

Analysis and Discussion

With an eye towards fruitful analysis and the most productive use of these data, we will examine this study's results in two different ways. Doing so may provide additional insights and accompanying recommendations for municipal waste managers.

The first way we analyze the baggable trash sampled in this study is by classifying it into three streams: Waste, Recyclable, and Compostable. These three streams are not exclusive, but are helpful in determining how much of what Maine residents are throwing away could be diverted to better uses. For discussion purposes only, we define "Waste" as materials not easily diverted from the waste stream through current Maine composting or recycling programs. Please see Appendix C for complete details of the waste stream classification used in this analysis. The waste sampled in this study had a roughly 40-40-20 breakdown between Waste materials, Compostable materials, and Recyclable materials, as shown in Figure 4.

Figure 4. Composition by Stream.



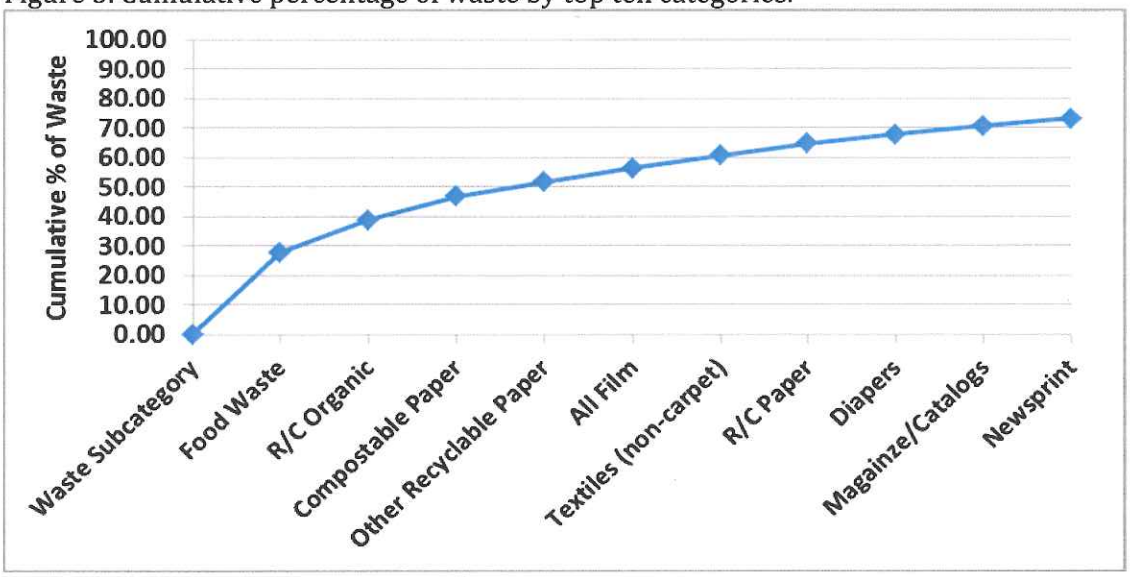
Waste comprised 39.87% of the trash sampled. Efforts could be made to reduce much of this waste at its source by encouraging the use of recyclable materials and/or the use of more reusable items (e.g. refillable razors). The potential also exists for several materials in this category, such as textiles and grocery bags, to be recycled at much higher rates in the future if better recycling programs for these materials can be developed. Compostable materials, at 38.41%, comprised nearly as much of the trash as Waste. Food waste and compostable paper comprised 93.2% of the Compostable stream. Creating municipal or regional composting programs and increasing awareness about backyard composting could greatly reduce the cost of disposing of solid waste in the State of Maine. Recyclable materials comprised just over 20% of the waste sampled. This category contains desirable materials that should be diverted from the normal waste stream to more economical uses. As shown in the previous section, some municipalities could greatly improve their capture of these materials. While Maine communities have been providing recycling programs to residents since the early 1990's, and recycling initiatives have been increasing with time, municipalities and businesses are still recycling much less of their waste than the state's 50% recycling goal that was established by the Maine Congress in 1989. This deadline for this law has been extended each time it is not met.

A second method we use to examine the data relies on identifying the waste subcategories which make up the greatest part of the residential waste stream. The ten subcategories shown in Table 26 made up 73.05% of the waste sampled for this study. Figure 5 shows the cumulative volume of these ten categories.

Table 26. Top ten waste subcategories by percentage.

Waste Subcategory	Category %	Cumulative %	Potential to be Diverted
Food Waste	27.86	27.86	Yes
Other Organics	10.97	38.83	No
Compostable Paper	7.93	46.76	Yes
Other Recyclable Paper	4.90	51.66	Yes
All Plastic Film	4.78	56.44	Yes
Textiles (non-carpet)	4.26	60.70	Yes
Remainder/ Composite Paper	4.08	64.78	No
Diapers	2.97	67.75	No
Magazines/Catalogs	2.88	70.62	Yes
Newsprint	2.43	73.05	Yes

Figure 5. Cumulative percentage of waste by top ten categories.



The three largest components of the waste stream were food waste, other organics, and compostable paper. Food waste and compostable paper have a high potential to be diverted from the normal waste stream, while items in the other organics subcategory do not, as much of these contained fecal matter. Items in several of the other subcategories, such as other recyclable paper, magazines/catalogs, and newsprint, are easily recyclable. Textiles are potentially recyclable, but better textile recycling programs are in need of development. Remainder/composite paper is not currently recyclable, but technical methods may be developed to facilitate this. The majority of plastic film, however is contaminated with food, making it unfit for recycling.

Our knowledge about the recycling potential of each subcategory permits us to focus primarily on those subcategories which have a high potential to be diverted from the normal waste stream. Table 27 lists the ten largest subcategories with a high potential to be diverted, and their percentages of total waste. Together, these ten subcategories constituted over 60% of the baggable trash sampled.

Table 27. Top ten waste subcategories with the potential to be diverted.

Waste Subcategory	% of Total Waste	Cumulative %
Food Waste	27.86	27.86
Compostable Paper	7.93	35.79
Other Recyclable Paper	4.90	40.69
All Plastic Film	4.78	45.47
Textiles (non-carpet)	4.26	49.73
Magazines/Catalogs	2.88	52.61
Newsprint	2.43	55.04
Clear Glass Containers	1.96	57.00
High Grade Office Paper	1.64	58.64
Uncoated Corrugated Cardboard/Kraft Paper	1.61	60.25

Conclusion

This report summarizes the results of a state-wide analysis of Maine's baggable trash. It is our intention that the information provided will be useful in understanding and managing Maine's residential waste. By identifying what materials end up in household baggable trash, municipalities may identify both the areas of their waste management programs that are working effectively as well as those that need improvement. The observed decrease in paper and glass waste from the early 1990's to the present can be explained by the increased use of plastic in packaging and product manufacturing. The composition of plastics and their respective recycling requirements have accordingly become more complex as new types of plastic have been developed.

Importantly, this analysis shows that 38% of current trash has the potential to be composted. Significant revenue loss also appears to occur in the improper disposal of recyclable materials, which make up 21% of the current residential waste stream. Though recycling rates have increased from 32.5% in 1993 to nearly 39% in 2010, vast improvements can still be made, as recycling rates have been stagnant in more recent years. Efforts to increase awareness about composting and recycling, as well as efforts to improve municipal recycling programs, should continue. We anticipate these efforts to be most effective when directed at products from the subcategories shown in Table 27.

Maine has the potential to accomplish its goal of reducing waste through increased recycling, which would lower costs to municipalities and prolong the life of landfills. The research done for this study can provide direction to efforts to improve statewide waste management.

Limitations and Future Research

While this research reports changes since earlier waste studies, more research is needed to assess the impact of particular management programs such as pay-as-you-throw, single stream recycling, mandatory recycling laws, and the availability of curbside pickup. A 1993-1994 Maine study by Seguino *et al.* found that pay-as-you-throw programs reduced per capita residential waste disposal by more than one-half. In this 2011 study, we would accordingly expect to find lower percentages of recyclable material in the trash of municipalities with pay-as-you-throw programs. Similarly, as single-stream systems make recycling easier, we would expect to find less recyclable material in the

household waste of communities where these programs exist. Unfortunately our efforts to sample waste from larger municipalities with pay-as-you-throw and single-stream recycling were not successful.

Another analysis that may be of interest in the future is a comparison of the weight (as opposed to percentage) changes of waste composition. As stated above, examining percentage changes in waste components distorts perceived improvements, since a change in the amount of any one component necessarily changes the percentages of all other components (since percentages must sum to 100). For many of the municipalities sampled, we know the number of houses involved as well as total waste weight. This information would allow us to compare pounds of waste per household in order to determine if average pounds per household vary depending on which waste management programs are in use (e.g. single stream recycling, pay-as-you-throw).

Examining the effectiveness of mandatory recycling ordinances is also a potential area of interest. The waste sorters involved in this study reported substantial anecdotal evidence that mandatory ordinances are not enforced thoroughly and may therefore have little to no actual impact on recycling rates. Finally, while this study examined baggable residential waste, future studies might also include household bulky waste, as well as industrial and commercial waste.

Appendix A. 2011 Waste Composition

Major Category	Subcategory	% of Waste	% of Major Category
Organics		43.28	
	Food	27.86	64.38
	R/C Organic	10.97	25.35
	Diapers	2.97	6.86
	Yard Waste	1.48	3.42
Paper		25.57	
	Compostable Paper	7.93	31.02
	Other Recyclable Paper	4.90	19.15
	R/C Paper	4.08	15.95
	Magazine/Catalogs	2.88	11.25
	Newsprint	2.43	9.51
	High Grade Office Paper	1.64	6.41
	Occ/Kraft	1.61	6.29
	Phone Books	0.11	0.43
Plastic		13.44	
	All Film	4.78	35.61
	All Other Plastic	3.76	27.97
	#3 - #7 Plastics	1.38	10.25
	PETE (#1)	1.18	8.81
	HDPE (#2)	1.15	8.58
	Grocery/Merch Bags	0.82	6.10
	Plastic ME Dep. Bev Cont.	0.36	2.68
Other Waste		5.77	
	Textiles (non-carpet)	4.26	73.86
	Other Waste	1.51	26.14
C&D		3.35	
Metal		3.26	
	Other Metal	1.71	52.40
	Tin/Steel Cont.	1.45	44.38
	Al. ME Dep. Bev Cont.	0.10	3.22
Glass		2.71	
	Clear Glass Cont.	1.96	72.48
	Glass ME Dep. Bev Cont.	0.41	15.23
	Amber & Green Glass	0.15	5.60
	All Other Glass	0.18	6.69
HHW		1.72	
Electronics		0.92	

Appendix B. 1991/1992 Waste Composition

Major Category	Subcategory	% of Waste	% of Major Category
Other		52.91	
	Food Waste	27.81	52.56
	Composites	4.74	8.96
	Textiles	4.24	8.01
	Cat Litter/ Pet Bedding	3.86	7.3
	Diapers	3.78	7.14
	Miscellaneous	3.15	5.95
	Household Demolition Debris	2.14	4.04
	Household Hazardous	1.32	2.49
	Deposit Containers	0.67	1.27
	Cosmetic/Toiletries	0.61	1.15
	Furniture/Carpeting	0.46	0.87
	Batteries	0.13	0.25
Paper		33.04	
	Other	14.09	42.64
	Newspaper	9.88	29.91
	Highgrade	3.04	9.22
	Magazines	2.92	8.84
	Corrugated Cardboard	2.92	8.83
	Telephone Books	0.19	0.56
Plastic		6.69	
	Other	2.75	41.07
	Bags	1.59	23.81
	HDPE	1.23	18.41
	Rigid	1.12	16.71
Glass		4.06	
	Clear	3.39	83.46
	Other	0.5	12.26
	Green/Brown	0.17	4.28
Metal		3.29	
	Tin/Steel Cans	2.28	69.43
	Ferrous	0.55	16.72
	Aluminum	0.39	11.76
	Nonferrous	0.07	2.09

Appendix C. Waste Stream Classification

Paper	Stream	Metal	Stream
High Grade Office Paper	R	Non-Redeemable Aluminum Beverage Containers	R
Magazines/Catalogs	R	Redeemable Aluminum Beverage Containers	R
Newsprint	R	Tin/ Steel Containers	R
Offshore Cardboard	R	Appliances	W
Other Recyclable Paper	R	Compressed Fuel Containers	W
Phone Books & Directories	R	Other Ferrous	W
Uncoated Corrugated Cardboard/ Kraft Paper	R	Other Non-ferrous	W
Compostable Paper	C	Remainder/ Composite Metal	W
Remainder/ Composite Paper	W	**Glass**	
Plastic		Amber Glass Containers	R
#3-#7 Plastics	R	Clear Glass Containers	R
HDPE Bottles	R	Green & Other Glass Containers	R
HDPE Containers (non-bottles)	R	Redeemable Glass Beverage Containers	R
PET Bottles	R	Flat Glass (uncoated)	W
PET Containers (non-bottles)	R	Remainder/ Composite Glass	W
Redeemable Plastic Beverage Containers	R	**Organic**	
Styrofoam	W	Food Waste	C
All Plastic Film	W	Leaves & Grass	C
Durable Plastic Items	W	Prunings & Trimmings	C
Grocery/ Merchandise Bags	W	Diapers	W
Remainder/ Composite Plastic	W	Other Organics	W
Household Hazardous		**Electronics**	
Ballasts, CFLs, & Other Fluorescents	W	Computer-Related Electronics	W
Batteries	W	Other Large Electronics	W
Empty Metal, Glass, Plastic Containers	W	Small Computer Electronics	W
Other Hazardous Waste	W	TVs & Computer Monitors	W
Paint	W	**Other Waste**	
Pesticides & Fertilizers	W	Bottom Fines & Dirt	W
Vehicle & Equipment Fluids	W	Bulky Items	W
Construction & Demolition		Other Miscellaneous	W
Wood	C	Textiles (non-carpet)	W
Remainder/ Composite C&D	W		

*R=Recyclable, C=Compostable, W=Waste.

Appendix D. Waste Sorting Procedure

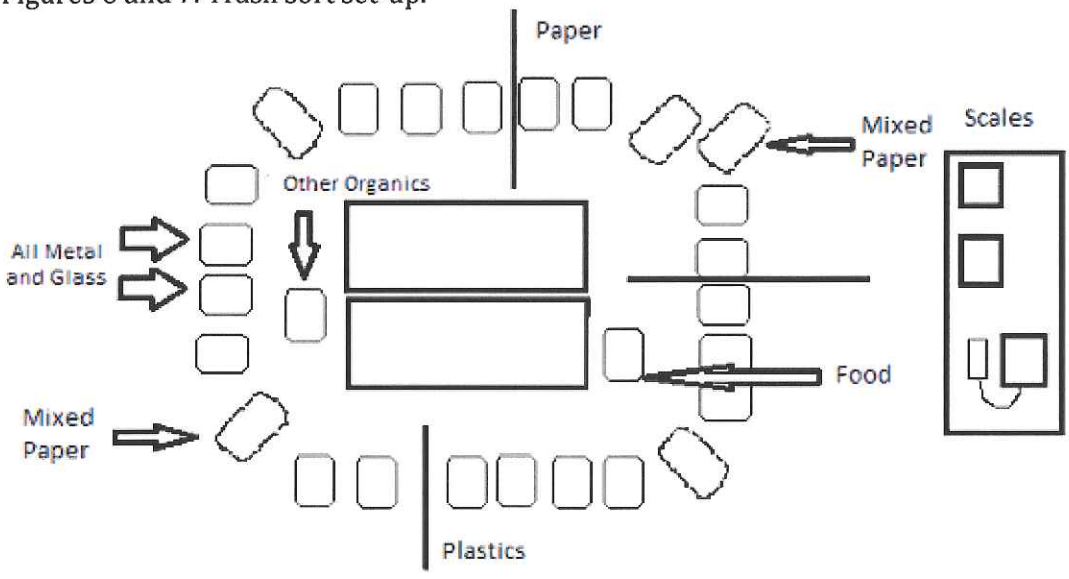
The waste sorting procedure was based on previous studies conducted by the University of Maine and the State of Connecticut. Figures 6 and 7 show the basic trash sort set-up. The project team used two 2'x5' tables covered by an 8'x12' tarp as a sorting surface. Surrounding this were approximately thirty Sterilite storage bins in two sizes, large and small. At one end of the sorting area was a weighing station with three scales. One scale was calibrated for the weight of the large bins, one was calibrated for the weight of the small bins, and one was electronic and used for loose items or for weights that did not register on the other two scales. To protect the sorting are from sun, wind, and rain, a pop-up tent, windscreen, and extra tarps were used at outdoor facilities as needed.

Collecting the sample varied by location. At drop-off facilities, a field supervisor spoke to individuals whose waste was selected for the sample, making sure that this waste could be included in the study and that it qualified as Maine household garbage. In the few instances where individuals did not wish to have their trash sorted, the next individual's trash was chosen for analysis.

Once a trash sample was received, the project team unloaded it on the sorting tables and surveyed the contents for dangerous materials. They worked together to sort the waste into its more general components, then into specific subcategories. Most materials were sorted directly on the table and then placed in designated bins, but some were sorted in two stages. One example of this was mixed paper, which was found in extremely high volumes, and for glass, electronics, and metal which were found in extremely small volumes. It was inefficient to sort these materials directly into their final categories, so they were first grouped together and then resorted. After all of the sorted waste components were removed, the project team used squeegees to collect bottom fines and dirt from the table.

Once a bin was full with a specific subcategory of waste, a field supervisor checked to make sure all of its contents were appropriate. The bin was then brought to the weighing station where a manager weighed the contents, recorded that weight, and discarded the waste.

Figures 6 and 7. Trash sort set-up.



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Questions and complaints about discrimination in any area of the University should be directed to Karen Kemble, Esq., Director of Equal Opportunity, University of Maine, 5754 North Stevens Hall, Room101, Orono, ME 04469-5754, telephone (207) 581-1226, TTY (207) 581-9484 or to the Director of Equity and Diversity for the University of Maine System, who can be reached at telephone (207) 973-3372 or TTY (207) 973-3300, 16 Central Street, Bangor, Maine 04401. Inquiries or complaints about discrimination in employment or education may also be referred to the Maine Human Rights Commission. Inquiries or complaints about discrimination in employment may be referred to the U. S. Equal Employment Opportunity Commission.

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Ensuring affordable, long term, environmentally sound disposal of MSW

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207-667-2099 Fax
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Request for Expressions of Interest
Appendix C

Information on the Facility

Request for Expressions of Interest
Appendix C
Information on the RDF Production Equipment at the PERC Facility

The PERC Facility, which began commercial operations in 1988, converts incoming MSW into RDF with the use of primary and secondary shredders for size reduction, trommels and disk screens to remove glass and grit, and magnets to remove ferrous materials.

The PERC Facility has two identical, but separate, processing lines for converting incoming MSW to RDF. Each line is designed to process 50 tons per hour of MSW. The MSW is moved into floor-level pan conveyors that feed the process lines with either of two Prentice 410E-SM electric stationary loaders, each with an enclosed cab, 32-foot knuckle boom and a Rotobec 075 power clam bucket. The loaders also remove items from incoming MSW that might damage the processing lines (e.g., propane cylinders, engine blocks) or that require additional size reduction (e.g., mattresses). The latter are stored on the tip floor until processed on a batch basis by an outside contractor with a mobile Doppstadt DW3060 Buffalo single-shaft high-torque shredder, which shreds the materials for return to the process lines with other incoming MSW. Less than 0.1 percent of incoming MSW requires landfill disposal because it cannot be processed.

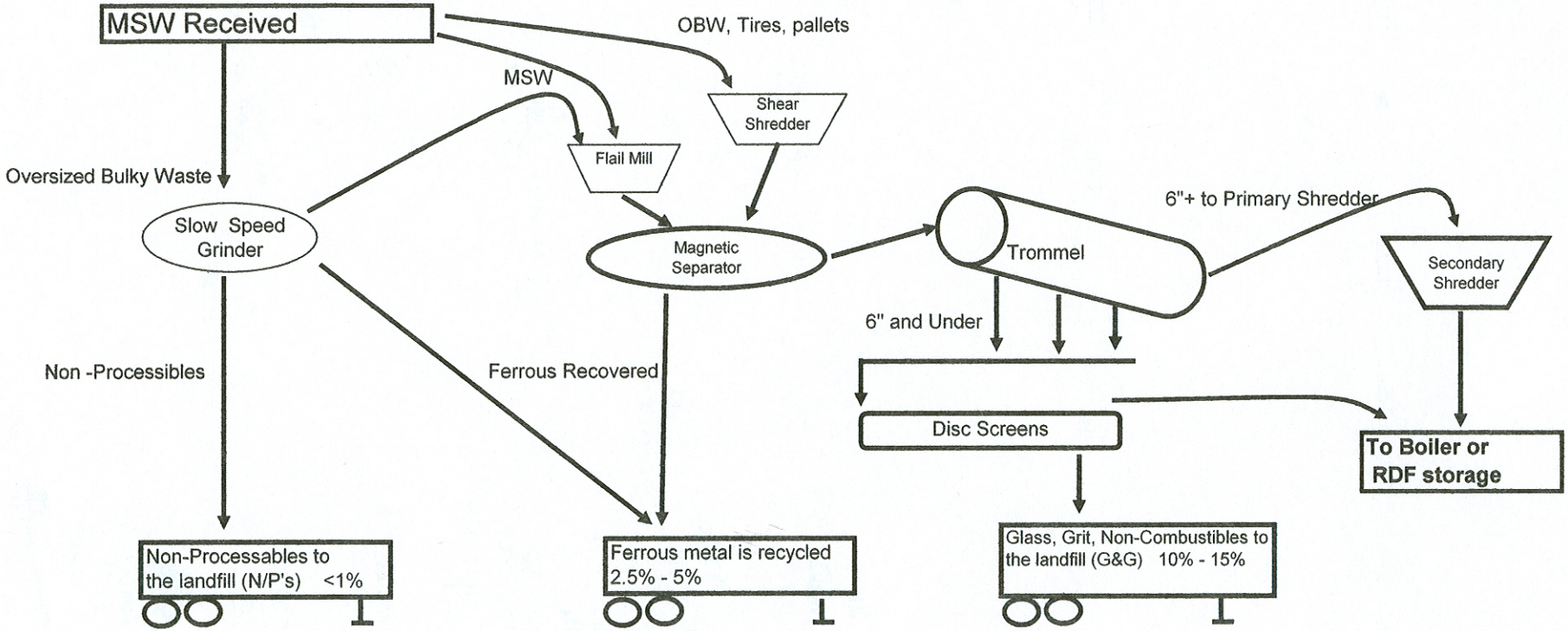
The primary shredders are modified horizontal flail mills with hammers, but no grates. These mills, which are enclosed in concrete explosion-proof bunkers with a pressure-relief roof, perform an initial shred on the MSW and open the bags. The shredded material then passes under belt magnets. The magnets remove approximately three percent of the incoming MSW for recycling as ferrous material. Some combustible materials and contaminants are also removed with the ferrous materials.

After recovery of the ferrous metals, the material passes through a Triple/S Dynamics, Inc., Model 9954 trommel that is 54 feet long with a 10-foot diameter. Each trommel has eight rows of screens, with 2.5-inch screens in Rows 1 and 8 and six-inch screens in Rows 2 through 7. Undersized (six-inch minus) material passes through the trommel screens and is conveyed to the disk screens. At the disk screens, horizontal disk wheels move the two-inch plus fraction of the material onto conveyors that lead to the boiler fuel conveyor system, while additional undersized (two-inch minus) material falls between the wheels and is conveyed to the glass and grit load-out area. Glass and grit removal rates vary from 10 percent to 24 percent over a year, with the removal rate dependent on the nature of the incoming materials; the level of wear on the disks; and the speed of the wheels (which is controlled by variable speed drives).

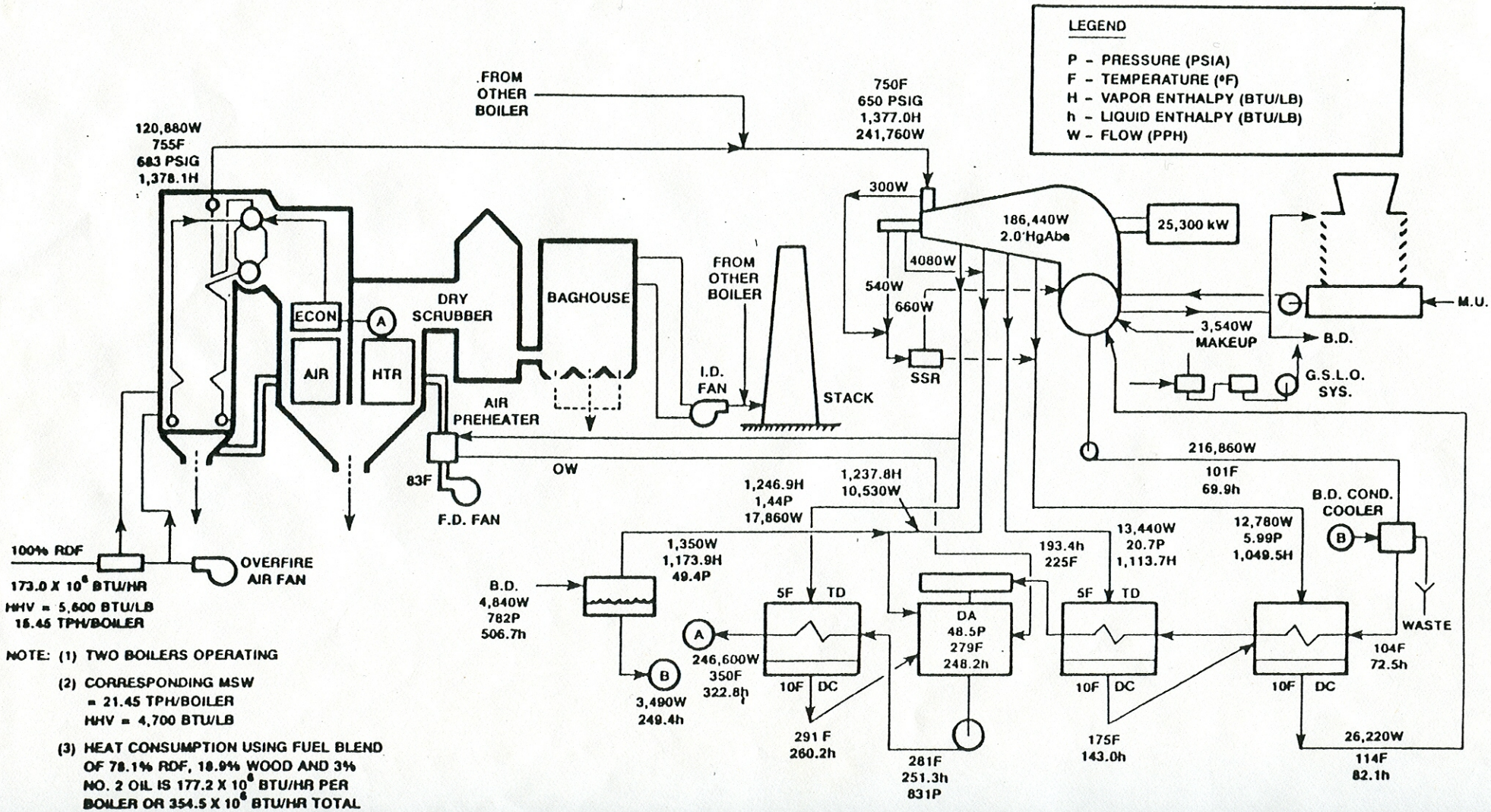
Oversized material from the trommel is conveyed to the secondary shredders, which are enclosed and modified horizontal flail mills with hammers that are similar to the primary shredders, but also have grates. Materials leaving the secondary shredder, which have been reduced to less than

six inches in size, are then moved to the conveyors that lead to the boiler fuel conveyor system. Through a series of conveyors, the RDF can either be fed directly to the boilers or can be routed to an RDF storage area. RDF can be returned from the storage area to the boilers via either of two different conveying systems.

PENOBSCOT ENERGY RECOVERY COMPANY
MSW PROCESSING - FLOW OF MATERIALS



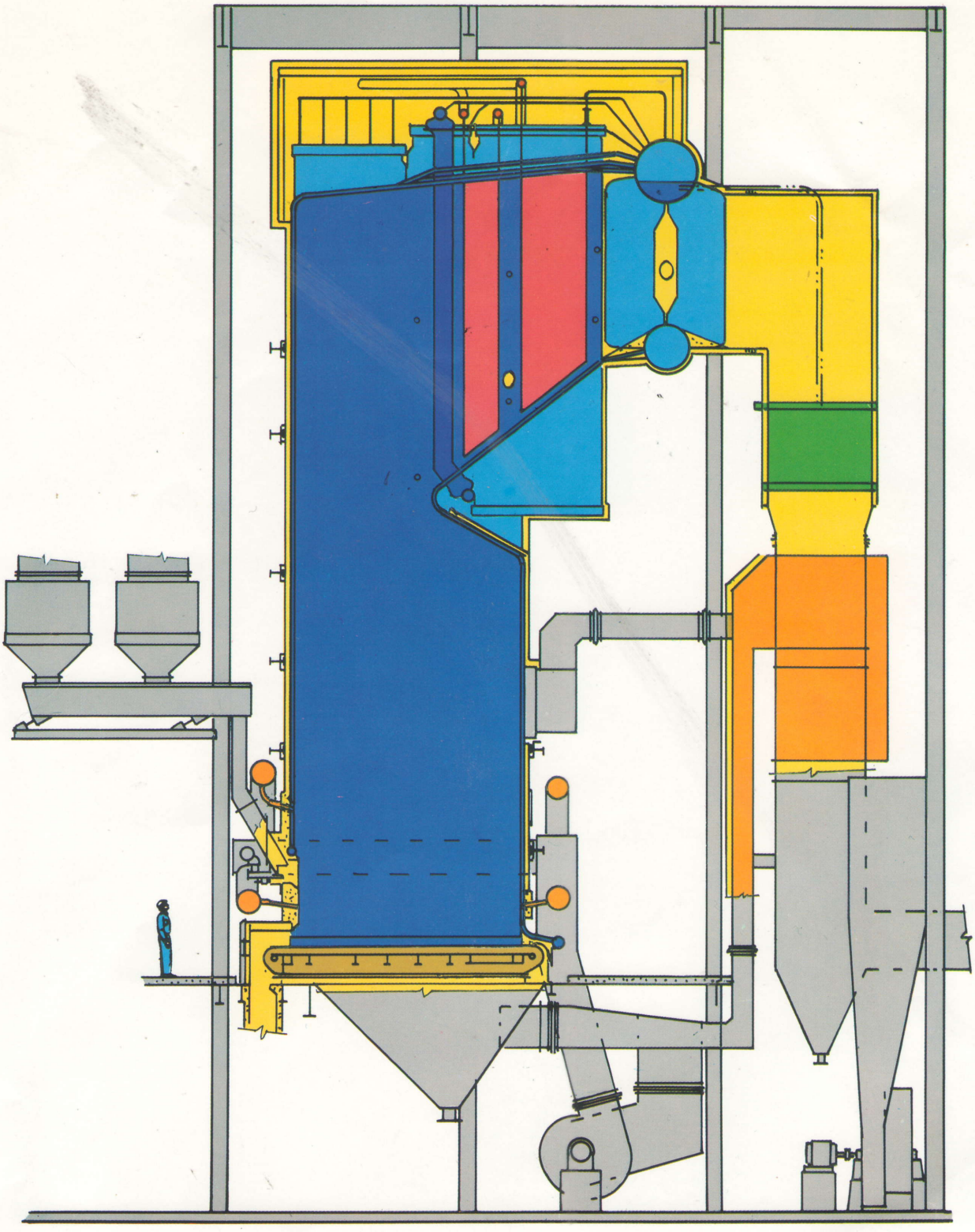
PERC
System Guarantee Point
(Steam Turbine-Generator Guarantee)



NOTE: (1) TWO BOILERS OPERATING

(2) CORRESPONDING MSW
= 21.45 TPH/BOILER
HHV = 4,700 BTU/LB

(3) HEAT CONSUMPTION USING FUEL BLEND OF 78.1% RDF, 18.9% WOOD AND 3% NO. 2 OIL IS 177.2 X 10^6 BTU/HR PER BOILER OR 354.5 X 10^6 BTU/HR TOTAL



PENOBSCOT ENERGY RECOVERY PROJECT
ORRINGTON, MAINE

Two 133,400 lbs/hr—720 psig operating—755°F
Riley Waste to Energy Units
Fired by Refuse Derived Fuel or in Combination with Wood or No. 2 Oil
118,000 lbs/hr when Fired by Wood alone
Developer: Kuhr Technologies, Inc. Turnkey Contractor: General Electric Company
RILEY STOKER CORPORATION WORCESTER, MASSACHUSETTS

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Attachment A
Transmittal Letter

The Transmittal Letter shall be printed on the letterhead of the respondent. Changes in the text of the Transmittal Letter submitted with the proposal from the version provided with this RFEI (other than the removal of italicized instructions) shall be red-lined to indicate the extent of the changes.

August 15, 2013

Greg Lounder, Executive Director
Municipal Review Committee, Inc.
395 State Street
Ellsworth, Maine 04605

RE: Response to MRC Request for Expressions of Interest

Dear Mr. Lounder:

We, _____*[insert name of respondent*] (Respondent), are pleased to submit this Response to the Request for Expressions of Interest (RFEI) issued by the Municipal Review Committee, Inc. (MRC) regarding re-development of a facility to manage municipal solid waste (MSW) from its member municipalities in central and eastern Maine. This Transmittal Letter conforms to the language and form of RFEI Attachment A in all respects, with the exception of additions and omissions that have been redlined to indicate the extent of the changes. We are providing five complete printed versions of the Response (one signed original and four copies), as well as one electronic copy of the Response on a USB memory stick.

As requested in the RFEI, we have included the following information in our Response, which in each case responds to the information requested in Section 4.2 of the RFEI:

1. A description of the design and performance of the proposed technology
2. A description of the experience with the technology, including a completed reference Facility Summary Information Sheet for at least one reference facility.
3. A description of the approach to facility development and associated business concepts and allocation of roles for the Respondent, the MRC and the Private Partners.
4. A description of the qualifications and experience of the Respondent.

We understand that this Response was prepared at our sole cost and expense. We will make no claims whatsoever against the MRC for reimbursement of the costs or expenses of the

acquisition or review of the RFEI, the preparation and submittal of our Response, or for reimbursement of costs or expenses for responses to subsequent requests for information, interviews, visits to reference facilities or other interactions requested by the MRC unless by mutual agreement. We understand and acknowledge that the MRC can reject or otherwise not respond to our Response.

We understand that the contents of our Response, once opened, will become public information and the property of the MRC. We certify that the MRC can rely on the information provided in our Response as true and accurate.

The primary contact for this Response shall be:

[insert name and contact information for a single individual from the respondent]

Thank you for your consideration.

Sincerely,

_____

[Sign and insert name and title of authorized representative of the Respondent]

Attachments

A Technical description
B Technology qualifications and experience
C Respondent qualification and experience
D Reference facility summary information sheet

Attachment B
Reference Facility Summary Information Sheet
Provide for each facility indicated in the RFEI as being a reference facility
Attach additional description and information as appropriate

1. Name of Respondent

2. Type of technology

3. Location of reference facility
   (city, state, country)

4. Contact information at reference facility

5. Type of facility _____ Bench test of technology/proof of concept

   _____ Pilot plant

   _____ Demonstration project

   _____ Commercial facility

6. Status/date of start of operation

   Now in operation? Yes No *(explain)*

7. Comparison to facility concept proposed for consideration by the MRC
   a. Feedstock: indicate whether the reference facility accepts and processes
      _____ Mixed MSW?
      _____ Mixed MSW after source-separation or removal of certain components?
      _____ Components of MSW source-separated or otherwise removed from mixed MSW?
      _____ C&D waste components?
      _____ Biosolids?
      _____ Other?

      Provide additional description to clarify the components removed or source-separated from MSW prior to acceptance at the reference facility, and any non-MSW waste streams accepted at the facility as referenced above.

   b. Scale of operation: provide the design capacity for processing incoming feedstock in

      Tons per day
      Tons per year

   c. Was the reference facility designed to meet U.S. codes and regulatory standards? Explain.

   d. Describe the products produced by the reference facility. Discuss the purchaser(s) of the products and the basis on which they are sold.

   e. Describe the air emissions, water discharges and residual solid waste materials generated by the reference facility. Does the reference facility comply with U.S. requirements for air emissions and water discharges? Are there any restrictions on the management of residual solid waste materials? Explain.

8. Indicate the role of the Respondent in the reference facility (check/describe all that apply).
   _____ Developer
   _____ Financier
   _____ Owner
   _____ Operator
   _____ Constructor
   _____ Licensee or agreement for the technology. Identify the technology licensor/provider.

   Describe past tasks performed and completed and continuing responsibilities in the role(s) indicated above.

Indicate which of the following materials regarding the reference facility are attached:

____ Pre-printed descriptive material

_____ Definition of Acceptable Waste or Unacceptable Waste

_____ Reviews by third-parties of the facility design or technology performance

_____ Site plans, general arrangement plans, aerial photos, artists' conceptions or equivalent

_____ Process flow diagrams, equipment lists or equivalent

_____ Mass balance, energy balance or other design basis for performance

_____ Data on actual quantities of material accepted and products and residuals produced

_____ Data on tip fees, operating costs and/or financial performance

_____ Other (describe)

APPENDIX G-1

PURCHASE OPTION (SITE A)

OPTION TO PURCHASE

Jay R. McLaughlin and **Ellen J. McLaughlin**, of Woodville, Maine (hereinafter collectively referred to as *Seller*), grant to **Municipal Review Committee, Inc.**, a Maine nonprofit corporation with a place of business in Ellsworth, Maine (hereinafter referred to as *Buyer*), an option to purchase, upon the terms and conditions set forth below, the real estate or any portion thereof, together with any improvements thereon and all easement and access rights thereto, including those described in conveyances to Seller and those exercised by Seller, located in **Argyle, Penobscot County, Maine** (hereinafter referred to as *the Property*) bounded and described in a) the deed from Richard C. Trott and David A. Woodhead, Trustees dated December 27, 2004 recorded in Book 9734, Page 51 of the Penobscot County Registry of Deeds (the "Triangular Parcel"), and b) the deed from Diamond Occidental Forest Inc. dated January 14, 1993 recorded in said Registry in Book 5253, Page 101, being Parcel I therein (the "DOFI Parcel"), the descriptions therein being incorporated herein by reference.

TERMS AND CONDITIONS:

1. Option Term. This Option shall be for an initial term of three (3) years from the date of this agreement. This option shall automatically renew, without the need for any further instrument, for two successive option terms of one year each, provided that within thirty (30) days after commencement of any such renewal term, Buyer shall pay to Seller an additional option consideration of [redacted] to be applied as provided herein.

2. Exercise of Option. Buyer shall exercise this option, if at all, at any time during the term of this Option, and any renewals thereof, by giving written notice delivered by certified mail or reputable overnight courier to Seller. Upon exercise of this option, the terms and provisions herein shall govern the purchase and sale of the Property.

3. Option Consideration. Buyer shall pay to Seller an initial option consideration of [redacted] of which is payable within five (5) business days after Seller's execution of this agreement and the balance of [redacted] is payable six (6) months from the date of Seller's execution of this agreement, provided this agreement has not previously been terminated by Buyer. Upon exercise of this option, the initial option consideration and any additional option consideration shall be deemed an earnest money deposit and applied toward the purchase price.

4. Restrictions during Option Term. During the term of this Option, and any renewals thereof, and prior to closing, Seller agrees not to sell the Property, offer to sell, mortgage, encumber, or otherwise transfer or dispose of, use or alter the Property, including the cutting of trees by or at the direction of Seller other than in accordance with any existing forest management plan pursuant to any existing tree growth taxation classification, without prior written consent of Buyer.

5. Inspection. Seller grants to Buyer, Buyer's duly authorized agents and employees, permittees and invitees, the right, during the term of this Option, and any renewals thereof, and prior to closing to enter upon the Property to conduct whatever tests and inspections of the Property that Buyer deems necessary. In the event the results of such tests and inspections are unsatisfactory to Buyer, Buyer may terminate this agreement as to the Property upon written notice to Seller, which written notice must be delivered to Seller not later than twenty (20) days prior to closing. Upon any such termination, all parties shall be released from their obligations hereunder.

UPON EXERCISE OF THIS OPTION, THIS AGREEMENT SHALL BE CONSIDERED A PURCHASE AND SALE AGREEMENT AND THE FOLLOWING PARAGRAPHS 1 - 6 SHALL APPLY TO CONVEYANCE OF THE PROPERTY.

1. Purchase Price. The total purchase price for the Property shall be based on the valuations of [redacted] per acre for the Triangular Parcel and [redacted] per acre for the DOFI Parcel. At any time during the term of this Option, Buyer may prepare a survey of the Property or GPS Data or an ARC View map with respect to the Property, in either case to determine the acreage of the Property. The costs and expenses with respect thereto shall be borne by Buyer and such Survey, GPS Data or ARC View map ("Acreage Calculation Method") shall be prepared by a reputable registered land surveyor or reputable forestry consulting firm selected by Buyer and reasonably acceptable to Seller, and the acreage of the Property for purposes of determining the Purchase Price shall be the acreage shown by such Acreage Calculation Method. After application of the option considerations/deposit, the remaining purchase price shall be paid to Seller with cash or by bank check or certified check at closing.

2. Deed. At the closing of the sale, Seller shall deliver to Buyer or Buyer's agent a duly executed and acknowledged quitclaim deed with covenant conveying to Buyer good and marketable title to the Property, free of all encumbrances except for easements and usual public utilities serving the Property otherwise acceptable to Buyer in Buyer's sole discretion and except for the reserved timber rights in favor of Seller set forth below.

3. Title Documents. Examination of the title shall be the responsibility of Buyer at Buyer's sole expense. Within thirty (30) days of the date of this agreement, Seller shall provide Buyer with copies of all existing title abstracts, title insurance policies or other title or survey information which Seller may have in Seller's possession. If Buyer finds title to the Property not to be good and marketable, then the closing shall be delayed for not more than thirty (30) days in order for Seller to cure the defect or defects. Notwithstanding the foregoing, Buyer acknowledges that the Triangular Parcel is currently encumbered by mineral rights reserved by International Paper Company and that Buyer shall be responsible for obtaining a release of such mineral rights, at Buyer's sole cost and expense. If such defect or defects cannot be removed by Seller (Seller having used reasonable efforts) or if Buyer is unable to obtain a release of such mineral rights, Buyer may, at Buyer's sole option, either (a) terminate this agreement, in which case all parties shall be released from their obligations hereunder or (b) accept such title as Seller can convey and consummate purchase of the Property in accordance with this agreement.

4. Possession and Reserved Rights. Exclusive possession of the Property shall be delivered to Buyer at the time of the delivery of said deed, subject to reserved timber rights in favor of Seller as follows.

At closing, Seller shall reserve the right to enter upon the Property, upon ten (10) days notice prior to any harvesting and removal operations, for a period of twenty (20) years from the date of closing, to harvest and remove merchantable and nonmerchantable timber in accordance with applicable laws, rules and regulations, in such a manner that will not result in the withdrawal of the Property from tree growth tax law classification, and in a manner that does not interfere with Buyer's proposed development and use of the Property. Stump heights of harvested stems shall not exceed six inches in height when practical. Any such entry and activities shall be at Seller's sole risk and expense and Seller shall hold Buyer harmless and indemnified against any loss, claims and damages arising from the same. Such reserved rights shall not be transferrable or assignable without prior approval of Buyer.

Upon request of Buyer at any time after closing, Seller agrees to harvest and remove, at no cost or expense to Buyer and within a reasonable time after any such request, all merchantable and nonmerchantable timber within an area designated by Buyer not to exceed fifty (50) acres. Stump heights of harvested stems shall not exceed six inches in height when practical unless Buyer requests Seller to remove stumps from the designated area; any such stump removal shall be at a price to be agreed upon by Seller and Buyer.

The rights and obligations herein shall be incorporated into an agreement between Seller and Buyer at closing on the foregoing terms and such other customary terms as Buyer and Seller agree, including but not limited to amounts and types of insurance coverages and condition of the Property upon completion of any harvesting activities.

5. Closing. The closing of the sale contemplated hereby shall take place at the offices of Eaton Peabody, Bangor, Maine, within forty five (45) days of Seller's receipt of notice of Buyer's exercise of the option as stated herein or such earlier date as specified by Buyer in its notice of exercise, unless delayed in accordance with the terms hereof.

6. Closing Adjustments. Real property taxes and any other assessments, utility charges or other charges levied against the Property shall be prorated as of the date of the closing. Real property taxes shall be prorated based on the fiscal year of the Town of Argyle. State of Maine transfer tax shall be shared equally by Buyer and Seller. Seller shall pay all charges for recording any documents necessary to remove encumbrances from record title to the Property.

7. Default. In the event Buyer fails to fulfill any of Buyer's obligations hereunder, this agreement shall, at the option of Seller, be terminated, and Buyer's said option considerations/deposit shall be retained by Seller as Seller's sole remedy. In the event Seller fails to fulfill any of Seller's obligations hereunder, then the option considerations/deposit shall be returned to Buyer and Buyer, at Buyer's option, may pursue its remedies at law or in equity, including but not limited to specific performance.

8. Notices. Any notice by either party to the other, as provided herein, shall be in writing and shall be effective if delivered by certified mail, return receipt requested, or by reputable overnight courier to the following address:

a. If to Seller, Jay R. and Ellen J. McLaughlin
Box 637
Medway, ME 04460

b. If to Buyer, c/o P. Andrew Hamilton, Esq.
Eaton Peabody P.A.
P.O. Box 1210
80 Exchange Street
Bangor, ME 04402-1210

9. General Provisions.

a. This agreement shall inure to the benefit of and be binding upon the parties hereto and their respective successors and assigns. Buyer may assign this agreement, provided that Buyer shall give written notice to Seller after such assignment of the name and address for any assignee.

b. This agreement constitutes the entire agreement between the parties, supersedes all prior negotiations and understandings between them, and shall not be altered or amended except by a written amendment signed by Seller and Buyer.

c. This agreement may be simultaneously executed in any number of counterparts, each of which when duly executed and delivered shall be an original; but such counterparts shall constitute but one and the same agreement. For purposes of this agreement, a facsimile signature shall be deemed an original.

d. Seller agrees that it shall keep the terms of this agreement and the transaction contemplated herein confidential, except as may be set forth in the Memorandum of Option contemplated below. Seller acknowledges and agrees that breach of this agreement could result in irreparable harm to Buyer and that money damages would not be a sufficient remedy for any breach of this agreement by Seller. In the event of any breach, Buyer shall be entitled to specific performance and injunctive relief as remedies for any such breach. Such remedies will not be deemed to be the exclusive remedies for a breach of this agreement by Seller but will be in addition to all other remedies available at law or in equity to Buyer. Seller's obligations under this provision shall survive closing.

e. The parties agree that this Option shall not be recorded. A Memorandum of this Option to Purchase may be prepared for recording for the purpose of giving notice to third persons of the existence of this agreement.

f. If any provision of this agreement is found to be invalid or unenforceable, such finding shall not affect the validity or enforceability of any other provision hereof.

g. This agreement shall be construed and enforced in accordance with and governed by the laws of the State of Maine.

h. For purposes of this agreement, the date of this agreement shall be the date Seller executes this agreement.

In witness whereof, the parties hereto have hereunto set their hands and seals as of the date set forth below.

Witness:

_____

_____

_____

Jay R. McLaughlin
Date: February 6, 2014

Ellen J. McLaughlin
Date: February 6, 2014

Municipal Review Committee, Inc.

By: _____
Its: Executive Director
Date: February 6, 2014

APPENDIX G-2

PURCHASE OPTION (SITE G)

OPTION TO PURCHASE

Herbert C. Haynes, Inc., a Maine corporation with a place of business in Winn, Maine (hereinafter referred to as *Seller*), grants to **Municipal Review Committee, Inc.**, a Maine nonprofit corporation with a place of business in Ellsworth, Maine (hereinafter referred to as *Buyer*), an option to purchase, upon the terms and conditions set forth below, the real estate, together with any improvements thereon and all easement and access rights thereto, including those described in conveyances to Seller and those exercised by Seller, located in **Greenbush, Penobscot County, Maine** (hereinafter referred to as *the Property*), bounded and described in the deed from Danny L. Archer dated May 14, 2012 and recorded in Book 12816, Page 347 of the Penobscot County Registry of Deeds, the description therein being incorporated herein.

TERMS AND CONDITIONS:

1. Option Term. This Option shall be for an initial term of two (2) years from the date of this agreement. This option shall automatically renew, without the need for any further instrument, for three (3) successive option terms of one (1) year each, provided that within thirty (30) days after commencement of any such renewal term, Buyer shall pay to Seller an additional option consideration of [redacted] to be applied as provided herein.

2. Exercise of Option. Buyer shall exercise this option, if at all, at any time during the term of this Option, and any renewals thereof, by giving written notice delivered by certified mail or reputable overnight courier to Seller. Upon exercise of this option, the terms and provisions herein shall govern the purchase and sale of the Property.

3. Option Consideration. Buyer shall pay to Seller an initial option consideration of [redacted] payable within five (5) business days after Seller's execution of this agreement. Upon exercise of this option, the initial option consideration and any additional option consideration shall be deemed an earnest money deposit and applied toward the purchase price.

4. Restrictions during Option Term. During the term of this Option, and any renewals thereof, and prior to closing, Seller agrees not to sell the Property, offer to sell, mortgage, encumber, or otherwise transfer or dispose of, use or alter the Property, including the cutting of trees by or at the direction of Seller other than in accordance with any existing forest management plan pursuant to any existing tree growth taxation classification, without prior written consent of Buyer.

5. Inspection. Seller grants to Buyer, Buyer's duly authorized agents and employees, the right, during the term of this Option, and any renewals thereof, and prior to closing to enter upon the Property to conduct whatever tests and inspections of the Property that Buyer deems necessary. In the event the results of such tests and inspections are unsatisfactory to Buyer, Buyer may terminate this agreement upon written notice to Seller, which written notice must be delivered

to Seller not later than twenty (20) days prior to closing. Upon any such termination, all parties shall be released from their obligations hereunder, provided however that, in the event any notice of termination is delivered within sixty (60) days of the date of this Option, the option consideration shall be returned to Buyer.

UPON EXERCISE OF THIS OPTION, THIS AGREEMENT SHALL BE CONSIDERED A PURCHASE AND SALE AGREEMENT AND THE FOLLOWING PARAGRAPHS 1 - 6 SHALL APPLY TO CONVEYANCE OF THE PROPERTY.

1. Purchase Price. The total purchase price for the Property shall be [redacted]. After application of the option considerations/deposit, the remaining purchase price shall be paid to Seller with cash or by bank check or certified check at closing.

2. Deed. At the closing of the sale, Seller shall deliver to Buyer or Buyer's agent a duly executed and acknowledged quitclaim deed with covenant conveying to Buyer good and marketable title to the Property, free of all encumbrances except for easements and usual public utilities serving the Property otherwise acceptable to Buyer in Buyer's sole discretion.

3. Title Documents. Examination of the title shall be the responsibility of Buyer at Buyer's sole expense. Within thirty (30) days of the date of this agreement, Seller shall provide Buyer with copies of all existing title abstracts, title insurance policies or other title or survey information which Seller may have in Seller's possession. If Buyer finds title to the Property not to be good and marketable, then the closing shall be delayed for not more than thirty (30) days in order for Seller to cure the defect or defects. If such defect or defects cannot be removed by Seller (Seller having used reasonable efforts), Buyer may, at Buyer's sole option, either (a) terminate this agreement, in which case all parties shall be released from their obligations hereunder and the option considerations/deposit shall be returned to Buyer, or (b) accept such title as Seller can convey and consummate purchase of the Property in accordance with this agreement.

4. Possession. Exclusive possession of the Property shall be delivered to Buyer at the time of the delivery of said deed.

5. Closing. The closing of the sale contemplated hereby shall take place at the offices of Eaton Peabody, P.A. in Bangor, Maine, within forty five (45) days of Seller's receipt of notice of Buyer's exercise of the option as stated herein or such earlier date as specified by Buyer in its notice of exercise, unless delayed in accordance with the terms hereof.

6. Closing Adjustments. Real property taxes and any other assessments, utility charges or other charges levied against the Property shall be prorated as of the date of the closing. Real property taxes shall be prorated based on the fiscal year of the Town of Greenbush. State of Maine transfer tax shall be shared equally by Buyer and Seller. Seller shall pay all charges for recording any documents necessary to remove encumbrances from record title to the Property.

7. Default. In the event Buyer fails to fulfill any of Buyer's obligations hereunder, this agreement shall, at the option of Seller, be terminated, and Buyer's said option considerations/deposit shall be retained by Seller as Seller's sole remedy. In the event Seller fails to fulfill any of Seller's obligations hereunder, then the option considerations/deposit shall be returned to Buyer and Buyer, at Buyer's option, may pursue its remedies at law or in equity, including but not limited to specific performance.

8. Notices. Any notice by either party to the other, as provided herein, shall be in writing and shall be effective if delivered by certified mail, return receipt requested, or by reputable overnight courier to the following address:

a. If to Seller, Herbert C. Haynes, Inc.
Attn: Herbert C. Haynes, Jr.
P.O. Box 96
Winn, ME 04495
Email: _____;

b. If to Buyer, c/o P. Andrew Hamilton, Esq.
Eaton Peabody P.A.
P.O. Box 1210
80 Exchange Street
Bangor, ME 04402-1210
Email: ahamilton@eatonpeabody.com

9. General Provisions.

a. This agreement shall inure to the benefit of and be binding upon the parties hereto and their respective successors and assigns. Buyer may assign this agreement, provided that Buyer shall give written notice to Seller after such assignment of the name and address for any assignee.

b. This agreement constitutes the entire agreement between the parties, supersedes all prior negotiations and understandings between them, and shall not be altered or amended except by a written amendment signed by Seller and Buyer.

c. This agreement may be simultaneously executed in any number of counterparts, each of which when duly executed and delivered shall be an original; but such counterparts shall constitute but one and the same agreement. For purposes of this agreement, a facsimile signature shall be deemed an original.

d. Seller agrees that it shall keep the terms of this agreement and the transaction contemplated herein confidential, except as may be set forth in the Memorandum of Option contemplated below. Seller acknowledges and agrees that breach of this agreement could result in irreparable harm to Buyer and that money damages would not be a sufficient remedy for any breach of this agreement by Seller. In the event of any breach, Buyer shall be entitled to specific

performance and injunctive relief as remedies for any such breach. Such remedies will not be deemed to be the exclusive remedies for a breach of this agreement by Seller but will be in addition to all other remedies available at law or in equity to Buyer. Seller's obligations under this provision shall survive closing.

e. The parties agree that this Option shall not be recorded. A Memorandum of this Option to Purchase may be prepared for recording for the purpose of giving notice to third persons of the existence of this agreement.

f. If any provision of this agreement is found to be invalid or unenforceable, such finding shall not affect the validity or enforceability of any other provision hereof.

g. This agreement shall be construed and enforced in accordance with and governed by the laws of the State of Maine.

h. For purposes of this agreement, the date of this agreement shall be the date Seller executes this agreement.

In witness whereof, the parties hereto have hereunto set their hands and seals as of the date set forth below.

Witness:

_____

Sheri Walsh

SHERI G. WALSH
Notary Public, Maine
My Commission Expires April 6, 2020

Herbert C. Haynes, Inc.

By: Herbert C. Haynes
Its: President

Date: Sept. 19, 2013

[BUYER] Municipal Review Committee, Inc.

By:
Its: Executive Director

Date: Sept 19, 2013

APPENDIX H-1

TAX MAP AND ABUTTERS LIST (SITE A)

ARGYLE SITE
ABUTTER'S LIST

TOWN OF ARGYLE, MAINE

MAP	LOT	NAME/ADDRESS
2	32 67	Wesley & Melisa Hatch 1011 Southgate Road Argyle, ME 04468
2	34 36	Donna Hatch 1012 Southgate Road Argyle, ME 04468
2	38	Velma Mayhew 697 Kennebec Road Hampden, ME 04444
2	43	Michael Shirley 2 Timberview Drive Skowhegan, ME 04976
2	43.1	Susan Dostie, Michael Austin, Barbara Clark P.O. Box 247 Levant, ME 04456
2	45	Joseph Key, Krissann Spear Key 930 Southgate Road Argyle, ME 04468
2	47	Steve & Lisa Harris 906 Southgate Road Argyle, ME 04468
2	48.3	Dana C. Cox 2919 Edinburgh Road Argyle, ME 04468
2	41	Brenda Roy & Pamela Gilbert 132 Woodville Road Falmouth, ME 04105
2	5 40	William & Cynthia Acree 1800 Red Road Clewiston, FL 33440
2	2 7	Stephen Powers P.O. Box 814 York Beach, ME 03910
2	1	United States Dept. of Interior U.S. Fish & Wildlife Service, Region 5 Northeast Regional Office Attn: Bill Porter 300 Westgate Center Drive Hadley, MA 01035-9589
2	9.1	Stephen & Priscilla McLaughlin 1424 Southgate Road Argyle, ME 04468
2	11	Joseph Graham 1398 Southgate Road Argyle, ME 04468
2	13	William Corliss 1376 Southgate Road Argyle, ME 04468
2	15	Joseph Ouellette P.O. Box 191 LaGrange, ME 04453
2	17	Richard & Nancy Ruggeri 1340 Southgate Road Argyle, ME 04468
2	19	Holly Brooks 1748 Wilsox Lane Silver Springs, MD 20906
2	21.1	Stanley Gomm Et. Al. 13 Southgate Road Old Town, ME 04468
2	21.2	RCC Atlantic, Attn: Tax Dept. 3905 Dakota Street SW Alexandria, MN 56308
2	23	Roger Galipeau 1198 Southgate Road Argyle, ME 04468
2	25	Mark & Deborah Gilman 1176 Southgate Road Argyle, ME 04468
2	27	Charles Tozier c/o Blaine Tozier 1148 Southgate Road Argyle, ME 04468 Charles Tozier 12 Poplar Lane Lamoine, ME 04605
2	30	Harry & Tammy Feero 1118 Southgate Road Argyle, ME 04468

TOWN OF ALTON, MAINE

8	21	Vincent Ivan Monteiro 6 Redinton Court Dix Hills, NY 11746
8	21-1	Lakeville Shores, Inc. Attn: Herbert C. Haynes, Jr. P.O. Box 96 Winn, ME 04495
8	137	Maryann Drake 45 Southgate Road Argyle, ME 04468

LOCUS MAP

PLAN NOTES

1: THIS MAP IS INTENDED FOR REFERENCE PURPOSES ONLY. CES, INC. AND ITS CLIENTELE ARE NOT RESPONSIBLE FOR THE MISUSE OR MISINTERPRETATION OF THIS MAP OR THE DATA DEPICTED HEREIN.

2: PROJECT-SPECIFIC DATA GENERATED BY CES, INC. ALTON PARCELS DIGITIZED FROM ALTON TAX MAPS. UNORGANIZED TERRITORY PARCELS WERE PART OF THE MEGIS UTP SHAPEFILE. SOME ARGYLE TWP. PARCELS WERE MODIFIED TO REFLECT UPDATED TAX MAP INFORMATION (2013).

3: SUPPORTING DATA LAYERS COURTESY OF THE MAINE OFFICE OF GIS (MEGIS).

4: MAP IS PROJECTED USING THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 19, NORTH, METERS, AND REFERENCES THE NORTH AMERICAN DATUM OF 1983 (NAD83).

5: NORTH ARROW IS REFERENCED TO GRID NORTH.

PROJECT TITLE:

MRC, INC.
ARGYLE & ALTON, ME

SHEET TITLE:

PARCEL MAP

DRAWN BY: lladd	MXD: Argyle Parcels 032614
	DATE: 3/28/2014
APPENDIX: H-1	SCALE: 1 " = 2,000 '
	JN: J6572.003

CES INC
Engineers • Environmental Scientists • Surveyors

P:\Brewer Jobs\6000-6999\6500-6599\J6572-MCR-Solid Waste Mgmt Fac\07-GIS-Data\MXD\PBD2014\Argyle Parcels 032614.mxd

APPENDIX H-2

TAX MAP AND ABUTTERS LIST (SITE G)

GREENBUSH SITE
ABUTTER'S LIST

TOWN OF GREENBUSH, MAINE

MAP	LOT	NAME/ADDRESS
002	014-A	Bruce Raukankis 261 Main Street Cromwell, RI 06416
002	059-003	Dan K. Grover, Sr. 31 Ruby Lane Orrington, ME 04474
002	014-001 014-004 014-005 014-006 014-008 014-009 014-010 014-011 014-012	Galen Thibeault 58 Greenfield Road Greenbush, ME 04418
002	014-002	Randall King & Brittany King 61 Lower River Road Greenbush, ME 04418
002	014-003	Kirk Ramsay & Laura Ramsay (JT) 28 Main Street Bradley, ME 04411
002	014-007	John Hunt & Margaret Hunt (JT) P.O. Box 1564 Bangor, ME 04402-1564
002	058 057 056-B	Louis J. Soucier, Jr. 425 Greenfield Road Greenbush, ME 04418
002	056C	Edward & Dallas Abbott Pamela Abbott c/o Edward Abbott III 29 Goodrich Avenue Auburn, ME 04210
003	025-C	Richard Stoddard, Sr. & Grace I. Stoddard P.O. Box 283 West Enfiield, ME 04493
003	025	Lawrence A. Taylor, Jr. 45 Dyer Street South Portland, ME 04106
003	024 024-A	Thornton Construction, Inc. P.O. Box 529 Milford, ME 04461
003	023	Burns Avery P.O. Box 855 Milford, ME 04461
003	022	Lawrence R. Shirland, Jr. 696 Greenfield Road Greenbush, ME 04418
003	056-B	Gregory Kitchen P.O. Box 277 Milford, ME 04461

TOWN OF MILFORD, MAINE

MAP	LOT	NAME/ADDRESS
011	003	Prentiss & Carlisle Co., Inc. & McCrillis Timberland, LLC P.O. Box 637 Bangor, ME 04402-0637
012	002	Fort James Operating Co. c/o Georgia-Pacific Consumer Products LP Attn: Property Tax P.O. Box 105681 Atlanta, GA 30348-5681

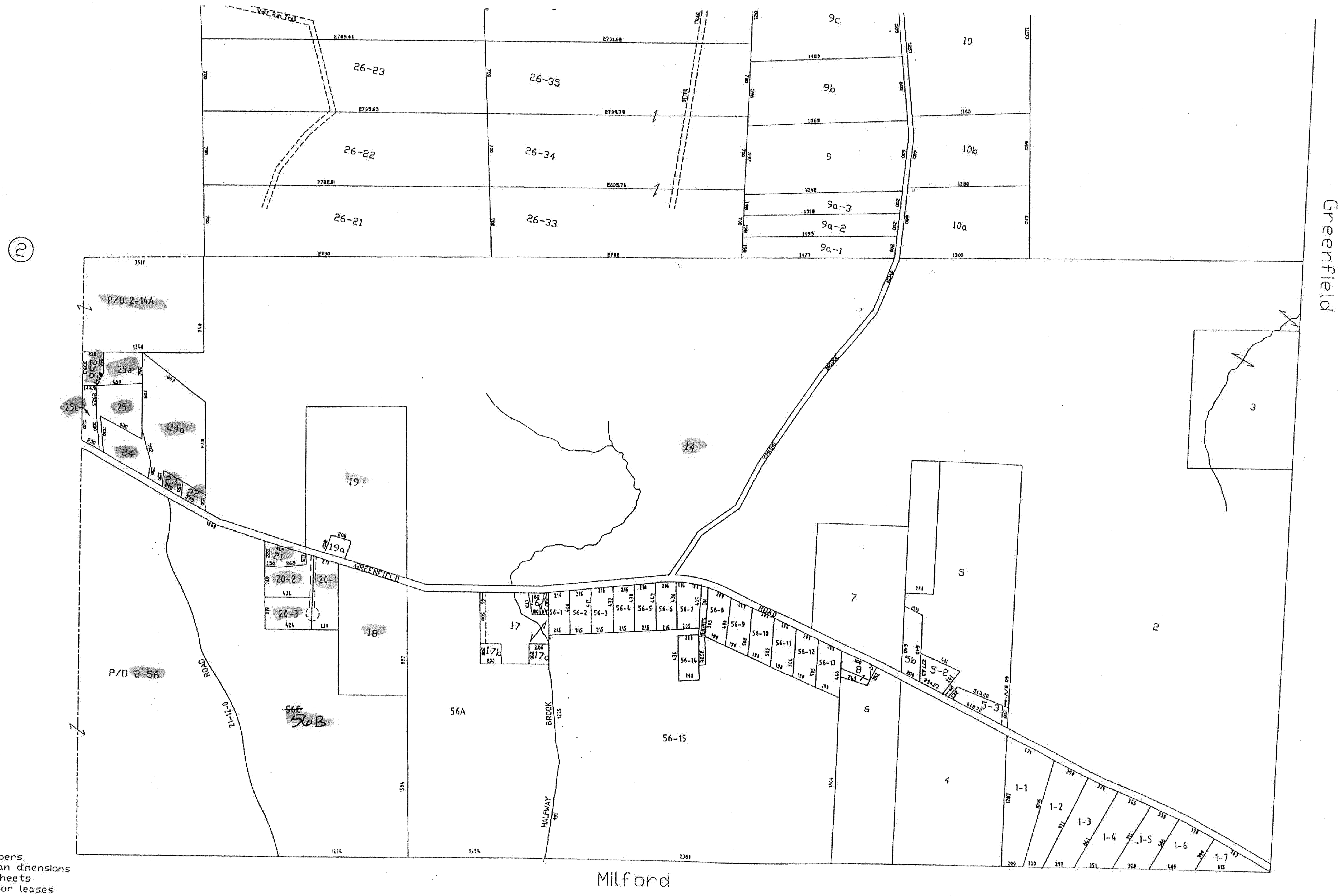
GREENBUSH

Parcel Map

for tax assessment purposes
DO NOT USE FOR CONVEYANCES

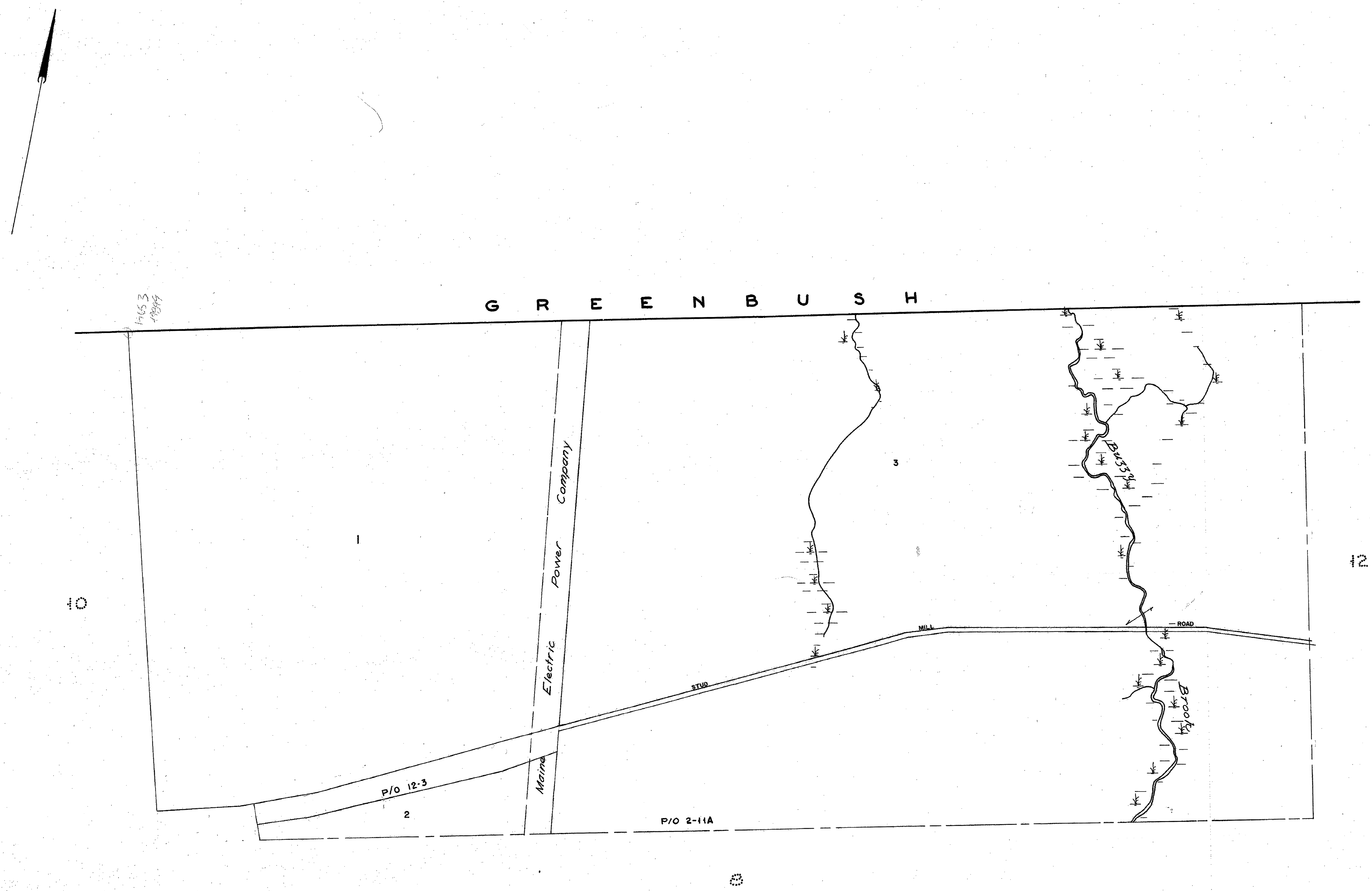
approx scale 1" = 500'

Milford



parcel numbers
deed or plan dimensions
adjacent sheets
easements or leases
match lines

GREE
Par
for tax asse
DO NOT USE F
approx sc



LEGEND

PARCEL NUMBERS 1
ADJACENT MAPS 2
MATCH LINE ---------------

For Assessment Purposes
Not to be used for Conveyances

Eastern Mapping Services
115 North Road
Newburgh, ME 04444
Tel. (207) 234-2777
Updated April 1, 2007

PROPERTY MAP
TOWN OF MILFORD
PENOBSCOT COUNTY, MAINE
PREPARED BY
JAMES W. SEWALL COMPANY   OLD TOWN, MAINE
SCALE 1 INCH =500 ± FEET

11

G R E E N B U S H

G R E E N F I E L D

P/O 11-3

P/O 2-11A

1

2

3

2500'

500'

1500'

500'

2687.4'

2687.4'

2360.4'

2728'

154'

344'

562.3'

ST. REGIS STUD MILL ROAD

519.7'

503'

6770'

Hamlin Brook

LEGEND

PARCEL NUMBERS 1

ADJACENT MAPS 2

MATCH LINE .....

For Assessment Purposes
Not to be used for Conveyances

Eastern Mapping Services
115 North Road
Newburgh, ME 04444
Tel. (207) 234-2777
Updated April 1, 2007

PROPERTY MAP
TOWN OF MILFORD
PENOBSCOT COUNTY, MAINE
PREPARED BY
JAMES W. SEWALL COMPANY OLD TOWN, MAINE
SCALE 1 INCH =500 ± FEET

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APPENDIX I

PUBLIC NOTICE OF INTENT AND CERTIFIED MAILING

PUBLIC NOTICE OF INTENT TO FILE

Please take notice that the Municipal Review Committee, Inc. (MRC), a non-profit regional association as described in 38 M.R.S.A. § 1304-B(5)(A) with a membership comprised of 187 Maine municipalities and a mission to ensure affordable, long term, and environmentally sound methods of disposal of waste for its members, 395 State Street, Ellsworth, ME 04605, 207-664-1700, is intending to file an application with the Maine Department of Environmental Protection (DEP) on or about April 2, 2014 pursuant to the provisions of 38 M.R.S.A., Sections 1310-N-sub-3-A and 1310-AA.

The application is for a Determination of Public Benefit for a new secure solid waste disposal facility to be located in either Argyle or Greenbush, Maine. The secure disposal facility is being planned as part of an integrated solid waste management system to be implemented in 2018. The planned integrated solid waste management system will be consistent with the State's solid waste management hierarchy and reduce waste to the extent practical prior to land disposal. The MRC members within the State of Maine currently deliver waste to the Penobscot Energy Recovery Company (PERC) facility under Waste Disposal Agreements that are scheduled to expire on March 31, 2018.

According to Department regulations, interested parties must be publicly notified, written comments invited, and if justified, an opportunity for public hearing given. A request for a public hearing must be received by the Department, in writing, no later than 20 days after publication of the public notice.

The application and supporting documentation are available for review at the Department's Augusta office, during normal working hours. A copy of the application and supporting documentation may also be seen at the Penobscot County Commissioners Office, 97 Hammond Street, Bangor, Maine and the Town of Greenbush, 132 Military Road, Greenbush, Maine.

Send all correspondence to: Maine Department of Environmental Protection, Solid Waste Program, 17 State House Station, Augusta, Maine 04333-0017 (207-287-2651 or 1-800-452-1942).

Legal Notices

PUBLIC NOTICE OF INTENT TO FILE

Please take notice that the Municipal Review Committee, Inc. (MRC), a non-profit regional association as described in 38 M.R.S.A. § 1304-B(5)(A) with a membership comprised of 187 Maine municipalities and a mission to ensure affordable, long term, and environmentally sound methods of disposal of waste for its members, 395 State Street, Ellsworth, ME 04605, 207-664-1700, is intending to file an application with the Maine Department of Environmental Protection (DEP) on or about April 2, 2014 pursuant to the provisions of 38 M.R.S.A., Sections 1310-N-sub-3-A and 1310-AA.

The application is for a Determination of Public Benefit for a new secure solid waste disposal facility to be located in either Argyle or Greenbush, Maine. The secure disposal facility is being planned as part of an integrated solid waste management system to be implemented in 2018. The planned integrated solid waste management system will be consistent with the State's solid waste management hierarchy and reduce waste to the extent practical prior to land disposal. The MRC members within the State of Maine currently deliver waste to the Penobscot Energy Recovery Company (PERC) facility under Waste Disposal Agreements that are scheduled to expire on March 31, 2018.

According to Department regulations, interested parties must be publicly notified, written comments invited, and if justified, an opportunity for public hearing given. A request for a public hearing must be received by the Department, in writing, no later than 20 days after publication of the public notice.

The application and supporting documentation are available for review at the Department's Augusta office, during normal working hours. A copy of the application and supporting documentation may also be seen at the Penobscot County Commissioners Office, 97 Hammond Street, Bangor, Maine and the Town of Greenbush, 132 Military Road, Greenbush, Maine.

Send all correspondence to: Maine Department of Environmental Protection, Solid Waste Program, 17 State House Station, Augusta, Maine 04333-0017 (207-287-2651 or 1-800-452-1942).

March 29, 2014

PROPOSED ARGYLE SITE
CERTIFIED MAIL LIST & RECEIPTS

Wesley & Melisa Hatch
1011 Southgate Road
Argyle, ME 04468

Donna Hatch
1012 Southgate Road
Argyle, ME 04468

Velma Mayhew
697 Kennebec Road
Hampden, ME 04444

Michael Shirley
2 Timberview Drive
Skowhegan, ME 04976

Susan Dostie, Michael Austin,
Barbara Clark
P.O. Box 247
Levant, ME 04456

Joseph Key, Krissann Spear Key
930 Southgate Road
Argyle, ME 04468

Steve & Lisa Harris
906 Southgate Road
Argyle, ME 04468

Dana C. Cox
2919 Edinburgh Road
Argyle, ME 04468

Brenda Roy & Pamela Gilbert
132 Woodville Road
Falmouth, ME 04105

William & Cynthia Acree
1800 Red Road
Clewiston, FL 33440

Stephen Powers
P.O. Box 814
York Beach, ME 03910

United States Dept. of Interior
U.S. Fish & Wildlife Service,
Region 5
Northeast Regional Office
Attn: Bill Porter
300 Westgate Center Drive
Hadley, MA 01035-9589

Stephen & Priscilla McLaughlin
1424 Southgate Road
Argyle, ME 04468

Joseph Graham
1398 Southgate Road
Argyle, ME 04468

William Corliss
1376 Southgate Road
Argyle, ME 04468

Joseph Ouellette
P.O. Box 191
LaGrange, ME 04453

Richard & Nancy Ruggeri
1340 Southgate Road
Argyle, ME 04468

Holly Brooks
1748 Wilsox Lane
Silver Springs, MD 20906

Stanley Gomm Et. Al.
13 Southgate Road
Old Town, ME 04468

RCC Atlantic,
Attn: Tax Dept.
3905 Dakota Street SW
Alexandria, MN 56308

Roger Galipeau
1198 Southgate Road
Argyle, ME 04468

Mark & Deborah Gilman
1176 Southgate Road
Argyle, ME 04468

Charles Tozier
c/o Blaine Tozier
1148 Southgate Road
Argyle, ME 04468

Charles Tozier
12 Poplar Lane
Lamoine, ME 04605

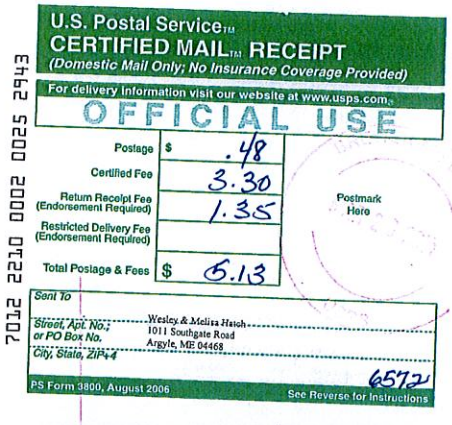
Harry & Tammy Feero
1118 Southgate Road
Argyle, ME 04468

Vincent Ivan Monteiro
6 Redinton Court
Dix Hills, NY 11746

Lakeville Shores, Inc.
Attn: Herbert C. Haynes, Jr.
P.O. Box 96
Winn, ME 04495

Maryann Drake
45 Southgate Road
Argyle, ME 04468

Penobscot County
Commissioners
97 Hammond Street
Bangor, ME 04401



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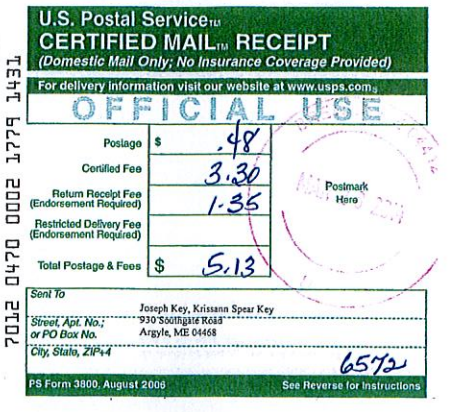

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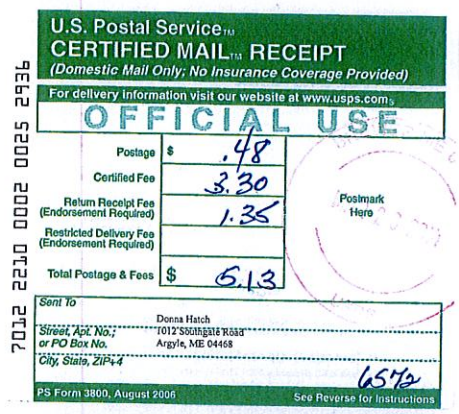

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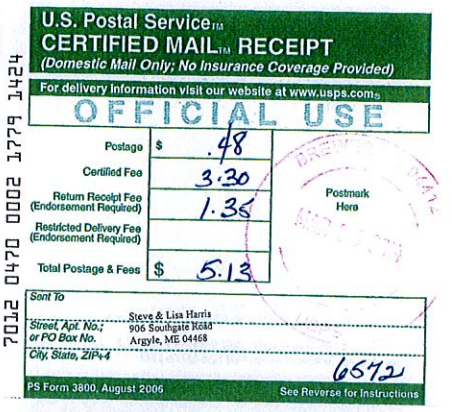

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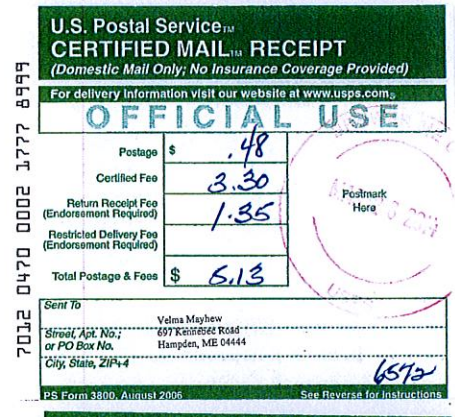

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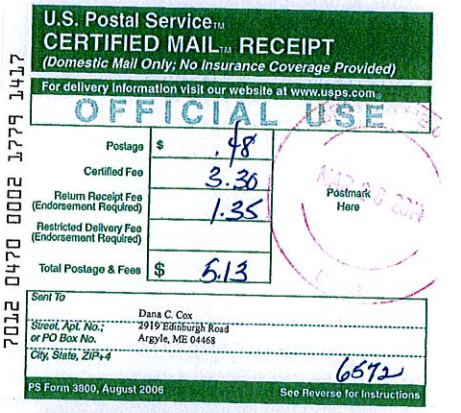

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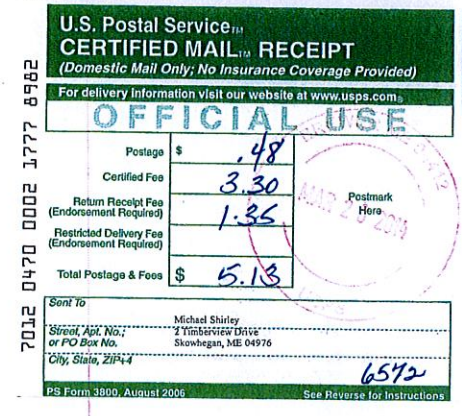

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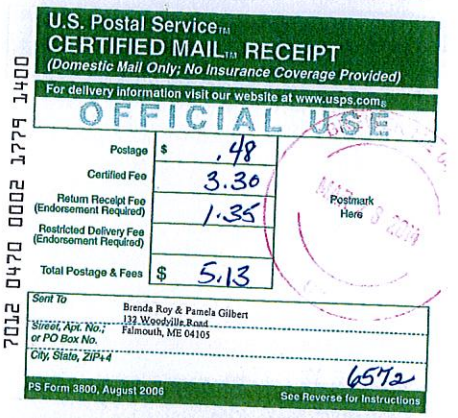

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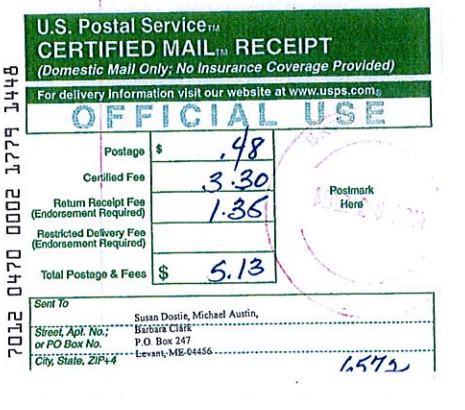

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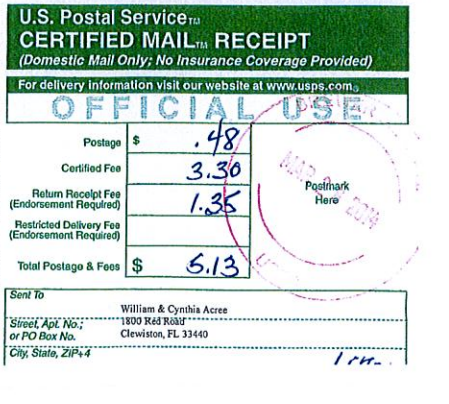

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Hadley, MA 01035-9589

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Street, Apt. No.; or PO Box No.: Attn: Herbert C. Haynes, Jr. P.O. Box 96
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City, State, ZIP+4: Lamoine, ME 04605

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Sent To: Penobscot County Commissioners
Street, Apt. No.; or PO Box No.: 97 Hammond Street
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7012 0470 0002 1779 1240

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City, State, ZIP+4: Argyle, ME 04468

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PROPOSED GREENBUSH SITE
CERTIFIED MAIL LIST & RECEIPTS

Bruce Raukankis
261 Main Street
Cromwell, RI 06416

Dan K. Grover, Sr.
31 Ruby Lane
Orrington, ME 04474

Galen Thibeault
58 Greenfield Road
Greenbush, ME 04418

Randall King & Brittany King
61 Lower River Road
Greenbush, ME 04418

Kirk Ramsay & Laura Ramsay (JT)
28 Main Street
Bradley, ME 04411

John Hunt & Margaret Hunt (JT)
P.O. Box 1564
Bangor, ME 04402-1564

Louis J. Soucier, Jr.
425 Greenfield Road
Greenbush, ME 04418

Edward & Dallas Abbott
Pamela Abbott
c/o Edward Abbott III
29 Goodrich Avenue
Auburn, ME 04210

Richard Stoddard, Sr. &
Grace I. Stoddard
P.O. Box 283
West Enfiield, ME 04493

Lawrence A. Taylor, Jr.
45 Dyer Street
South Portland, ME 04106

Thornton Construction, Inc.
P.O. Box 529
Milford, ME 04461

Burns Avery
P.O. Box 855
Milford, ME 04461

Lawrence R. Shirland, Jr.
696 Greenfield Road
Greenbush, ME 04418

Gregory Kitchen
P.O. Box 277
Milford, ME 04461

Prentiss & Carlisle Co., Inc. &
McCrillis Timberland, LLC
P.O. Box 637
Bangor, ME 04402-0637

Fort James Operating Co.
c/o Georgia-Pacific Consumer Products LP
Attn: Property Tax
P.O. Box 105681
Atlanta, GA 30348-5681

Town of Greenbush
132 Military Road
Greenbush, ME 04418

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Sent To: Bruce Raukankis
Street, Apt. No.; or PO Box No.: 261 Main Street
City, State, ZIP+4: Cromwell, RI 06416
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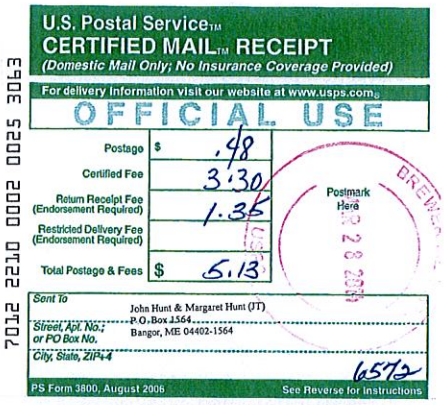
PS Form 3800, August 2006 See Reverse for Instructions
7012 2210 0002 0025 3117



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Sent To: John Hunt & Margaret Hunt (JT)
Street, Apt. No.; or PO Box No.: P.O. Box 1564
City, State, ZIP+4: Bangor, ME 04402-1564
6572
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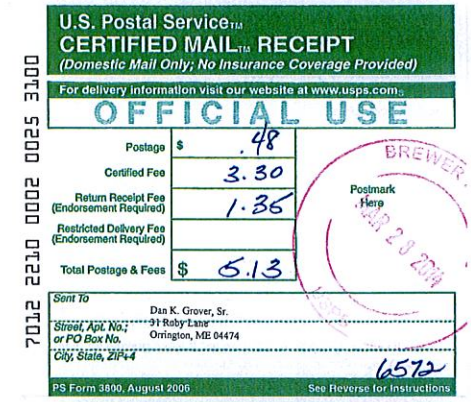
7012 2210 0002 0025 3063



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Sent To: Dan K. Grover, Sr.
Street, Apt. No.; or PO Box No.: 91 Roby Lane
City, State, ZIP+4: Orrington, ME 04474
6572
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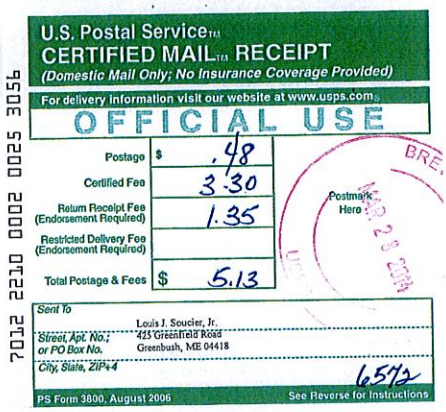
7012 2210 0002 0025 3100



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City, State, ZIP+4: Greenbush, ME 04418
6572
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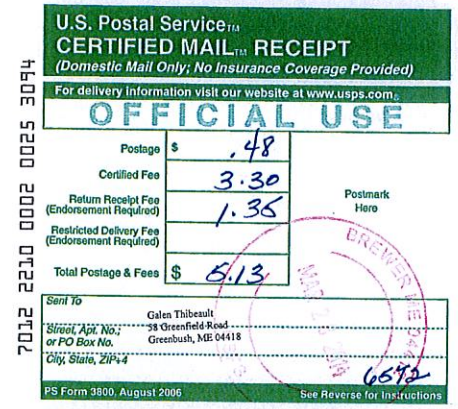
7012 2210 0002 0025 3056



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MAR 2 8 2008
Sent To: Galen Thibeault
Street, Apt. No.; or PO Box No.: 58 Greenfield Road
City, State, ZIP+4: Greenbush, ME 04418
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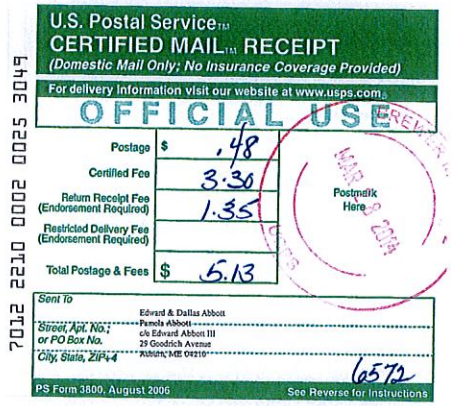
7012 2210 0002 0025 3094



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Sent To: Edward & Dallas Abbott
Pamela Abbott
Street, Apt. No.; or PO Box No.: c/o Edward Abbott III
City, State, ZIP+4: 29 Goodrich Avenue
Auburn, ME 04210
6572
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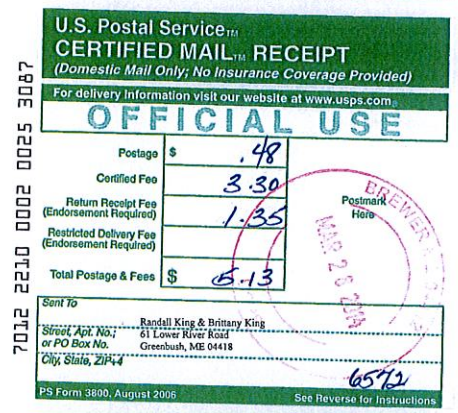

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MAR 2 8 2008
Sent To: Randall King & Brittany King
Street, Apt. No.; or PO Box No.: 61 Lower River Road
City, State, ZIP+4: Greenbush, ME 04418
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MAR 2 8 2008
Sent To: Richard Stoddard, Sr. &
Grace L. Stoddard
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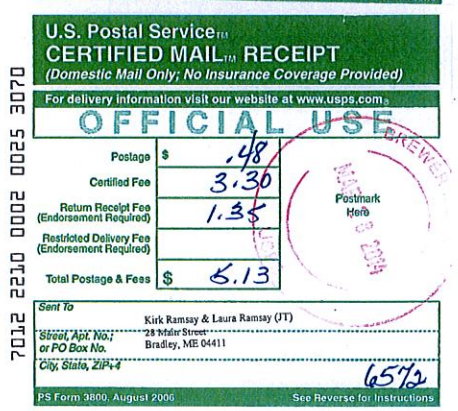

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Sent To: Kirk Ramsay & Laura Ramsay (JT)
Street, Apt. No.; or PO Box No.: 28 Muir Street
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MAR 2 8 2008
Sent To: Lawrence A. Taylor, Jr.
Street, Apt. No.; or PO Box No.: 45 Dyer Street
City, State, ZIP+4: South Portland, ME 04106
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7012 2210 0002 0025 3025

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MAR 2 8 2011

7012 2210 0002 0025 3018

Sent To: Thornton Construction, Inc.
Street, Apt. No.; or PO Box No.: P.O. Box 529
City, State, ZIP+4: Milford, ME 04461

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BREWER ME 04412
MAR 2 8 2011

7012 2210 0002 0025 2967

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c/o Georgia-Pacific Consumer Products LP
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P.O. Box 105681
City, State, ZIP+4: Atlanta, GA 30348-5681

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7012 2210 0002 0025 3001

Sent To: Burns Avery
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City, State, ZIP+4: Milford, ME 04461

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BREWER ME 04412
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7012 2210 0002 0025 2950

Sent To: Town of Greenbush
Street, Apt. No.; or PO Box No.: 132 Military Road
City, State, ZIP+4: Greenbush, ME 04418

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7012 2210 0002 0025 2998

Sent To: Lawrence R. Shirland, Jr.
Street, Apt. No.; or PO Box No.: 686 Greenfield Road
City, State, ZIP+4: Greenbush, ME 04418

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7012 2210 0002 0025 2981

Sent To: Gregory Kitchen
Street, Apt. No.; or PO Box No.: P.O. Box 277
City, State, ZIP+4: Milford, ME 04461

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7012 2210 0002 0025 2974

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McCrum Timberland, LLC
Street, Apt. No.; or PO Box No.: P.O. Box 637
City, State, ZIP+4: Bangor, ME 04402-0637

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