

SP0654, LD 1682, item 2, 124th Maine State Legislature , Amendment C "A", Filing Number S-372, Sponsored by

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Amend the bill by striking out everything after the enacting clause and before the summary and inserting the following:

Sec. 1. 35-A MRSA §3210, sub-§2, ¶B-1, as enacted by PL 2007, c. 403, §2, is repealed.

Sec. 2. 35-A MRSA §3210, sub-§2, ¶B-2, as enacted by PL 2007, c. 403, §3, is amended to read:

B-2. "Renewable energy credit" means a tradable instrument that represents an amount of electricity generated from renewable capacity resources as defined in section 3210C, subsection 1, paragraph E.

Sec. 3. 35-A MRSA §3210, sub-§2, ¶B-3 is enacted to read:

B-3. "Renewable capacity resource" means a source of electrical generation:

(1) Whose total power production capacity does not exceed 100 megawatts and relies on one or more of the following:

(a) Fuel cells;

(b) Tidal power;

(c) Solar arrays and installations;

(d) Geothermal installations;

(e) Hydroelectric generators that meet all state and federal fish passage requirements applicable to the generator; or

(f) Biomass generators that are fueled by wood or wood waste, landfill gas or anaerobic digestion of agricultural products, by-products or wastes; or

(2) That relies on wind power installations.

Sec. 4. 35-A MRSA §3210, sub-§2, ¶B-4 is enacted to read:

B-4. "New" as applied to any renewable capacity resource means a renewable capacity resource that:

(1) Has an in-service date after September 1, 2005;

(2) Was added to an existing facility after September 1, 2005;

(3) For at least 2 years was not operated or was not recognized by the New England independent system operator as a capacity resource and, after September 1, 2005, resumed operation or was recognized by the New England independent system operator as a capacity resource; or

(4) Was refurbished after September 1, 2005 and is operating beyond its previous useful life or is employing an alternate technology that significantly increases the efficiency of the generation process.

For the purposes of this paragraph, "capacity resource" has the same meaning as in section 3210C, subsection 1, paragraph A.

Sec. 5. 35-A MRSA §3210, sub-§2, ¶C, as repealed and replaced by PL 1999, c. 398, Pt. I, §2, is amended to read:

C. "Renewable resource" means a source of electrical generation:

(1) That qualifies as a small power production facility under the Federal Energy Regulatory Commission rules, 18 Code of Federal Regulations, Part 292, Subpart B, as in effect on January 1, 1997; or

(2) Whose total power production capacity does not exceed 100 megawatts and that relies on one or more of the following:

- (a) Fuel cells;
- (b) Tidal power;
- (c) Solar arrays and installations;
- (d) Wind power installations;
- (e) Geothermal installations;
- (f) Hydroelectric generators;

(g) Biomass generators that are fueled by wood or wood waste, landfill gas or anaerobic digestion of agricultural products, by-products or wastes; or

(h) Generators fueled by municipal solid waste in conjunction with recycling.

Sec. 6. 35-A MRSA §3210-C, sub-§1, ¶E, as amended by PL 2007, c. 293, §1, is further amended to read:

E. "Renewable capacity resource" means ~~a renewable resource, as defined~~ has the same meaning as in section 3210, subsection 2, paragraph C, except the maximum total power production capacity limit of 100 megawatts under section 3210, subsection 2, paragraph C does not apply and "renewable capacity resource" does not include: B3.

~~(1) A generator fueled by municipal solid waste in conjunction with recycling; or~~

~~(2) A hydroelectric generator unless it meets all state and federal fish passage requirements applicable to the generator.~~

Sec. 7. 35-A MRSA §3212-A, sub-§1, as amended by PL 2009, c. 329, Pt. B, §2, is further amended to read:

1. Definitions. As used in this section, unless the context otherwise indicates, the following terms have the following meanings.

A. "Green power supply" means electricity or renewable energy credits for electricity generated from renewable capacity resources as defined in section ~~3210~~ 3210, subsection ~~1~~ 2, paragraph ~~E~~ or from a generator fueled by landfill gas B3, including electricity generated by community-based renewable energy projects as defined in section 3602, subsection 1. "Green power supply" includes a biomass generator, whose fuel may include, but is not limited to, anaerobic digestion of agricultural products, byproducts or wastes.

B. "Renewable energy credit" has the same meaning as in section 3210, subsection 2, paragraph ~~B1~~, except that the total power production capacity limit of 100 megawatts under section 3210, subsection 2, paragraph ~~C~~ does not apply to wind power installations B2.

Sec. 8. 35-A MRSA §3602, sub-§2, as enacted by PL 2009, c. 329, Pt. A, §4, is amended to read:

2. Eligible renewable resource. "Eligible renewable resource" means a renewable capacity resource as defined in section 3210, subsection 2, paragraph ~~C~~, except that "eligible renewable resource" does not include a generator fueled by municipal solid waste in conjunction with recycling and does include a generator fueled by landfill gas. "Eligible renewable resource" includes a biomass generator whose fuel includes anaerobic digestion of agricultural products, byproducts or wastes B-3.

SUMMARY

This amendment replaces the bill. The amendment does the following:

1. Clarifies which resources are subject to the 100-megawatt capacity limit on new renewable capacity resources in order to qualify for the new renewable resource portfolio requirement above 30% and related renewable energy credits under that law and the law governing green power options. Specifically, the amendment clarifies that all new renewable capacity resources except for wind power installations are subject to the 100-megawatt limit;

2. Adds definitions of "new" and "renewable capacity resources" to the law governing renewable resources portfolio requirements rather than relying on cross-references to those terms as used in the capacity resource adequacy laws;

3. Specifies types of biomass generators included within the definitions of "renewable resource" and "renewable capacity resource." This clarifies that generators fueled by wood or wood waste, landfill gas or anaerobic digestion of agricultural products, by-products or wastes qualify under the basic portfolio requirement, the new renewable resource portfolio requirement, the law governing green power options and the community-based renewable energy pilot program; and

4. Amends the definition of "renewable capacity resource" in the law governing capacity resource adequacy, the definitions of "green power supply" and "renewable energy credit" in the law governing green power options and the definition of "eligible renewable resource" in the law governing the community-based renewable energy pilot program to make them consistent with the definition of "renewable capacity resource" now provided in the law governing renewable resource portfolio requirements.

TABLE 2. Sensitivity of Emission Factors for WTE to Plant Efficiency, Waste Composition, and Remanufacturing Benefits of Steel Recovery

	baseline factors		Sensitivity on				
			system efficiency	waste composition	steel recovery		
			Input Parameters Varied ^a				
heat rate [Btu/(kW h)]	18000	18000	<i>[11000, 23000]</i>	18000	18000	18000	18000
efficiency (%)	19	19	<i>[15, 30]</i>	19	19	19	19
composition	default	default	default	<i>all biogenic</i>	<i>all fossil</i>	default	default
stack gas limits	reg	avg	<i>reg/avg</i>	reg	reg	<i>reg</i>	<i>avg</i>
steel recovery	excludes	excludes	excludes	excludes	excludes	<i>includes</i>	<i>includes</i>
Results: Criteria Pollutants							
CO [g/(MW h)]	790	790	<i>[500, 1000]</i>	740	880	-110	-110
NO _x [g/(MW h)]	1300	1500	<i>[810, 1800]</i>	1200	1400	1200	1400
SO _x [g/(MW h)]	578	221	<i>[140, 730]</i>	550	620	450	90
PM [g/(MW h)]	181	60	<i>[38, 230]</i>	180	190	-190	-310
Results: Greenhouse Gases							
CO ₂ -biogenic [Mg/(MW h)]	0.91	0.91	<i>[0.58, 1.2]</i>	1.5	0.03	0.91	0.91
CO ₂ -fossil [Mg/(MW h)]	0.56	0.56	<i>[0.36, 0.71]</i>	0.02	1.5	0.49	0.49
CH ₄ [Mg/(MW h)]	1.3E-05	1.3E-05	<i>[8.1E-06, 1.6E-05]</i>	1.6E-05	7.9E-06	-5.0E-05	-5.0E-05
CO ₂ e [MTCO ₂ e/(MW h)]	0.56	0.56	<i>[0.36, 0.71]</i>	0.02	1.45	0.49	0.49
Results: Electricity Generation							
TW h ^b	98	98	<i>[78, 160]</i>	61	37	98	98
(kW h)/ton	590	590	<i>[470, 930]</i>	470	970	590	590
GW ^c	12	12	<i>[9.7, 20]</i>	7.6	4.7	12	12

^a For each sensitivity analysis scenario, the input parameters in italics were modified and resultant emission factors were calculated and are reported. ^b The values represent the TWh of electricity that could be generated from all MSW disposed into landfills. ^c 1 TW h/8000 h = TW; a capacity factor of approximately 0.91 was utilized.

TABLE 3. Comparison of Total Power Generated

	total electricity generated from 166 million tons of MSW, TW h	total power ^a , GW	electricity generated from 1 ton of MSW, (kW h)/ton
waste-to-energy	78-160	9.7-19	470-930
landfill-gas-to-energy	7-14	0.85-1.8	41-84

^a 1 TW h/8000 h = TW; a capacity factor of approximately 0.91 was utilized.

The composition of MSW also has an effect on the emission factors. One of the controversial aspects of WTE is the fossil-based content of MSW, which contributes to the combustion emissions. The average composition of MSW as discarded by weight was calculated to be 77% biogenic- and 23% fossil-based (Table S1, SI). The sensitivity of emission factors to the biogenic- vs fossil-based waste fraction was also determined. Two compositions (one with 100% biogenic-based waste and another with 100% fossil-based waste) were used to generate the emission factors (Table 2). The CO₂e emissions from WTE increased from 0.56 MTCO₂e/(MW h) (WTE-Reg) to 1.5 MTCO₂e/(MW h) when the 100% fossil-based composition was used (Table 2, Figure 2). However, the CO₂e emissions from WTE based on 100% fossil-based waste were still lower than the most aggressive LFGTE scenario (i.e., LF-VENT 2-ICE 60) whose CO₂e emissions were 2.3 MTCO₂e/(MW h).

The landfill emission factors include the decay of MSW over 100 years, whereas emissions from WTE and conventional electricity-generating technologies are instantaneous. The operation and decomposition of waste in landfills continue even beyond the monitoring phases for an indefinite period of time. Reliably quantifying the landfill gas collection efficiency is difficult due to the ever-changing nature of

landfills, number of decades that emissions are generated, and changes over time in landfill design and operation including waste quantity and composition. Landfills are an area source, which makes emissions more difficult to monitor. In a recent release of updated emission factors for landfill gas emissions, data were available for less than 5% of active municipal landfills (27). Across the United States, there are major differences in how landfills are designed and operated, which further complicates the development of reliable emission factors. This is why a range of alternative scenarios are evaluated with plausible yet optimistic assumptions for LFG control. For WTE facilities, there is less variability in the design and operation. In addition, the U.S. EPA has data for all the operating WTE facilities as a result of CAA requirements for annual stack testing of pollutants of concern, including dioxin/furan, Cd, Pb, Hg, PM, and HCl. In addition, data are available for SO₂, NO_x, and CO from continuous emissions monitoring. As a result, the quality and availability of data for WTE versus LFGTE results in a greater degree of certainty for estimating emission factors for WTE facilities.

The methane potential of biogenic waste components such as paper, food, and yard waste is measured under optimum anaerobic decay conditions in a laboratory study (24), whose other observations reveal that some portion of

ecomaine averages 553 kW h/ton

38 §2101. SOLID WASTE MANAGEMENT HIERARCHY

38 §2101. SOLID WASTE MANAGEMENT HIERARCHY

2. Waste reduction and diversion. It is the policy of the State to actively promote and encourage waste reduction measures from all sources and maximize waste diversion efforts by encouraging new and expanded uses of solid waste generated in this State as a resource.

[2007, c. 192, §2 (NEW) .]

1. Priorities. It is the policy of the State to plan for and implement an integrated approach to solid waste management for solid waste generated in this State and solid waste imported into this State, which must be based on the following order of priority:

A. Reduction of waste generated at the source, including both amount and toxicity of the waste; [1989, c. 585, Pt. A, §7 (NEW) .]

B. Reuse of waste; [1989, c. 585, Pt. A, §7 (NEW) .]

C. Recycling of waste; [1989, c. 585, Pt. A, §7 (NEW) .]

D. Composting of biodegradable waste; [1989, c. 585, Pt. A, §7 (NEW) .]

E. Waste processing that reduces the volume of waste needing land disposal, including incineration; and [2007, c. 583, §7 (AMD) .]

F. Land disposal of waste. [1989, c. 585, Pt. A, §7 (NEW) .]

It is the policy of the State to use the order of priority in this subsection as a guiding principle in making decisions related to solid waste management.

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TESTIMONY OF KEVIN ROCHE

Re: L.D. 1682

Owner Communities

Bridgton
Cape Elizabeth
Casco
Cumberland
Falmouth
Freeport
Gorham
Gray
Harrison
Hollis
Limington
Lyman
North Yarmouth
Ogunquit
Portland
Pownal
Scarborough
South Portland
Waterboro
Windham
Yarmouth

Associate Members

Baldwin
Hiram
Naples
Parsonsfield
Porter
Saco
Standish

Recycling Members

Andover
Cornish
Monmouth
Old Orchard Beach
Poland
Readfield
Sanford
Wayne

An Act to Amend the Electric Utility Industry Laws as They Relate to Renewable Resources

Presented before the Joint Standing Committee on Utilities and Energy

January 28, 2010

Senator Hobbins, Representative Hinck and members of the Joint Standing Committee on Utilities and Energy. My name is Kevin Roche, General Manager of **ecomaine**, a publicly owned and operated municipal waste management system, located in Portland.

I am testifying on behalf of **ecomaine** in support of L.D. 1682, as amended, which is before you today.

ecomaine supports the State of Maine's advocacy for renewable energy resources. As a regionally-owned organization with 37 member communities, **ecomaine** owns and operates a single sort recycling facility, a waste-to-energy power plant, an ashfill, and a landfill. **ecomaine** is committed to the State's Solid Waste Management Hierarchy which places recycling ahead of waste-to-energy and waste-to-energy ahead of landfilling. **ecomaine** makes recycling a priority through our aggressive single sort recycling program that maximizes the opportunity for our Communities to recycle as much as possible. Those waste materials that are not recyclable can then go to **ecomaine's** waste-to-energy plant that generates renewable energy from the municipal solid waste of its owner communities. In turn, we receive Renewable Energy Credits from the grid that has economic value to us.

The **ecomaine** landfill is used to dispose of our ash and at times, we store raw solid waste in it when it can't be processed at the waste-to-energy facility. Whenever possible, we prefer to eventually mine and return the waste to the waste-to-energy facility for processing in order to take advantage of the many benefits associated with it.

The **ecomaine** waste-to-energy facility plays a valuable role in the management of solid waste disposal -- in fact, when burned, a ton of municipal waste is reduced by 90% and the residue ash is placed in the ashfill. The longevity of our ashfill is significantly enhanced as

compared to solid waste landfills which will be full 90% faster when accepting the same amount of municipal waste.

At a time when land is scarce and siting new waste disposal landfills is rare, the benefits of waste-to-energy are significant. Not only is the reduction of total volume of trash which has to be landfilled a valuable asset for waste-to-energy, but also turning that trash into electricity is another invaluable recovery of resources. The disposal of ash not only takes up less space on the landscape, but the alkalinity derived from the lime scrubbers helps to stabilize and contain the presence of heavy metals, such as cadmium and lead, in the ashfill leachate as opposed to the instability of MSW leachate. Waste-to-energy plants also remove ferrous metal from the waste stream. This not only decreases the amount of material deposited in the landfill, it also offers an additional revenue stream from the sale of the scrap metal recovered. Raw solid waste that is just landfilled doesn't have this type of metal recovery.

Waste-to-energy facilities have sophisticated air pollution control technology to assure that the air emitted is clean. **ecomaine** is ISO 14001 certified with a comprehensive environmental management system to evaluate our impacts on the surrounding air and water. This provides proof of our environmental performance and keeps it transparent to our member communities.

As a result of a commitment to waste-to-energy technology, the member municipalities of **ecomaine** are avoiding the use of landfills for permanent disposal of raw solid waste, which is consistent with the State's policy requiring the following order of priority in making decisions related to solid waste management (also known as the Solid Waste Management Hierarchy):

- A. Reduction of waste generated at the source, including both amount and toxicity of the waste;*
- B. Reuse of waste;*
- C. Recycling of waste;*
- D. Composting of biodegradable waste;*
- E. Waste processing that reduces the volume of waste needing land disposal, including incineration; and*
- F. Land disposal of waste.*

This is set down in 38 MRSA §2101(1)

To be consistent with this hierarchy, waste-to-energy derived energy should be at least as valuable as landfill derived energy. The EPA also lists waste-to-energy higher in the waste hierarchy than landfilling. Various New England states, including Connecticut and Massachusetts, which require renewable resources be included in portfolios of competitive electricity providers, include waste-to-energy facilities as renewable resources as well. In addition, the 2009 Clean Energy Act, enacted by the US House of Representatives and referred to the US Senate, includes a renewable portfolio requirement which recognizes waste-to-energy as a renewable resource. The European Union also recognizes the renewable attributes of WTE facilities. Managing waste is a vital undertaking, and turning that waste into a productive commodity is smart and sustainable.

We are pleased that the proposed amendment to LD 1682 includes generators fueled by solid waste as a source of renewable resources. However, the bill also excludes waste-to-energy, while including landfill gas, in the definitions of new renewable resource, renewable capacity resource and eligible renewable resource as defined in various sections in the bill. This will give greater value for energy from landfills over waste-to-energy plants and we believe that is not consistent with the State's Solid Waste Management Hierarchy. In order to encourage and support compliance with the State's solid waste policy and expand the use of electricity generated from renewable sources, we request that the Committee include waste-to-energy as a new renewable resource, a renewable capacity resource and an eligible renewable resource. In this fashion, waste-to-energy facilities which operate in conjunction with recycling will increase the availability of renewable resources while ensuring compliance with the State's solid waste management policy.

Thank you for your attention, and I would be happy to respond to any questions you may have.



February 12, 2010

Owner Communities

- Bridgton
- Cape Elizabeth
- Casco
- Cumberland
- Falmouth
- Freeport
- Gorham
- Gray
- Harrison
- Hollis
- Limington
- Lyman
- North Yarmouth
- Ogunquit
- Portland
- Pownal
- Scarborough
- South Portland
- Waterboro
- Windham
- Yarmouth

Ms. Paula Clark
 Maine Department of Environmental Protection
 Bureau of Remediation and Waste Management
 Division of Oil & Hazardous Waste Facilities Regulation
 17 State House Station
 Augusta, Maine 04333-0017

RE: Response to Maine Department of Environmental Protection (MDEP),
 Bureau of Remediation & Waste Management,
 Division of Solid Waste Management

Dear Paula:

I'm responding to your request that **ecomaine** furnish the Department of Environmental Protection with information regarding the acceptance of drugs from a collection event in South Portland and Cape Elizabeth last fall. It is our understanding that the South Portland Medication Collection Committee organized this event and combined it with HHW collection in both South Portland and Cape Elizabeth on Saturday, October 17th.

Based on Scale House tickets for Monday, October 19, 2009, the City of South Portland utilized a van and truck arriving at 10:57AM and 10:59AM; weighing 820 lbs. and 500 lbs; departing 12:06PM and 12:03PM, respectively.

When the material arrived, the Scale House contacted the Shift Supervisor and the Environmental Manager. The Environmental Manager spoke with the Shift Supervisor, who dispatched the Relief Operator to meet the South Portland delivery and assist up the elevator to the 6th floor for a witness burn. According to the Crane Cab operator's log book, the South Portland Police Department unloaded 35 boxes. The SPPD physically tossed each box into the hopper and watched from the Crane Cab as the boxes were placed into the feed chute and sent to the boiler for thermal destruction.

We feel that the City of South Portland and **ecomaine** made reasonable precautions to sort out any materials that are not accepted at the **ecomaine** waste-to-energy facility. Two pharmacists and seven technicians were at the collection site to do the sorting and separate out the list of hazardous materials that they understood could not be accepted. It was noted in the Environmental Manager's field notebook on

Associate Members

- Baldwin
- Hiram
- Naples
- Parsonsfeld
- Porter
- Saco
- Standish

Recycling Members

- Andover
- Cornish
- Monmouth
- Old Orchard Beach
- Poland
- Readfield
- Sanford
- Wayne

October 15th that South Portland would be bringing to **ecomaine** “non-hazardous waste Monday, October 19th at 10:00AM.” While coordinating this event, we suggested that the City contact the DEP and the DEA to determine sorting requirements. We understand that the City received guidance from the DEA to assist them in their sorting efforts. After speaking with the DEP, our Environmental Manager conveyed to the City that pharmacists and law enforcement agents must be on-site during the collection. The DEA furnished the City with a list of hazardous substances that must be separated out and we believe the City made a reasonable attempt to properly sort the materials. We now realize that the list may not have been complete and there may have been some confusion on sorting procedures. It is our understanding that the City also received mercury containing items at the collection event and properly separated them out, in addition to sorting the drugs. The City has assured us that the items containing mercury did not get delivered to **ecomaine**.


To assure the users of our facility that we don't accept hazardous waste, we have clearly marked signs at the Gate House that communicate that **ecomaine** does not accept hazardous waste in accordance with **ecomaine**'s Air Permit. The fuel/waste **ecomaine** is allowed to burn, as cited in Condition 14(A)(2), states “**ecomaine** is licensed to fire waste types 0, 1, 2, 3, and 6 as defined in Chapter 100, of the Department's Regulation.” Condition 14(A)(2) clearly states that “the following are unacceptable wastes and shall not be combusted in the MWCs: waste classified as RCRA hazardous waste, low level radioactive and red bag medical wastes.”

In addition, after hearing about the concerns from the Department of Environmental Protection, **ecomaine** has declined requests by other owner communities to accept collected items from such collection events, with the exception of controlled drugs that are non-hazardous.

In summary, I believe that both the City of South Portland and **ecomaine** made reasonable precautions to properly dispose of the materials that were collected at the expired drug collection events in South Portland and Cape Elizabeth last fall. Since then, we have received more guidance and understanding of what is and is not considered acceptable in these types of collection programs. We have already employed this guidance and will use it in the future.

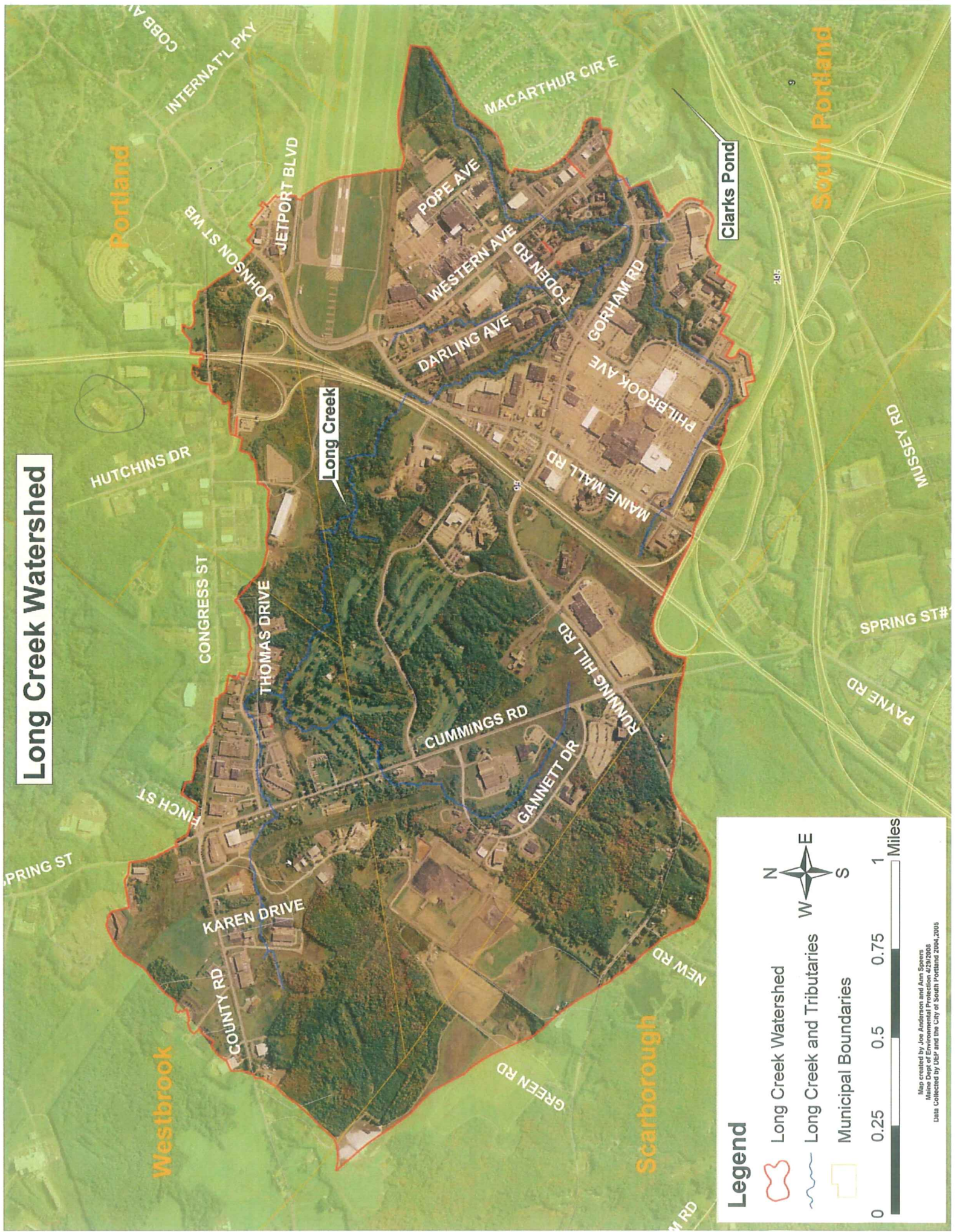
Please feel free to contact me if you have any questions.

Sincerely,



Kevin H. Roche
General Manager

KR/lct



Long Creek Watershed

Legend

- Long Creek Watershed
- Long Creek and Tributaries
- Municipal Boundaries

0 0.25 0.5 0.75 1 Miles

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W E
S

Map created by Joe Anderson and Ann Speers
Maine Dept of Environmental Protection 4/29/2008
Data Collected by DEP and the City of South Portland 2/04, 2/05