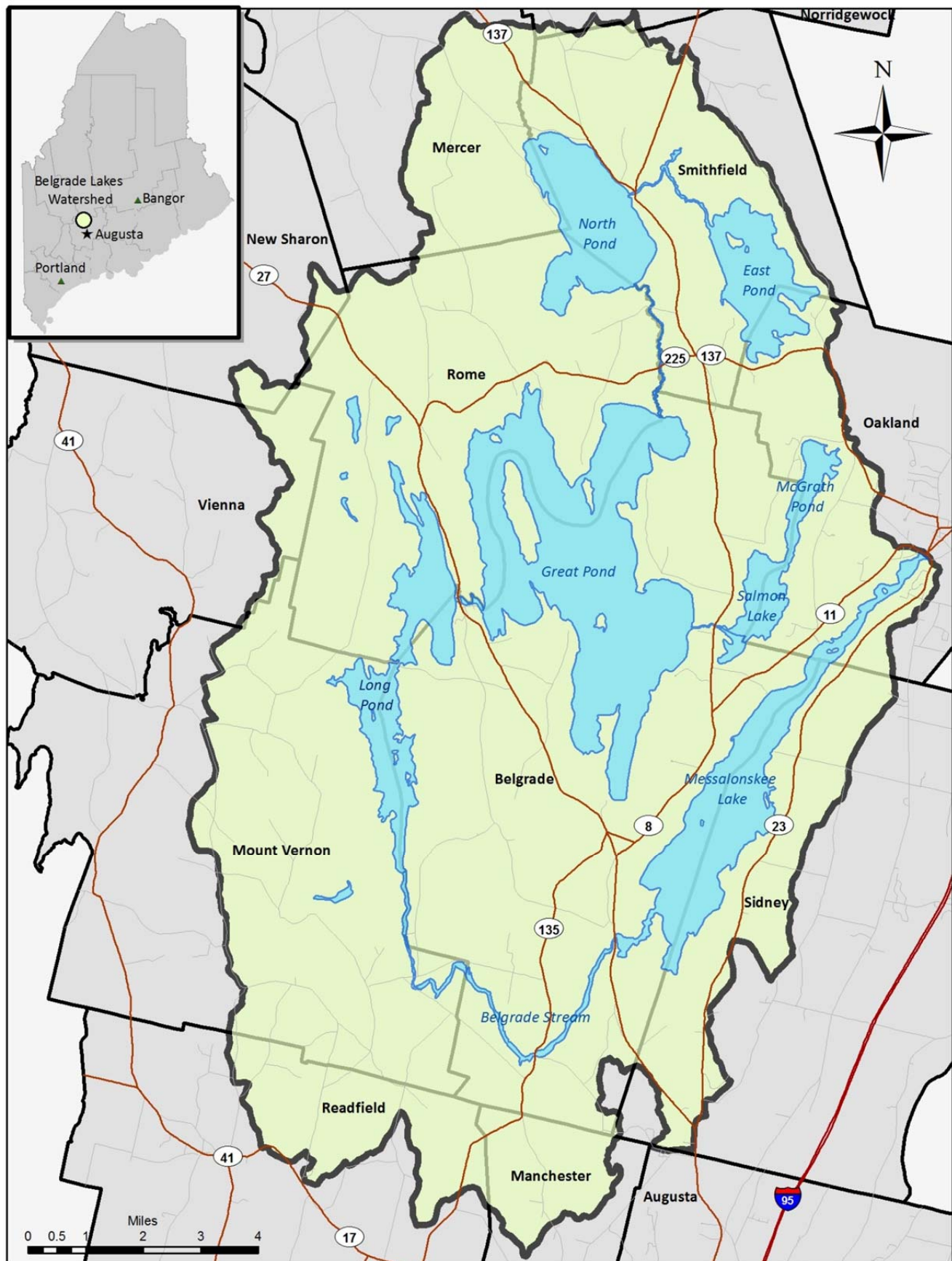# 2012 STATISTICAL ABSTRACT FOR THE BELGRADE LAKES WATERSHED

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Acknowledgements

A watershed is: "…that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community."[1]

– John Wesley Powell, scientist geographer (1834–1902)

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[1] "What is a Watershed?" US Environmental Protection Agency. http://water.epa.gov/type/watersheds/whatis.cfm.

Creating a Statistical Abstract for the Belgrade Lakes Watershed

A statistical abstract is a collection of data presented in tables, charts, and maps from a variety of sources to provide a snap-shot of important regional characteristics in a consistent format. Statistical abstracts are typically constructed according to geo-political boundaries (e.g., cities, school districts, counties, states, or countries) and include demographic, cultural, and economic information. This document takes a non-traditional approach in reporting information according to the boundaries of a physical land form – the Belgrade Lakes Watershed. The defining characteristic of this ecosystem, seven interconnected water bodies, provides a unique context in which to tie the socio-economic linkages that inherently define the communities that exist within the Belgrade Lakes Watershed to their physical environment through a compilation of relevant economic, demographic, and scientific information. This abstract is constructed in this fashion to provide the residents of the Watershed communities with a resource to better understand the environment in which they live in the context of factors that define and drive economic activity in the region. The intended audience for this abstract includes stakeholder groups, community service providers, economic development agents, and policy makers.

In the simplest of terms, a watershed is an area of land defined by how water drains into and from it. The boundaries of a watershed are defined according to the topography of the land that surrounds it. Higher elevations mark the edges of a watershed and the slopes leading away from the boundaries indicate the direction water flows – either into or out of the watershed. One of the unique features of the Belgrade Lakes Watershed is that it includes seven interconnected water bodies, as well as several bogs, streams, and smaller ponds. As illustrated by the map on the cover of this abstract, water flows from East Pond into North Pond, which in turn empties into Great Pond. Water also flows into Great Pond from McGrath Pond via Salmon Lake. Great Pond drains into Long Pond and from there water enters the Belgrade Stream to flow into Messalonskee Lake (also known locally as Snow Pond). From here, water that reaches Messalonskee Lake from North Pond flows into the Kennebec River Watershed.

City/Town "touched" by the Belgrade Lakes Watershed	Percent of Population Living in the Watershed
Augusta	0.04%
Belgrade	100%
Mercer	26.73%
Manchester	9.17%
Mount Vernon	62.18%
New Sharon	0%
Norridgewock	0%
Oakland	32.60%
Readfield	21.58%
Rome	100%
Sidney	23.46%
Smithfield	72.36%
Vienna	0%

In constructing this abstract we began by using the work of our Colby colleagues on the *Belgrade Lakes Watershed Sustainability Project* who examined topographical maps, retrieved geographic information system (GIS) data, and applied the results of their own field work to map the Belgrade Lakes Watershed boundary. We then identified thirteen cities and towns in Central Maine that are "touched" by the Watershed. Next we used geographic data from the US Census Bureau to separate out the "blocks"[2] within each city or town that lie within the physical boundaries of the Watershed. Occasionally, the Watershed boundary would pass through a Census block and in these instances we would employ satellite imagery and GIS mapping to estimate the fraction of the population in that block living in the Watershed. The table at right provides a listing of the cities and towns that lie either partially or completely within the Belgrade Lakes Watershed. The accompanying population weights were applied in the set of tables in the next section to define the demographic characteristics for the Belgrade Lakes Watershed.

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[2]A Census block is the most detailed sub-unit of measurement of the population reported by the US Census Bureau in the decennial census. In a large city like Chicago or Los Angeles, a "block" might literally be a city block. In rural areas, however, Census blocks are often irregular in shape and defined by roads, highways, or streets.

Demographic Profile of the Belgrade Lakes Watershed

Table 1 presents detailed demographic characteristics for the residents of the Belgrade Lakes Watershed and most of the surrounding communities, applying the population weights described above to data from the 2000 and 2010 Census as reported by the US Census Bureau. Data for Readfield and Manchester are included in the totals for the Belgrade Lakes Watershed, but are not reported separately in Table 1 due to formatting constraints. Totals for Maine, and Kennebec and Somerset counties are included for comparison purposes. We also decided to include Waterville in Table 1 despite the fact that it lies entirely outside the Belgrade Lakes Watershed because of its importance as a related source of economic activity due to its proximity to the region.

Some of the key features of the demographic profile for the Belgrade Lakes Watershed revealed in Table 1 include:

> The Belgrade Lakes Watershed population declined by 5.3%, while the overall population in Maine and both Kennebec and Somerset counties increased from 2000 to 2010. In fact, Table 1 shows that the population in each of the towns touched by the Watershed increased from 2000 to 2010. A hint as to what might account for this apparent contradiction can be found in the fact that the number of seasonal homes as a percent of the Belgrade Lakes Watershed's total housing stock increased during this period. In addition, Map 1 (on page 7) illustrates the change in population from 2000 to 2010 for each Census block in the Watershed. Note that a significant number of the Census blocks that border the lakes show a decline in population while many of the blocks away from the lakes experienced either an increase or no change in population. This would seem to confirm anecdotal reports that lake-front property is being purchased by people whose primary residence lies outside the Belgrade Lakes Watershed.

> The increase in the housing stock in the Belgrade Lakes Watershed from 2000 to 2010 was significantly below that in any of the surrounding communities or for the State as a whole.

> The number of "families" (two or more people related to by birth, marriage, or adoption) living in the Belgrade Lakes Watershed showed a greater decline than in any of the surrounding communities, the state of Maine, or the two counties touched by the Watershed; with the greatest declines coming among larger-sized households.

> Average family size declined across the State during the past 10 years.

> The number of single mothers living in the Belgrade Lakes Watershed declined from 2000 to 2010, but rose or remained unchanged in each of the surrounding communities.

> Map 2 (on page 8) provides an illustration of the intensity of use of resources in the Watershed in 2010. The greatest stresses on ecosystem services in the region will occur where the number of housing units (both seasonal and year-round) per square kilometer is the greatest.

Table 1: Decennial Census Profile of the Belgrade Lakes Watershed

Variable	Belgrade Lakes Watershed			State of Maine			Kennebec County			Somerset County		
	2000	2010	% Change	2000	2010	% Change	2000	2010	% Change	2000	2010	% Change
Total Population	10,523	9,970	-5.3%	1,274,923	1,328,361	4.2%	117,114	122,151	4.3%	50,888	52,228	2.6%
Males	49.2%	49.6%		48.7%	48.9%		48.5%	48.7%		49.0%	49.6%	
Females	50.8%	50.4%		51.3%	51.1%		51.5%	51.3%		51.0%	50.4%	
Total Housing Units	6,447	6,576	2.0%	651,901	721,830	10.7%	56,364	60,972	8.2%	28,222	30,569	8.3%
Total Occupied Housing Units	4,082	4,071	-0.3%	518,200	557,219	7.5%	47,683	51,128	7.2%	20,496	21,927	7.0%
One-person Household	766	839	9.5%	139,969	159,533	14.0%	13,170	14,744	12.0%	5,035	5,888	16.9%
Two-person Household	1,623	1,783	9.8%	190,804	213,695	12.0%	17,258	19,392	12.4%	7,740	8,753	13.1%
Three-person Household	724	655	-9.5%	82,223	84,340	2.6%	7,654	7,843	2.5%	3,437	3,275	-4.7%
Four-person Household	654	529	-19.1%	69,418	64,010	-7.8%	6,477	5,959	-8.0%	2,846	2,547	-10.5%
Five or more person Household	316	266	-16.0%	35,786	35,641	-0.4%	3,124	3,190	2.1%	1,438	1,464	1.8%
Vacant Housing Units	2,365	2,505	5.9%	133,701	164,611	23.1%	8,681	9,844	13.4%	7,726	8,642	11.9%
Seasonal Homes	2,179	2,234	2.6%	101,470	118,310	16.6%	5,770	6,188	7.2%	5,906	6,532	10.6%
Seasonal Homes as Percentage of Total Housing Units	33.8%	34.0%		15.6%	16.4%		10.2%	10.1%		20.9%	21.4%	
Families	3,072	2,954	-3.8%	340,685	350,621	2.9%	31,328	32,368	3.3%	14,117	14,353	1.7%
Average Family Size	2.8	2.7	-4.9%	2.9	2.8	-2.4%	2.9	2.8	-2.4%	2.9	2.8	-2.4%
Single Mothers	221	196	-11.6%	32,352	33,634	4.0%	3,303	3,325	0.7%	1,392	1,361	-2.2%
White Population	10,329	9,772	-5.4%	1,236,014	1,264,971	2.3%	114,129	117,501	3.0%	49,868	50,733	1.7%
Black/African American Population	17	27	59.3%	6,760	15,707	132%	404	687	70.0%	121	192	58.7%
AIAN Population	24	28	18.1%	7,098	8,568	20.7%	469	586	24.9%	208	241	15.9%
Asian Population	44	28	-37.0%	9,111	13,571	49.0%	690	892	29.3%	171	295	72.5%
Other Race Population	27	18	-32.2%	3,293	4,603	39.8%	230	417	81.3%	66	77	16.7%
Two or more races	83	98	18.1%	12,647	20,941	65.6%	1,192	2,068	73.5%	454	690	52.0%
Hispanic/Latino Population	55	82	48.7%	9,360	16,935	80.9%	852	1,504	76.5%	234	409	74.8%

Source: US Census Bureau, 2000 and 2010 Census, Summary File 1 data. AIAN denotes American Indian and Alaska Native.

Table 1: Decennial Census Profile of the Belgrade Lakes Watershed (continued)

Variable	Belgrade Lakes Watershed			Augusta (0.04% in Watershed)			Waterville (0% in WS)			Oakland (32.6% in WS)		
	2000	2010	% Change	2000	2010	% Change	2000	2010	% Change	2000	2010	% Change
Total Population	10,523	9,970	-5.3%	18,560	19,136	3.1%	15,605	15,722	0.7%	5,959	6,240	4.7%
Males	49.2%	49.6%		47.3%	48.6%		45.9%	46.8%	2.5%	48.9%	48.5%	3.8%
Females	50.8%	50.4%		52.7%	51.4%	2.9%	54.1%	53.2%	-0.8%	51.1%	51.5%	5.6%
Total Housing Units	6,447	6,576	2.0%	9,480	9,756	2.9%	6,819	7,065	3.6%	2,847	3,024	6.2%
Total Occupied Housing Units	4,082	4,071	-0.3%	8,565	8,802	2.8%	6,218	6,370	2.4%	2,352	2,543	8.1%
One-person Household	766	839	9.5%	3,277	3,503	6.9%	2,398	2,481	3.5%	556	579	4.1%
Two-person Household	1,623	1,783	9.8%	2,919	3,005	2.9%	2,024	2,090	3.3%	813	988	21.5%
Three-person Household	724	655	-9.5%	1,149	1,109	-3.5%	862	866	0.5%	428	471	10.0%
Four-person Household	654	529	-19.1%	832	756	-9.1%	605	568	-6.1%	366	337	-7.9%
Five or more person Household	316	266	-16.0%	388	429	10.6%	329	365	10.9%	189	168	-11.1%
Vacant Housing Units	2,365	2,505	5.9%	915	954	4.3%	601	695	15.6%	495	481	-2.8%
Seasonal Homes	2,179	2,234	2.6%	155	177	14.2%	67	66	-1.5%	317	343	8.2%
Seasonal Homes as Percentage of Total Housing Units	33.8%	34.0%		1.6%	1.8%		1.0%	0.9%		11.1%	11.3%	
Families	3,072	2,954	-3.8%	4,610	4,490	-2.6%	3,371	3,274	-2.9%	1,650	1,793	8.7%
Average Family Size	2.8	2.7	-4.9%	2.8	2.8	-0.4%	2.8	2.8	-1.4%	3.0	2.8	-5.0%
Single Mothers	221	196	-11.6%	643	649	0.9%	553	565	2.2%	179	185	3.4%
White Population	10,329	9,772	-5.4%	17,856	18,001	0.8%	14,951	14,765	-1.2%	5,856	6,037	3.1%
Black/African American Population	17	27	59.3%	93	201	116%	122	180	47.5%	9	27	200%
AIAN Population	24	28	18.1%	89	127	42.7%	88	88	0.0%	14	24	71.4%
Asian Population	44	28	-37.0%	250	291	16.4%	161	189	17.4%	33	56	69.7%
Other Race Population	27	18	-32.2%	31	78	152%	70	128	82.9%	5	26	420%
Two or more races	83	98	18.1%	241	438	81.7%	213	372	74.6%	42	70	66.7%
Hispanic/Latino Population	55	82	48.7%	160	341	113%	160	374	134%	31	84	171%

Source: US Census Bureau, 2000 and 2010 Census, Summary File 1 data. AIAN denotes American Indian and Alaska Native.

Table 1: Decennial Census Profile of the Belgrade Lakes Watershed (continued)

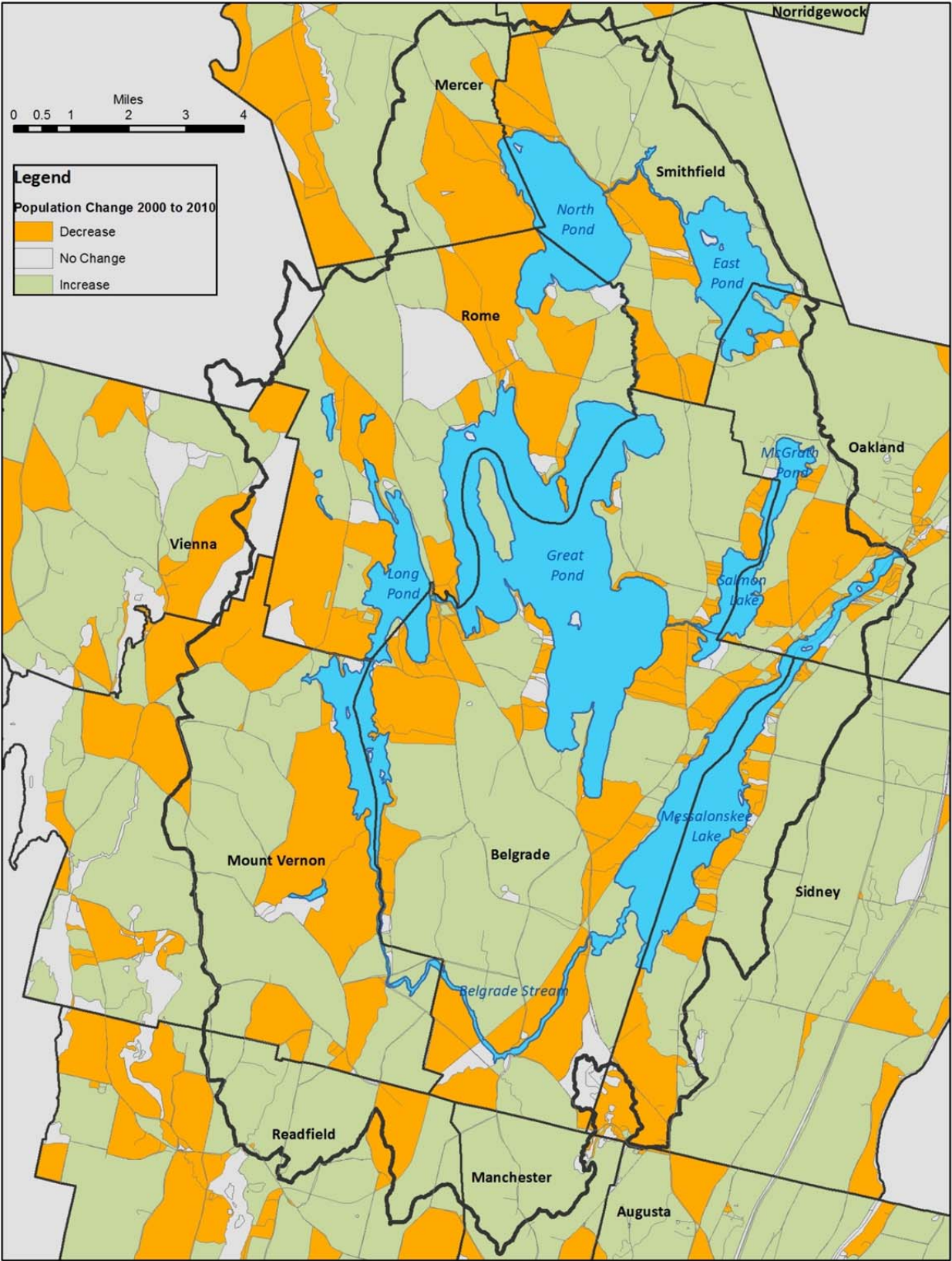| Variable	Belgrade Lakes Watershed			Belgrade (100% in Watershed)			Rome (100% in Watershed)			Smithfield (72.36% in WS)		
	2000	2010	% Change	2000	2010	% Change	2000	2010	% Change	2000	2010	% Change
Total Population	10,523	9,970	-5.3%	2,978	3,189	7.1%	980	1,010	3.1%	930	1,033	11.1%
Males	49.2%	49.6%		48.2%	49.5%		48.5%	51.5%		50.0%	49.2%	
Females	50.8%	50.4%		51.8%	50.5%		51.5%	48.5%		50.0%	50.8%	
Total Housing Units	6,447	6,576	2.0%	2,007	2,198	9.5%	941	1,038	10.3%	608	727	19.6%
Total Occupied Housing Units	4,082	4,071	-0.3%	1,178	1,265	7.4%	386	439	13.7%	372	451	21.2%
One-person Household	766	839	9.5%	223	248	11.2%	69	106	53.6%	66	104	57.6%
Two-person Household	1,623	1,783	9.8%	487	518	6.4%	174	209	20.1%	167	213	27.5%
Three-person Household	724	655	-9.5%	210	226	7.6%	53	52	-1.9%	64	65	1.6%
Four-person Household	654	529	-19.1%	168	185	10.1%	56	46	-17.9%	50	45	-10.0%
Five or more person Household	316	266	-16.0%	90	88	-2.2%	34	26	-23.5%	25	24	-4.0%
Vacant Housing Units	2,365	2,505	5.9%	829	933	12.5%	555	599	7.9%	236	276	16.9%
Seasonal Homes	2,179	2,234	2.6%	774	818	5.7%	538	560	4.1%	218	243	11.5%
Seasonal Homes as Percentage of Total Housing Units	33.8%	34.0%		38.6%	37.2%		57.2%	53.9%		35.9%	33.4%	
Families	3,072	2,954	-3.8%	877	935	6.6%	290	299	3.1%	285	314	10.2%
Average Family Size	2.8	2.7	-4.9%	2.9	2.9	-1.4%	2.9	2.7	-6.3%	2.8	2.6	-7.7%
Single Mothers	221	196	-11.6%	66	66	0%	25	18	-28.0%	17	17	0.0%
White Population	10,329	9,772	-5.4%	2,939	3,135	6.7%	963	995	3.3%	915	1,008	10.2%
Black/African American Population	17	27	59.3%	3	6	100%	1	2	100%	1	1	0.0%
AIAN Population	24	28	18.1%	3	4	33.3%	8	4	-50.0%	2	2	0.0%
Asian Population	44	28	-37.0%	6	2	-66.7%	1	1	0.0%	4	5	25.0%
Other Race Population	27	18	-32.2%	5	0	-100%	0	7		4	1	-75.0%
Two or more races	83	98	18.1%	22	42	90.9%	7	1	-85.7%	4	16	300%
Hispanic/Latino Population	55	82	48.7%	14	16	14.3%	3	6	100%	9	10	11.1%

Source: US Census Bureau, 2000 and 2010 Census, Summary File 1 data. AIAN denotes American Indian and Alaska Native.

Table 1: Decennial Census Profile of the Belgrade Lakes Watershed (continued)

Variable	Belgrade Lakes Watershed			Mercer (26.73% in Watershed)			Mount Vernon (62.18% In WS)			Sidney (23.46% In WS)		
	2000	2010	% Change	2000	2010	% Change	2000	2010	% Change	2000	2010	% Change
Total Population	10,523	9,970	-5.3%	647	664	2.6%	1,524	1,640	7.6%	3,514	4,208	19.7%
Males	49.2%	49.6%		47.8%	48.9%		50.3%	49.3%		49.7%	50.4%	
Females	50.8%	50.4%		52.2%	51.1%		49.7%	50.7%		50.3%	49.6%	
Total Housing Units	6,447	6,576	2.0%	366	399	9.0%	956	1,107	15.8%	1,518	1,850	21.9%
Total Occupied Housing Units	4,082	4,071	-0.3%	256	287	12.1%	603	693	14.9%	1,314	1,607	22.3%
One-person Household	766	839	9.5%	51	69	35.3%	119	152	27.7%	235	283	20.4%
Two-person Household	1,623	1,783	9.8%	102	132	29.4%	248	321	29.4%	469	657	40.1%
Three-person Household	724	655	-9.5%	45	41	-8.9%	96	97	1.0%	273	277	1.5%
Four-person Household	654	529	-19.1%	38	28	-26.3%	102	87	-14.7%	231	258	11.7%
Five or more person Household	316	266	-16.0%	20	17	-15.0%	38	36	-5.3%	106	132	24.5%
Vacant Housing Units	2,365	2,505	5.9%	110	112	1.8%	353	414	17.3%	204	243	19.1%
Seasonal Homes	2,179	2,234	2.6%	91	87	-4.4%	320	371	15.9%	166	167	0.6%
Seasonal Homes as Percentage of Total Housing Units	33.8%	34.0%		24.9%	21.8%		33.5%	33.5%		10.9%	9.0%	
Families	3,072	2,954	-3.8%	179	199	11.2%	449	487	8.5%	989	1,196	20.9%
Average Family Size	2.8	2.7	-4.9%	2.9	2.7	-8.5%	2.9	2.7	-5.6%	3.0	2.9	-3.3%
Single Mothers	221	196	-11.6%	8	11	37.5%	35	35	0%	71	86	21.1%
White Population	10,329	9,772	-5.4%	628	653	4.0%	1,488	1,611	8.3%	3,471	4,124	18.8%
Black/African American Population	17	27	59.3%	1	1	0%	4	1	-75.0%	2	6	200%
AIAN Population	24	28	18.1%	2	4	100%	8	6	-25.0%	6	14	133%
Asian Population	44	28	-37.0%	9	3	-66.7%	3	2	-33.3%	10	13	30.0%
Other Race Population	27	18	-32.2%	4	0	-100%	6	2	-66.7%	6	7	16.7%
Two or more races	83	98	18.1%	3	3	0%	15	18	20.0%	19	44	132%
Hispanic/Latino Population	55	82	48.7%	4	2	-50.0%	6	12	100%	15	28	86.7%

Source: US Census Bureau, 2000 and 2010 Census, Summary File 1 data. AIAN denotes American Indian and Alaska Native.

Map 1: Change in Population in the Belgrade Lakes Watershed, 2000 to 2010

Legend

Population Change 2000 to 2010

- Decrease
- No Change
- Increase

Miles
0 0.5 1 2 3 4

Norridgewock

Mercer

Smithfield

North Pond

East Pond

Rome

Oakland

McGrath Pond

Vienna

Great Pond

Long Pond

Salmon Lake

Messalonskee Lake

Mount Vernon

Belgrade

Sidney

Belgrade Stream

Readfield

Manchester

Augusta

Map 2: Household Density in the Belgrade Lakes Watershed

Legend

Roads
Watershed_boundary
Belgrade_Lakes

Housing Units per Square Kilometer
0
1 - 8
9 - 12
13 - 18
19 - 28
29 - 44
45- 69
70 - 112
113 - 188
189 - 2645

North Pond

East Pond

McGrath Pond

Great Pond

Salmon Lake

Long Pond

Messalonskee Lake

Belgrade Stream

N

Kilometers
0   1.5   3   6   9

Norridgewock
Mercer
New Sharon
Smithfield
Rome
Oakland
Vienna
Belgrade
Mount Vernon
Sidney
Readfield
Manchester
Augusta
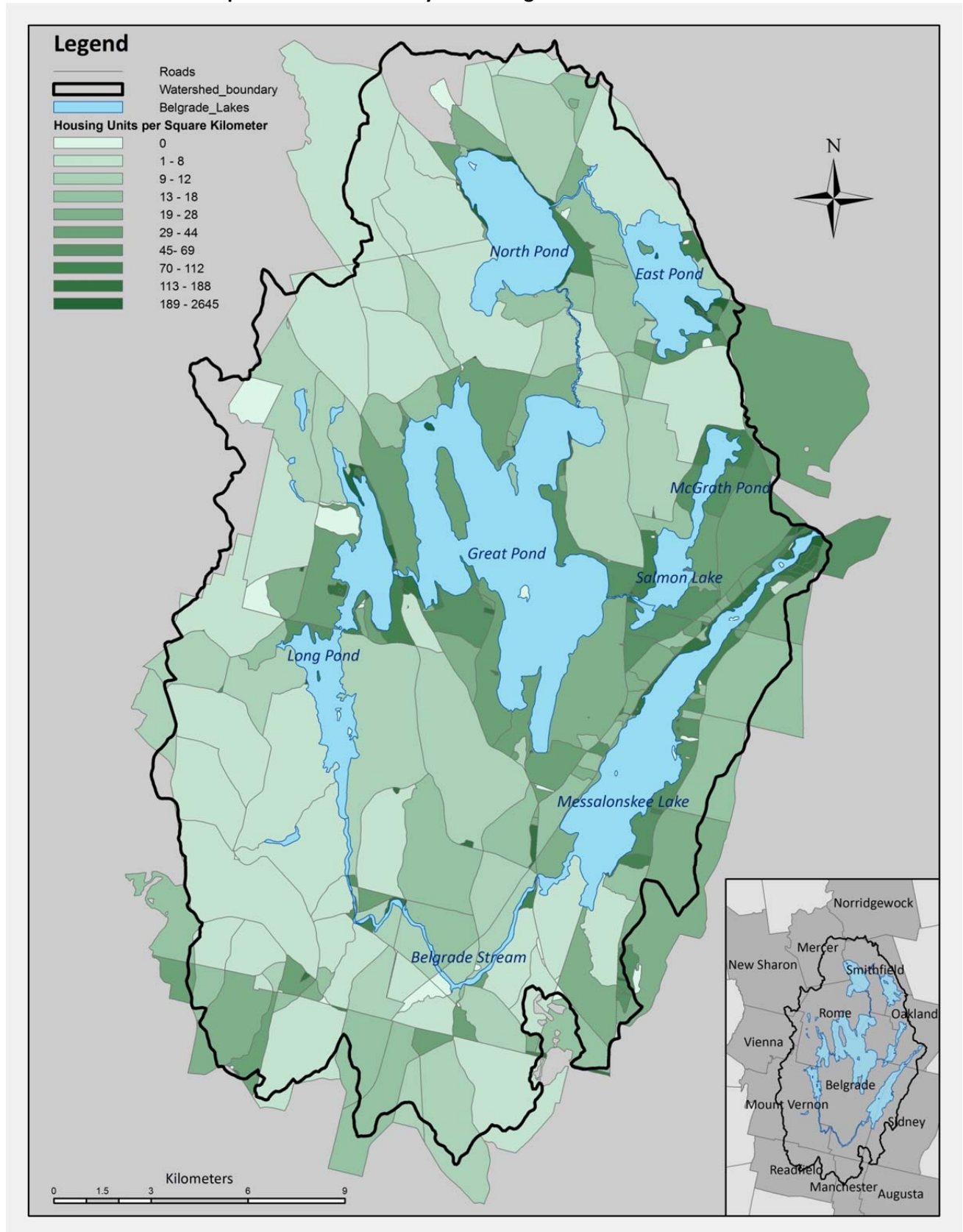
Demographic Characteristics for the Belgrade Lakes Region

In 2010 the US Census Bureau abandoned the traditional "long form" questionnaire administered to a representative sample of the population every 10 years, much to the consternation of researchers and policy makers who had come to rely on these data to track details related to income, poverty, education, and behavioral characteristics about the nation's population. In its place, the Census Bureau now relies on an annual survey for a smaller sample of the population and reports 5-year averages for these data via the American Community Survey. These data are not available at the block level so we were unable to calculate changes relative to the 2000 population for the Census blocks that make up the Belgrade Lakes Watershed. The data in the American Community Survey are most reliable in urban areas. For rural areas like Central Maine, however, small sample sizes employed for the Survey make for much less reliable estimates. Thus, the information provided in this section of the Abstract should be treated with some caution.

Table 2 reports summary statistics for what we have labeled the "Belgrade Lakes Region," calculated by aggregating across the communities reported in the US Census' American Community Survey that have 23% or more of their population in the Watershed. Note that the data in Table 2 are averages for the period 2006 – 2010. Some highlights include the following:

> The fraction of households in the Belgrade Lakes Region reporting incomes above $150,000 is noticeably higher than for the State as a whole or for the 5-year averages in Kennebec and Somerset counties.

> Median household income in the Belgrade Lakes Region is 12% higher than that for the State.

> Smithfield and Mercer both report rates of poverty above the average for all of Maine for this period.

> The fraction of households in the Region receiving supplemental assistance for food (formerly known as the "Food Stamps" program) is higher than the state-wide average.

> The fraction of the population over 25 years of age with an advanced educational degree in the Belgrade Lakes Region is above the average for Maine. The difference between the Region as a whole and Somerset County is particularly large.

> Average commuting times for work appear to be somewhat lower on average for people working outside the home in the Belgrade Lakes Region than for the state as a whole. People in the towns of Mercer and Rome seem to have the longest commuting times on average.

Table 2: Demographic Characteristics of the Belgrade Lakes Region
Estimates for the Period 2006 – 2010

	Statistic	Belgrade Lakes Region	Maine	Kennebec County	Somerset County
	Total Population	17,252	1,291,988	118,549	51,554
	Total Households	6,963	551,125	50,869	21,892
Household Income Level	Less than $10,000	4.93%	7.22%	7.40%	9.98%
	$10,000-$14,999	2.64%	6.40%	5.42%	9.02%
	$15,000-$24,999	11.56%	12.34%	12.12%	16.28%
	$25,000-$34,999	11.09%	11.52%	12.79%	12.25%
	$35,000-$49,999	16.26%	15.44%	16.00%	14.41%
	$50,000-$74,999	24.53%	20.20%	21.19%	19.31%
	$75,000-$99,999	11.69%	12.31%	11.64%	10.03%
	$100,000-$149,999	10.79%	9.62%	9.06%	6.16%
	$150,000-$199,999	3.37%	2.82%	2.63%	1.34%
	$200,000 or more	3.15%	2.14%	1.75%	1.23%
	Median Household Income	$52,669	$46,933	$45,973	$36,647
	Per capita Income	$27,422	$25,385	$24,656	$20,709
	Income Below Poverty Level	8.39%	12.57%	12.53%	18.38%
	Households Received Food Stamps/SNAP program	10.50%	5.80%	6.61%	8.41%
	Population over 25	12,189	929,301	84,934	37,153
Education Level	No High School	2.20%	3.80%	3.67%	4.94%
	Some High School	5.41%	6.44%	6.08%	8.45%
	High School Graduate	34.99%	35.16%	37.35%	43.85%
	Some College	19.03%	19.16%	19.20%	19.01%
	College Graduate	27.99%	26.06%	24.83%	18.74%
	Graduate Degree	7.56%	6.66%	6.13%	3.62%
	Professional Degree or Certification	2.83%	2.71%	2.73%	1.39%
	Number of people working outside the home	8,080	609,259	55,433	20,825
Travel to Work	Less than 5 minutes	5.63%	6.03%	5.06%	7.58%
	5 to 19 minutes	40.87%	44.69%	44.62%	44.22%
	20 to 39 minutes	38.84%	33.23%	35.72%	28.66%
	40 to 59 minutes	7.34%	9.94%	8.10%	9.83%
	60 to 89 minutes	4.76%	3.97%	4.65%	5.69%
	90 minutes or more	2.56%	2.14%	1.85%	4.02%

Source: US Census Bureau, American Community Survey data.

Table 2: Demographic Characteristics of the Belgrade Lakes Region (continued)

Estimates for the Period 2006 – 2010

	Statistic	Belgrade	Mount Vernon	Oakland	Rome	Sidney	Mercer	Smithfield
	Total Population	3,168	1,327	6,103	1,055	4,060	547	992
	Total Households	1,240	598	2,502	437	1,542	238	406
Household Income Level	Less than $10,000	2.82%	6.86%	6.87%	6.18%	2.85%	2.94%	4.19%
	$10,000-$14,999	3.79%	4.35%	0.96%	0.00%	2.33%	12.18%	5.42%
	$15,000-$24,999	15.97%	9.53%	12.67%	16.25%	8.17%	5.88%	5.42%
	$25,000-$34,999	11.94%	11.37%	12.03%	10.53%	6.42%	14.71%	18.47%
	$35,000-$49,999	10.32%	11.04%	20.42%	14.87%	16.08%	18.07%	17.49%
	$50,000-$74,999	21.53%	25.42%	19.46%	22.43%	37.16%	20.17%	20.44%
	$75,000-$99,999	9.60%	18.73%	11.35%	10.98%	9.27%	17.23%	16.50%
	$100,000-$149,999	15.40%	9.20%	9.27%	8.70%	11.74%	2.94%	11.58%
	$150,000-$199,999	3.39%	1.00%	3.36%	5.03%	4.47%	4.20%	0.49%
	$200,000 or more	5.24%	2.51%	3.60%	5.03%	1.49%	1.68%	0.00%
	Median Household Income	$56,379	$57,115	$46,343	$52,375	$56,675	$43,929	$49,375
	Per capita Income	$28,231	$29,050	$27,223	$34,933	$26,300	$23,673	$22,561
	Income Below Poverty Level	15.06%	8.06%	7.65%	4.93%	3.13%	10.05%	16.43%
	Households Received Food Stamps	3.95%	2.79%	4.93%	8.63%	2.73%	4.57%	4.13%
	Population over 25	2,209	1,007	4,262	738	2,814	422	737
Education Level	No High School	0.45%	3.67%	1.95%	2.98%	2.31%	7.82%	2.44%
	Some High School	5.57%	5.06%	5.02%	5.96%	5.79%	6.40%	5.02%
	High School Graduate	30.15%	27.61%	37.82%	33.33%	34.12%	41.47%	44.50%
	Some College	18.88%	23.54%	17.15%	13.55%	21.68%	13.51%	22.66%
	College Graduate	31.42%	31.38%	26.28%	20.19%	28.46%	23.70%	19.40%
	Graduate Degree	9.05%	6.95%	8.14%	11.79%	6.36%	3.32%	3.26%
	Professional Degree or Certification	4.48%	1.79%	3.64%	2.17%	1.28%	3.79%	0.68%
	Number of people working outside the home	1,351	658	2,966	479	1,970	214	442
Travel to Work	Less than 5 minutes	4.37%	10.94%	7.15%	2.09%	3.20%	4.67%	6.56%
	5 to 19 minutes	30.57%	17.78%	58.16%	14.61%	42.54%	13.08%	25.11%
	20 to 39 minutes	49.96%	52.43%	24.04%	56.16%	40.56%	49.53%	52.26%
	40 to 59 minutes	9.70%	10.49%	4.79%	9.39%	5.99%	17.29%	11.54%
	60 to 89 minutes	3.63%	6.53%	3.17%	12.11%	5.89%	7.94%	1.81%
	90 minutes or more	1.78%	1.82%	2.70%	5.64%	1.83%	7.48%	2.71%

Source: US Census Bureau, American Community Survey data.

Crime in the Belgrade Lakes Region

Crime rates are defined in terms of the number of offenses per 1,000 residents for a specific geographic region. The Belgrade Lakes Watershed lies primarily within Kennebec and Somerset counties. In Maine, only towns with their own police departments provide publicly available crime statistics. All other crime statistics are reported in an aggregate fashion at the state and county levels by the state police or county sheriff offices. Within the Belgrade Lakes Watershed, only Augusta and Oakland have their own police departments reporting crime data. As noted above, only a very small portion of Augusta (approximately 0.04% of the population) lies within the Watershed.

As illustrated in Chart 1 below, when comparing county-level data to the state of Maine or the United States we can see that total crime rates for the counties that include the Belgrade Lakes Watershed are slightly higher than overall crime rates in the state of Maine. However, crime rates in Maine are generally lower than for the nation as a whole. Oakland is the town with the most land area within the Belgrade Lakes Watershed that has its own police department, and we can see that its crime rates are noticeably lower than those reported for both the state of Maine and the US.

Table 3 provides a comparison of detailed crime statistics for the counties and towns that surround the Belgrade Lakes Watershed. The recent trends reported in Table 3 indicate that crime rates within the Watershed are probably more similar to those of Oakland while the higher crime rates in Waterville, Skowhegan, and Augusta will inflate the reported Kennebec County level crime rates above those for the towns that lie within the Watershed.

Chart 1: Crime Rates for the US, Maine, and the Belgrade Lakes Region
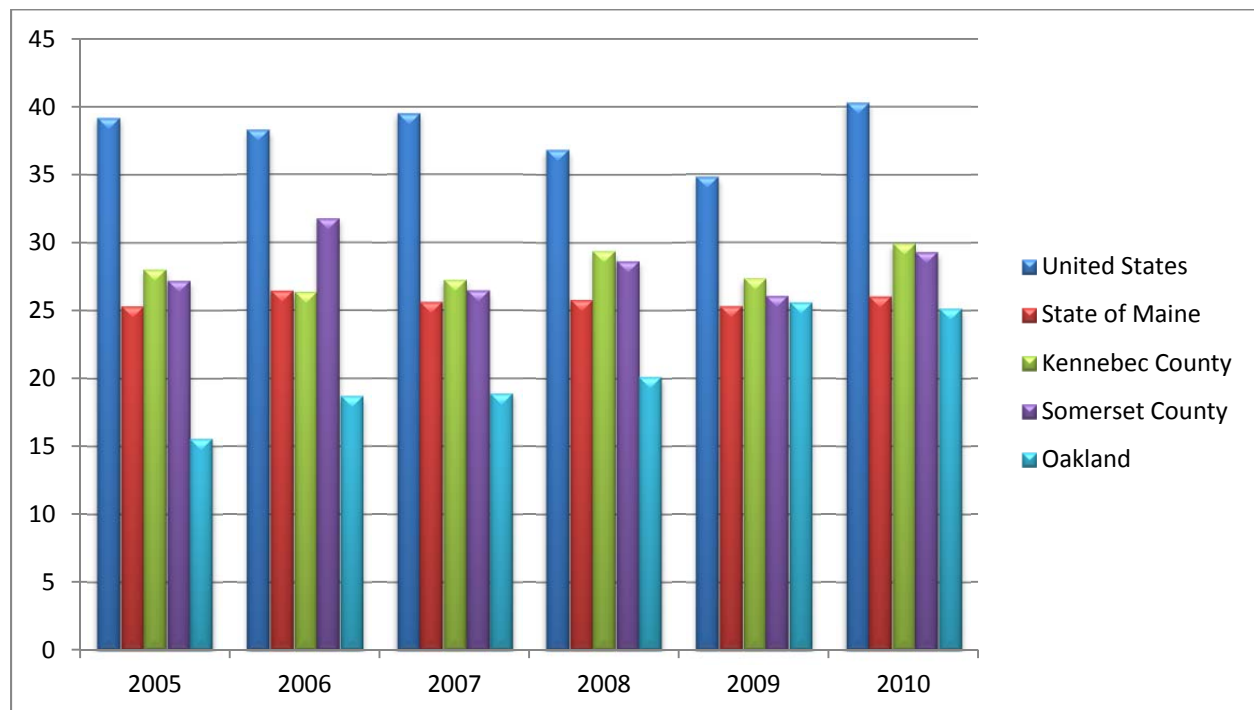
Source: State of Maine Department of Public Safety. http://www.maine.gov/dps/cim/crime_in_maine/2010contents.htm.

Table 3: Crime Statistics for the Belgrade Lakes Region

Reported Crimes	Maine					Kennebec County					Somerset County				
	2006	2007	2008	2009	2010	2006	2007	2008	2009	2010	2006	2007	2008	2009	2010
Murder	21	21	31	26	24	0	2	3	1	1	6	2	1	2	1
Rape	340	393	373	374	389	54	56	46	55	51	16	16	18	22	19
Robbery	383	349	332	398	416	23	26	17	28	29	8	7	9	8	10
Aggravated Assault	780	793	813	742	760	73	74	71	58	66	28	20	25	20	21
Burglary	6,776	6,677	6,516	6,711	7,343	638	80	629	630	812	390	315	348	387	411
Larceny	25,161	24,060	24,582	23,900	24,490	2,253	2,350	2,663	1,433	2,594	1,128	936	989	841	975
Motor Vehicle Theft	1,340	1,260	1,173	1,018	985	125	79	105	83	83	61	67	75	46	51
Arson	193	243	188	143	245	26	22	17	28	22	6	13	12	13	14
Total Crimes	34,994	33,796	34,008	33,412	34,652	3,192	3,289	3,551	3,316	3,658	1,643	1,376	1,477	1,339	1,502
Rate Per 1000 population	26.48	25.66	25.83	25.34	26.09	26.38	27.27	29.41	27.37	29.98	31.8	26.5	28.67	26.09	29.35

Reported Crimes	Oakland				Augusta				Waterville				Skowhegan			
	2007	2008	2009	2010	2007	2008	2009	2010	2007	2008	2009	2010	2007	2008	2009	2010
Murder	0	0	0	0	1	3	0	0	0	0	0	0	0	1	1	0
Rape	1	3	3	1	16	8	11	12	14	12	10	10	6	7	10	6
Robbery	2	0	3	0	10	4	12	13	9	8	3	11	2	2	2	4
Aggravated Assault	1	1	1	2	44	43	30	32	10	12	13	8	4	6	6	5
Burglary	26	29	30	22	182	184	166	221	130	93	90	84	58	50	57	58
Larceny	86	89	117	130	932	980	81	964	588	624	660	559	256	327	265	282
Motor Vehicle Theft	1	3	5	2	25	40	32	20	18	10	8	14	6	11	5	9
Arson	1	0	0	0	11	13	5	11	2	1	8	2	5	4	2	1
Total Crimes	118	125	159	157	1,221	1,275	1,127	1,273	771	760	792	688	337	408	348	65
Rate per 1000 population	18.91	20.15	25.61	25.18	65.74	69.51	61.75	68.76	49.33	47.61	49.31	42.80	37.97	46.62	40.17	42.39

Source: State of Maine Department of Public Safety. http://www.maine.gov/dps/cim/cim/crime_in_maine/2010contents.htm.

**Public School Enrollment Trends for the Belgrade Lakes Region**

Table 4 provides data on recent trends in public school enrollments and eligibility for subsidized free and reduced-fee lunch programs for school districts enrolling students from the Belgrade Lakes Region. Chart 2 illustrates the recent rise in eligibility for free and reduced-fee lunch programs within the region.

Table 4: Public School Enrollment Trends

| | Academic Year | | | | | | | | |
| | 2009-2010 | | | 2010-2011 | | | 2011-2012 | | |
	Enrollment	% Chg	Eligible	Enrollment	% Chg	Eligible	Enrollment	% Chg	Eligible
Maine	191,613	-0.70%	43.0%	189,433	-1.14%	44.1%	187,651	-0.94%	45.2%
Belgrade Lakes Region	5,505	-0.05%	47.9%	5,338	-3.03%	48.8%	5,343	0.09%	50.7%
RSU 18 Belgrade, Oakland, Rome, Sidney	2,622	-0.30%	36.4%	2,522	-3.81%	37.4%	2,488	-1.35%	38.9%
RSU 38 Mt. Vernon Elementary School	107	-12.30%	48.6%	104	-2.80%	48.1%	121	16.35%	46.3%
RSU 54 Canaan, Cornville, Mercer, Norridgewock, Skowhegan, Smithfield	2,776	0.73%	58.8%	2,712	-2.31%	59.3%	2,734	0.81%	61.7%

Source: State of Maine Department of Education; http://www.state.me.us/education/sfs/reports_tab.html.

Chart 2: Eligibility for Free and Reduced-Fee Lunch Programs
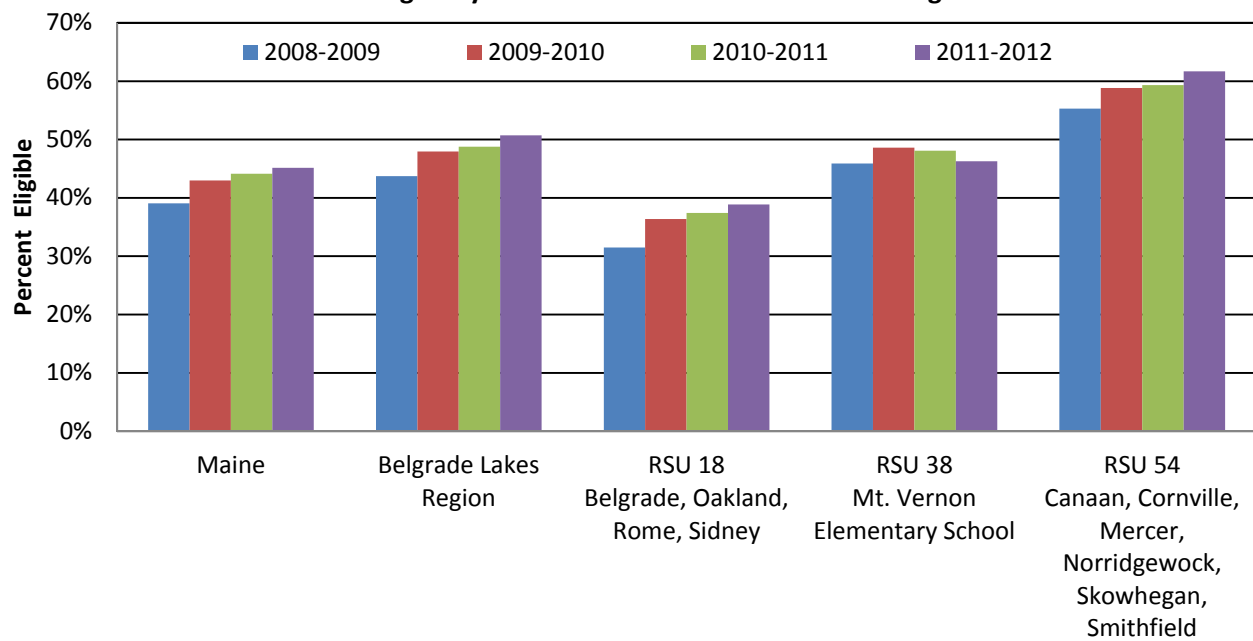
Employment in the Belgrade Lakes Watershed

The information in this section of the Abstract come from the Maine Department of Labor and represent aggregate statistics from a data set of employers located in the thirteen towns that are touched by the Belgrade Lakes Watershed. From this data set, we geocoded the physical addresses for each of these employers and separated out those located within the boundaries of the Belgrade Lakes Watershed. In the results below, we do not report summary statistics for industries with fewer than five employers to protect the confidentiality of the individual firms involved.

Table 5 provides a snapshot of industries physically located within the Belgrade Lakes Watershed. In 2011 there were 172 employers located within the boundaries of the Watershed and an average level of employment of 1,772 workers. The industry with the largest number of employers in the Watershed was the construction industry. The second largest sector was Accommodation and Food Services, which represents the tourism industry and, not surprisingly, it reported the largest number of average employees for 2011.

**Table 5: 2011 Employment by Industry in the Belgrade Lakes Watershed**

Industry	Employers	Employees
Accommodation and Food Services	21	323
Administrative Services	16	84
Arts, Entertainment, and Recreation	–	37
Construction	39	161
Educational Services	12	302
Finance, Insurance, and Real Estate	5	35
Health Care	14	256
Manufacturing	13	121
Professional Services	11	31
Retail Trade	15	230
Transportation and Warehousing	7	38
Wholesale Trade	5	65
Industries with fewer than 5 employers in the Belgrade Lakes Watershed	14	89
TOTALS	172	1,772

Source: Maine Department of Labor and authors' calculations.

Charts 3 and 4 illustrate, respectively, recent trends in employment and wages paid by firms located in the Belgrade Lakes Watershed. One of the interesting features in both charts is the lack of a negative effect on total employment or wage growth due to the Great Recession of 2007 – 2009. Average employment grew through this period and wages (adjusted for inflation) increased as well.

Map 3 illustrates the geographic dispersion of employers within the Belgrade Lakes Watershed by industry. Map 4 aggregates the level of employment across industries, providing an indication of geographic concentration of employment within the Watershed.

Chart 3: Employment Trends in the Belgrade Lakes Watershed
(All Industries)
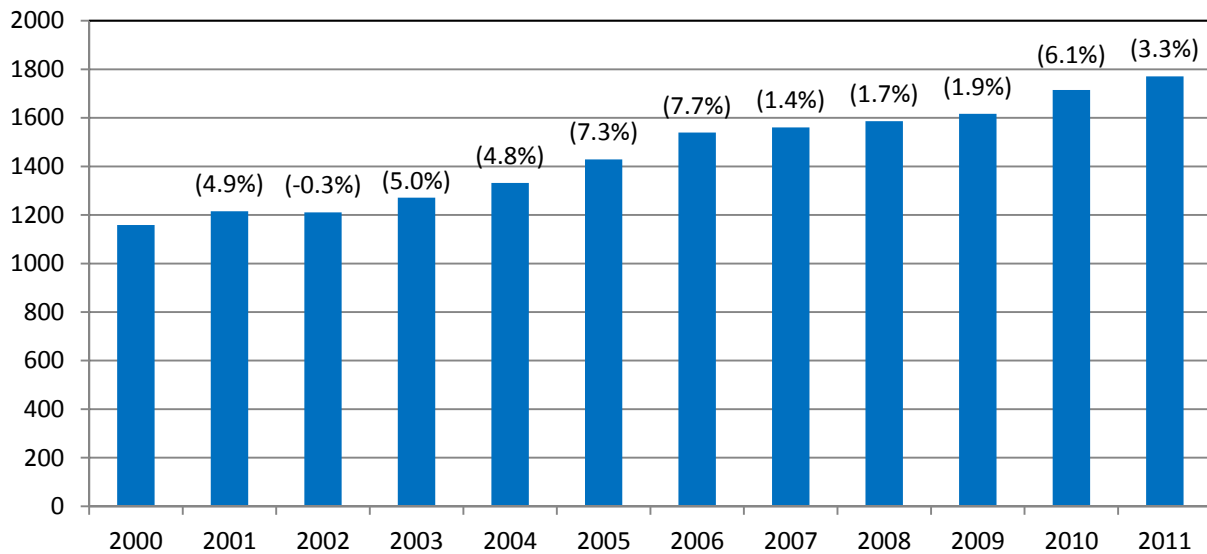
Source: Maine Department of Labor. Annual rates of growth in parentheses.

Chart 4: Wages Paid by Employers in the Belgrade Lakes Watershed
(All Industries, Inflation-Adjusted 2005 Dollars)
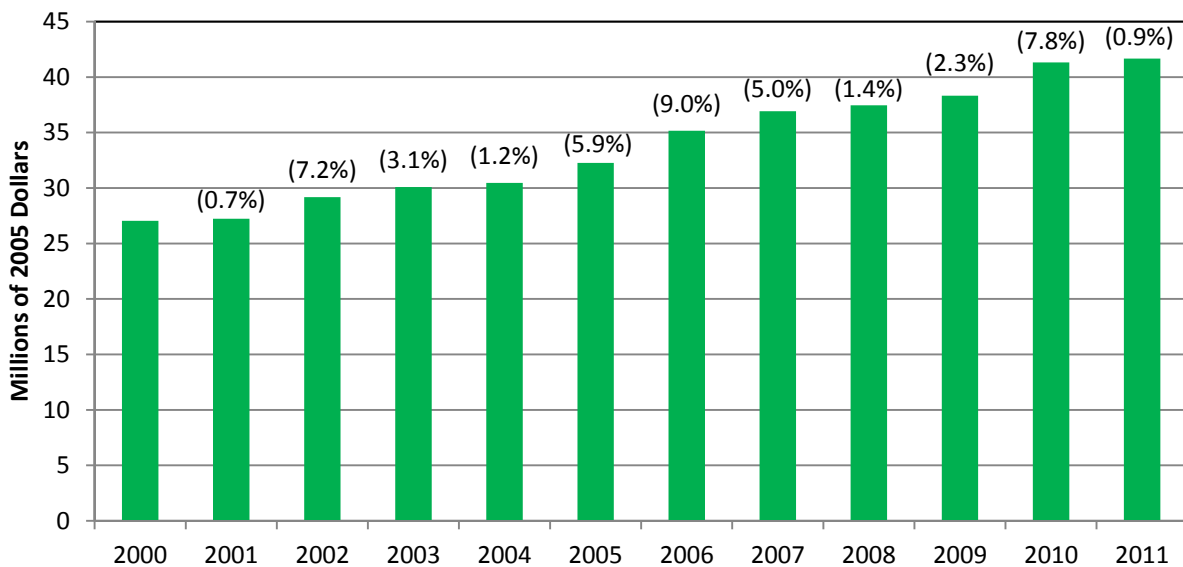
Source: Maine Department of Labor. Annual rates of growth in parentheses.

Map 3: Employers in the Belgrade Lakes Watershed in 2011

Legend

Industry and NAICS Code

- C   Logging (11)
- U   Utilities (22)
- | Construction (23)
- A   Manufacturing (31)
- g   Wood Product Manufacturing (32)
- &   Metal Manufacturing (33)
- ;   Wholesale Trade (42)
- ●   Retail Trade (44)
- S   Sporting Goods, Book Stores, and Misc. (45)
- E   Transportation (48)
- "   Postal Service (49)
- #   Publishing Services (51)
- ©   Finance and Insurance (52)
- R   Real Estate (53)
- P   Professional, Scientific and Support Services (54)
- •   Management of Companies (55)
- ▣   Administrative Support Services (56)
- E   Educational Services (61)
-     Health Care (62)
-     Arts and Entertainment (71)
- ¶   Accommodation and Food Services (72)
- -   Other Services (81)
- H   Public Administration (92)

Map 4: Employment in the Belgrade Lakes Watershed in 2011

Legend

Employees
- 0.25 – 9.50
- 9.51 – 31.75
- 31.76 – 75.75
- 75.76 – 345

Norridgewock

Mercer

Smithfield

New Sharon

North Pond

East Pond

Rome

Oakland

Vienna

McGrath Pond

Great Pond

Salmon Lake

Long Pond

Belgrade

Messalonskee Lake

Mount Vernon

Sidney

Belgrade Stream

Readfield

Manchester

Augusta

N

Miles
0 0.5 1   2   3   4

Labor Market Characteristics for the Belgrade Lakes Region

The labor market statistics in Table 6 represent selected measures from data publicly available from Maine's Department of Labor. Data for seven of the towns touched by the Belgrade Lakes Watershed are presented in Table 6 both individually, and in aggregate form identified as the Belgrade Lakes Region. Chart 5 at right illustrates trends in the unemployment rate for the Belgrade Lakes Region. Since 2000 the unemployment rate in the region has been below the average for the state of Maine.
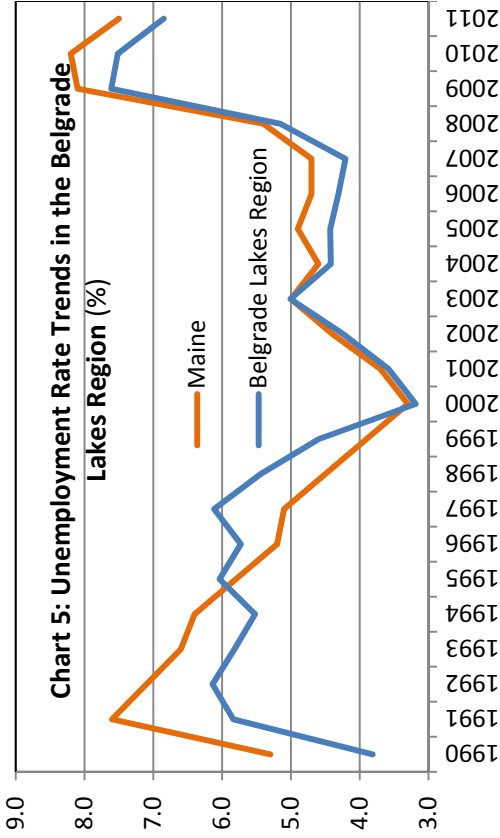

Chart 5: Unemployment Rate Trends in the Belgrade Lakes Region (%)

Table 6: Belgrade Lakes Region Labor Market

Variable	Mercer			Oakland			Sidney		
	2000	2010	2011	2000	2010	2011	2000	2010	2011
Civilian Labor Force	368	366	367	2,973	3,121	3,142	2,051	2,442	2,453
Annualized Growth Rate		-0.05%	0.27%		0.49%	0.67%		1.76%	0.45%
Employment	361	333	338	2,871	2,864	2,914	1,997	2,283	2,314
Unemployment	7	33	29	102	257	228	54	159	139
Unemployment Rate %	1.90%	9.00%	7.90%	3.40%	8.20%	7.30%	2.60%	6.50%	5.70%

Variable	Belgrade			Rome			Mount Vernon			Smithfield		
	2000	2010	2011	2000	2010	2011	2000	2010	2011	2000	2010	2011
Civilian Labor Force	1,632	1,733	1,750	499	520	522	861	918	925	485	518	530
Annualized Growth Rate		0.60%	0.98%		0.41%	0.38%		0.64%	0.76%		0.66%	2.32%
Employment	1,578	1,617	1,640	490	481	487	826	850	862	467	466	473
Unemployment	54	116	110	9	39	35	35	68	63	18	52	57
Unemployment Rate %	3.30%	6.70%	6.30%	1.80%	7.50%	6.70%	4.10%	7.40%	6.80%	3.70%	10.00%	10.80%

Variable	Belgrade Lakes Region			Kennebec County			Somerset County			Maine		
	2000	2010	2011	2000	2010	2011	2000	2010	2011	2000	2010	2011
Civilian Labor Force	8,869	9,618	9,689	60,826	63,493	64,072	25,038	24,785	24,937	672,440	700,567	704,078
Annualized Growth Rate		0.81%	0.74%		0.43%	0.91%		-0.10%	0.61%		0.41%	0.50%
Employment	8,590	8,894	9,028	58,741	58,642	59,502	23,869	22,002	22,353	650,385	643,244	651,038
Unemployment	279	724	661	2,085	4,852	4,570	1,169	2,782	2,585	22,055	57,324	53,040
Unemployment Rate	3.15%	7.53%	6.82%	3.43%	7.63%	7.13%	4.67%	11.22%	10.36%	3.30%	8.20%	7.50%

Source: Maine Department of Labor, http://www.maine.gov/labor/cwri/qcew1.html and http://www.maine.gov/labor/cwri/laus1.html.

The LakeSmart Awards Program

In 2003, the Maine Department of Environmental Protection (Maine DEP) introduced an incentivized lake protection program it called LakeSmart. Designed to halt persistent, widespread declines in lake water quality by offering the carrot of reward rather than the stick of enforcement, LakeSmart has become well known statewide. The program's trademark blue and white Award signs are broadly recognized as the hallmark of responsible lake stewardship. In essence, LakeSmart brings the expertise of lake managers to homeowners in an experiential, easy to understand fashion. The Award signs serve to recognize a homeowner's good stewardship, identify desirable landscape practices, and stimulate interest in the program to further its dissemination.
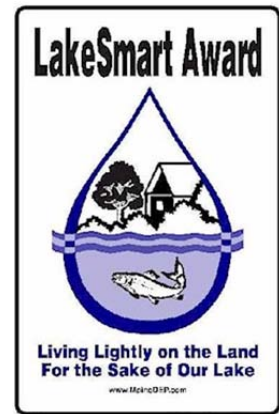
LakeSmart is a community-based initiative that requires a host organization for propagation. Usually, the host is a lake association or alliance whose mission exactly matches LakeSmart's intent. Members of the lake association community are invited to participate voluntarily, and interested homeowners are provided an individualized property assessment by visiting DEP-trained evaluators. Awards are given to those properties that earn high marks in four areas: 1) Driveway and Parking; 2) Structures and Septic Systems; 3) Lawn, Recreation, and Footpaths; and 4) Shorefront and Beach Areas. Since its inception, the program has been in high demand by lake groups anxious to implement it as a tool for water quality improvement, but state budget constraints have limited DEP's ability to include all groups that want to participate. At present, the program is active on thirty Maine lakes.

Recognizing LakeSmart's transformative potential, the Maine Congress of Lake Associations (COLA) initiated a partnership with Maine DEP in 2008 to test the use of trained volunteers to cut costs and speed distribution. Seven lakes in developing watersheds, including several from the Belgrade Lakes Watershed, were selected for a three-year pilot program that ran from 2009 through 2011. In these three years, participating Belgrade Lakes Watershed volunteers generated 74 LakeSmart Awards, a number that represents 16% of all LakeSmart Awards (463) distributed by Maine DEP throughout the state since LakeSmart began in 2003. Table 7 presents the current LakeSmart Award winners for the Belgrade Lakes Watershed.

In June, 2010, Colby College faculty and students engaged in the Sustainability Solutions Initiative (SSI) research project, *Modeling Resilience and Adaptation in the Belgrade Lakes Watershed*, were trained by Maine DEP and Maine COLA to perform property screenings in preparation for site evaluations by paid DEP evaluators. Eight students participated in property screenings that summer, significantly increasing the number of homeowners contacted.

The pilot project's success points to new directions for LakeSmart. It demonstrated that volunteers increase the rate at which LakeSmart spreads, and they eliminate the costs and inefficiencies that occur when experts based outside the community travel distances to assess properties that may not qualify for an award. Ongoing social science research at Colby is finding that the site visit is, in itself, an important component of change agency. People are less likely to change behavior when presented by scientific fact than they are when they watch and imitate what their neighbors do. This element of social diffusion, the effect of person-to-person exchange within one's home network, is brought to LakeSmart by community-based volunteers who infuse the site visit's teaching moment with their own commitment to lake protection.

Table 7: LakeSmart Awards in the Belgrade Lakes Watershed

Great Pond		Long Pond		East Pond	
Property Owner(s)	**Year**	**Property Owner(s)**	**Year**	**Property Owner(s)**	**Year**
Polly Beatie	2005	Blaine and Natalie Horrocks	2005	Betsy & Jerry Tipper	2009
Jane and Bret Eberle	2005	Frank and Pamela Lepera	2006	Mel & Kathy Croft	2009
Marge Humphreys	2005	Cindy MacColl	2006	Rob & Diane Jones	2009
Lea Ramirez	2005	Peter & Becky Alter	2006	Dave & Jo Comeau	2009
Maggie and Roger Shannon	2005	Maureen Maslak	2006	Max & Susan Hillson	2009
Jackie Tanner	2005	Peter & Betty Tilley	2007	Ted & Cindy Hesson	2009
Pat Donahue	2006	Jean Trueblood	2007	Gordon & Diane Woods	2009
Bill and Joan Witkin	2006	Dick & Susan Greenan	2007	Ron & Donna Dombrowski	2009
Chip and Laura Foye	2007	Larry & Debbie Onie	2007	Hal & Joan Jordan	2010
Dave & Kim Malley	2007	Doug & Tania Carnrick	2009	Peter & Jane Redmond	2010
Charlie & Anne McCandlish	2007	James & Aretta Muir	2009	Sally Harwood	2010
Francis Sterner	2007	Richard & Trudy Smith	2009	Dave Brown	2010
Mary & Matt Friedman	2007	Tracy Cove Assoc	2009	Al & Maureen Lantis	2010
Mark & Pam Heuberger	2007	Doris & Jim Williams	2009	Dave & Beth Jackson	2010
Sandy Cobb	2008	Ann & Tren Dolbear	2010	Joe & Cindy Reese	2011
Dr. Arthur Brown	2009	David & Ruth Harris	2010	George Pollock	2011
Jeanne Kreiger	2009	Stephen & Ann McNees	2010	Tom & Donna Mickewich	2011
Charles McCandlish	2009	David & Ruth Hollis	2010	Richard & Liz Knight	2011
Lynda & Rick Murray	2009	Scott & Lauren Bolduc	2010	Rob Levine & Val Schmitt	2011
Karen Norman	2009	Richard & Karen Roman	2010		
Barbara & Ben Ford	2009	John & Wendy Schlosser	2010		
Anonymous home owner	2009	Rose Talbor	2010		
David & Sue Gay	2010	Julia & David Baldwin	2011		
Deborah Boucher & Susan Pullen	2010	Bob & Naomi Behler	2011	**McGrath Pond**	
Elain Eadler & Tree Robbins	2010	Susan & Charlie Grover	2011	Joyce Bushey	2011
Bill & Nancy Gregory	2010	Nancy Whyte & Rudy Heintze	2011		
Dave & Izabela Hallett	2010	Tom & Nancy Kelly	2011		
Roberta & Larry LaFreniere	2010	Dan & Pam Pelletier	2011		
Michael & Beth Nowak	2010	Russ Sabia	2011		
Laurie & Christopher Raleigh	2010	Hilton & Catherine Salhanick	2011	**Salmon Lake**	
Steve & Patty Shaw	2010	George & Diana Tobey	2011	Ellen & Mal Dawson	2010
Ellen & Tom Sidar	2010	Jeff and Deb Baron	2011	Trudy Kaplan	2010
Michael & Bernadette Alford	2011	Lynn and Phyllis Matson	2011		
Joanne & Michael Bernstein	2011	Kathi and Alex Wall	2011		
Scott & Martha Finlay	2011				
Liz & Fred Fontaine	2011				
Michele & Michael Ginieczki	2011				
Cary & Lynne Johnson	2011				
Judy & Marty Lebson	2011				
Burgoyne	2011				
Tucker	2011				
Lauren Shaw & Paul Feinberg	2011				
Colby College Outing Club	2012				

Sources: Maine DEP http://www.maine.gov/dep/water/lakes/lakesmart/ , the Belgrade Lake Associate, and the East Pond Lake Association.

Reflections on the Belgrade Lakes Watershed

Nickolas Kondiles '13, a member of Colby's EPSCoR team, invited people who have come to know and love the Belgrade Lakes Watershed to share personal stories, poems, and reflections on their experience and collected these into a short documentary film entitled *Reviving Affection: Sense of Place in the Belgrade Lakes*.[3] We offer the following in the spirit of this research effort.

What's better: starting a day on the lake, or ending one?
Waking up to coffee on the dock, or falling asleep to the crackle of the fire?
Watching the boats wave by or hearing the loons say goodnight?
The prospect of a new day or the satisfaction of one well spent?
But we don't have to choose, because on constantly leads to another.

– Caitlin Vorlicek '14

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the belgrade lakes
are not your average lake conglomeration
each unique, all interconnected,
they are beautiful.

the belgrade lakes
are not only a vacation destination
they are the center
of an economic engine
bucking macroeconomic trends of the nation
disregarding great recessions with disdain

the belgrade lakes
are a region to live, work, and play in
with great voracity, with great pride
they are beautiful.

– Nicholas Papanastassiou '13

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[3]You can view this film by directing your web browser to http://web.colby.edu/epscor/2012/07/30/reviving-affection-sense-of-place-in-the-belgrade-lakes/ .