



**GROWING AREA ER**  
**Point of Maine, Machiasport to Cape Wash, Cutler**

**Annual Report for 2010**  
**Final Report Date: 1-30-2012**

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**APPROVAL**

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1/30/12

Print name

signature

Date:



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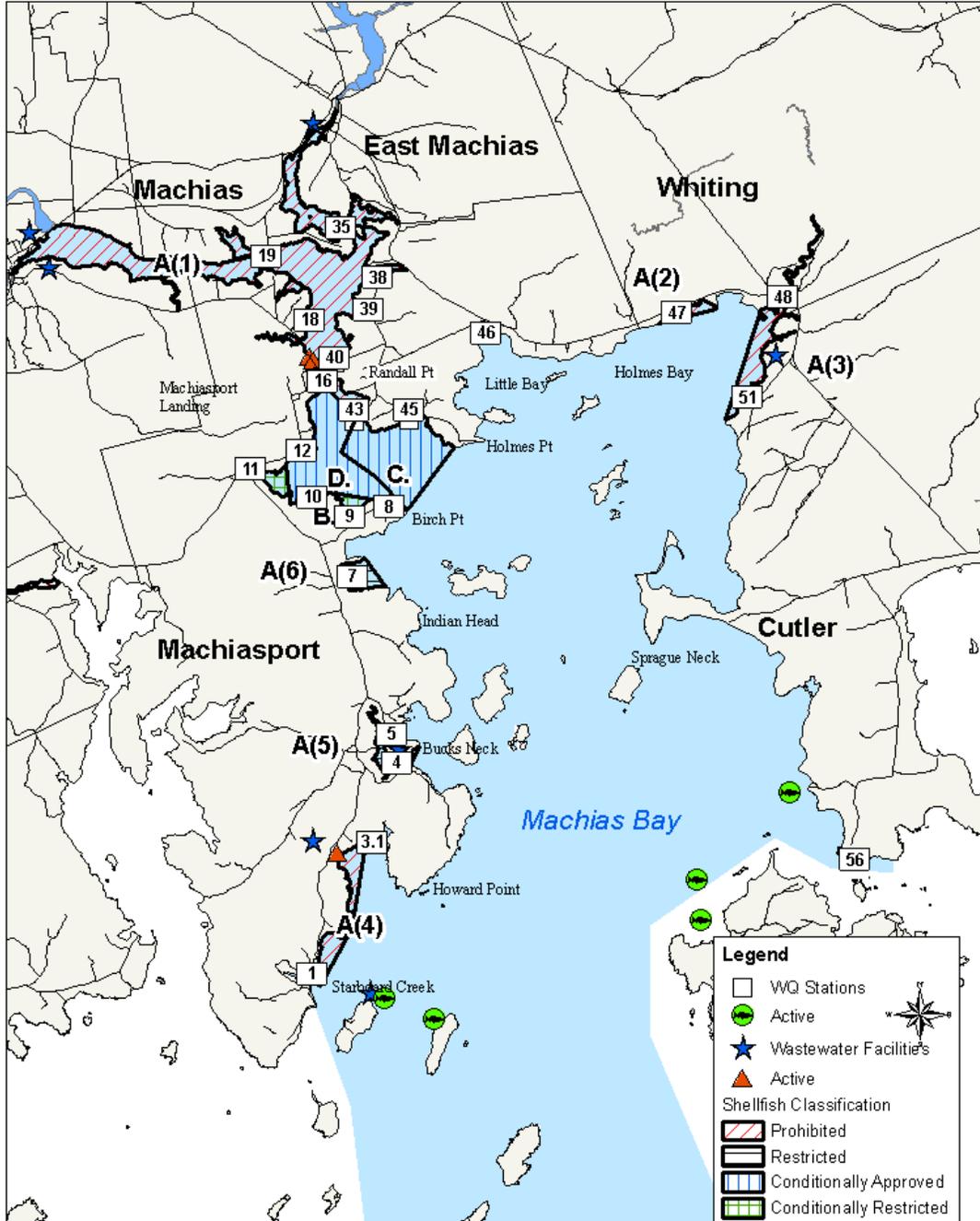
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Figure 1. Growing Area ER, with Active Water Stations and Licensed Overboard Discharges



Public Health Division  
Maine Department of Marine Resources



## Executive Summary

This is an annual report for growing area ER written in compliance with the requirements of the 2009 Model Ordinance and the National Shellfish Sanitation Program.

Water quality in the growing area supports the current classification under the NSSP criteria. All approved or restricted water quality sampling stations have P90 values less than their classification standard. All conditionally approved sampling stations had P90 values that met their NSSP standards and management plan criteria during their open status. All active stations were sampled 6 times following the systematic random sampling (SRS) schedule and conditional stations were sampled the required number of times while in the open status. Overall, 2010 water quality in Area ER has remained constant compared with 2009. Of the 24 sample stations, six showed improved water quality and one station showed a decline in water quality (based on a change of greater than twenty percent points of the approved standard). There are no classification changes required or proposed at this time. Dredging of the Bucks Harbor mooring area has taken place during the fall months of 2010. The sampling schedule will remain the same in 2011.

The next triennial report is due in 2012. The next sanitary survey report is due in 2019.

## Growing Area Description

The growing area is in the southwestern section of Washington County. Figure 1 is a detailed map of the growing area with active water sampling sites and current shellfish classified areas. The growing area includes the near sub-tidal waters, inter-tidal flats and a zone of shore property that extends inland to a definite up-land boundary. The shoreline included in this report stretches from Starboard Creek, Point of Maine, Machiasport to Cape Wash, Cutler. Machias Bay is about nine miles long and generally about three miles wide. Several uninhabited islands break its exposure to the Bay of Fundy; the western shore is generally of bluff ledge broken by several narrow coves and the eastern shore is of lower profile with broad expanses of soft sediment intertidal area. Islands are bold granite topped with softwood forest. The Machias and East Machias Rivers enter tidal water at the head of a narrow five-mile long estuary emptying into Machias Bay from the northwest. The upland land cover is predominately deciduous, with some evergreens, and a wetland forest with minimal development. Blueberry and grass fields are scattered throughout the land area. The upland boundary starts at Starboard Creek, Machiasport, goes inland to a point west of Bucks Harbor; then northwest to Machias; then northeast to where US Route 1 crosses the East Machias River; then southeast to the head of Holmes Bay; then south to Cape Wash; and then follows the northern and western shores of Cross Island. The villages and towns of Machiasport (pop- 1,120), Machias (pop- 2,323), East Machias (pop- 1,225), Whiting (pop- 456) and Cutler (pop-574) have the largest population concentrations (2007-2008 Maine Municipal Directory). There are wastewater treatment facilities in Bucks Harbor, Machias and East Machias. Development along these shores is spotty with clusters of homes separated by undeveloped land. Any agricultural operations are small with few animals, with the exception of approximately thirty head of sheep in Bucks Harbor and approximately fifty head of cattle near the East Machias River outlet. Seasonal boat



mooring areas are occupied in summer months only and are predominately work boats. Finfish aquaculture pens are located off Cross, Libby, Stone and Starboard Islands. A finfish processing facility is located in Bucks Harbor, Machiasport. The harbors most likely to contain significant populations of soft and hard shell clams and mussels are: Bucks Harbor, Larrabee Cove, Sanborn Cove, southeast of the Rim Bridge, Simpson Cove, Woodruff Cove, Randall Flats, Holmes Bay and Sprague Neck. This growing area has a large soft shell clam resource and is one of top annual producers in Maine. Machiasport has > 100 licensed harvesters with East Machias and Cutler having approximately 10 each. Current closures are based on a cluster of three residential licensed overboard discharges in Machiasport Village; a licensed cluster wastewater system in East Machias; waste water treatment plants in the towns of Machias and Machiasport and four areas having non-point pollution sources in Bucks Harbor, Larrabee Cove and two in Holmes Bay.

### **Current Classification(s)**

At the end of the 2010 review year, shellfish growing area ER had areas classified as:

**Approved-** ER 1, 3.1, 5, 46, 51

#### **Restricted**

Area No. 55, Machias and East Machias Rivers and Machias Bay (Machias, East Machias, Machiasport, Whiting, Cutler)

A5- Bucks Harbor; intermittent water quality does not meet approved standards; ER 4

A6- Larrabee Cove; water quality does not meet approved standards; ER 7

#### **Conditionally Approved**

Area No. 55, Machias and East Machias Rivers and Machias Bay (Machias, East Machias, Machiasport, Whiting, Cutler)

C- Randall Point Flats; will close due to a malfunction/CSO event of the Machias Wastewater Treatment Plant; ER 43, 45

D- Sanborn Cove; will close due to a malfunction/CSO event of the Machias Wastewater Treatment Plant; ER 8, 10, 12, 16

#### **Conditionally Restricted**

Area No. 55, Machias and East Machias Rivers and Machias Bay (Machias, East Machias, Machiasport, Whiting, Cutler)

B- Sanborn Cove; will close due to a malfunction/CSO event of the Machias Wastewater Treatment Plant; ER 9, 11

#### **Prohibited**

Area No. 55, Machias and East Machias Rivers and Machias Bay (Machias, East Machias, Machiasport, Whiting, Cutler)

A1- Machias and East Machias Rivers; water quality does not meet approved standards; ER 18, 19, 35, 38, 39, 40

A2- Northwest Holmes Bay; water quality does not meet approved standards; ER 48, 51

A3- Northeast Holmes Bay; water quality does not meet approved standards; ER 47

A4- Howard Cove-Starboard Cove; Bucks Harbor Wastewater Treatment Plant; ER 1, 3.1



Please visit the DMR website to view legal notices:

[http://www.maine.gov/dmr/rm/public\\_health/closures/closedarea.htm#](http://www.maine.gov/dmr/rm/public_health/closures/closedarea.htm#)

### Activity during Review Period

There were no classification changes in area ER in 2010.

### Conditionally Managed Area

There are two conditionally approved and two conditionally restricted areas in growing area ER. They are Areas No. 55 (Part D), Sanborn Cove, No. 55 (Part C), Randall Point Flats and Areas No. 55 (Part B), Sanborn Cove (Machiasport). All these areas are closed when there is a combined sewer overflow (CSO) event in the collection system at the Machias Wastewater Treatment Facility. The areas remain closed for a minimum of 14 days and reopen when water and clam samples meet reopening criteria. The conditional areas are monitored by sample sites ER 8, 9, 10, 11, 12, 16, 43 and 45. All sample sites are sampled monthly when in the open status. The Machias Wastewater Facility has met its license criteria in 2010. The management plan was updated in 2010 and can be found in DMR's central files. A more detailed review of the area management plan is in Appendix A.

### Water Quality Review and Discussion

Table 1 lists all active approved, restricted and prohibited stations in Growing Area ER, with their respective Geomean and P90 calculations for 2010. Please refer to Appendix B for a key to interpreting the headers on the columns of Table 1. The approved and restricted standards for each station are also displayed in Table 1. These standards will fluctuate yearly as a result of the DMR transition from a most probable number (MPN) fecal coliform test method to a membrane filtration (MF) method and are dependent on the number of sample analyzed by MPN verses MF. The total number of data points used in the calculations is displayed in the Count column and includes both MPN and MF values. The number of data points analyzed by MF is displayed in the MFCNT column. This fluctuating standard will cease when all 30 data points have been analyzed by the MF method. A more detailed explanation of this transition can be found in DMR central files.

All approved and restricted stations met their respective NSSP classification during the 2010 review year.

**Table 1. Geomean and P90 Scores, Growing Area ER**

Station	Class	Count	MFCnt	GM	SDV	MAX	P90	Appd_Std	Restr_Std
ER001.00	A-boundary	30	26	2.1	0.13	9.1	3.1	32	176
ER003.10	A-boundary	30	26	2.3	0.24	22	4.8	32	176
ER004.00	R	30	26	4.4	0.47	102	18	32	176
ER005.00	A	30	26	3.5	0.43	110	13	32	176



Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd_Std	Restr_Std
ER007.00	R	30	27	7.1	0.66	1340	51.1	32	173
ER018.00	P	30	28	7.6	0.5	130	34.1	31	169
ER019.00	P	30	30	7.8	0.56	240	40.6	31	163
ER035.00	P	30	30	8.3	0.59	1140	48.9	31	163
ER038.00	P	30	26	4.1	0.42	60	14.6	32	176
ER039.00	P	30	26	4.6	0.45	48	17.4	32	176
ER040.00	P	30	30	5.8	0.6	136	34.8	31	163
ER046.00	A	30	27	2.6	0.34	48	7.2	32	173
ER047.00	P	30	26	3.4	0.42	93	12.1	32	176
ER048.00	P	30	26	9.5	0.73	460	83.4	32	176
ER051.00	A-boundary	30	26	2.6	0.25	22	5.5	32	176
ER056.00	A	30	26	2	0.06	2.9	2.4	32	176

Table 2 lists all conditionally approved and conditionally restricted stations in Sanborn Cove and Randall Point with their respective Geomean and P90 calculations for 2010. All the conditional areas are placed in the closed status due to a malfunction/CSO event of the Machias Wastewater Treatment Plant. Data for conditionally approved stations reflects only the open status. All stations met the approved standard during open status.

**Table 2. Sanborn Cove-Randall Point Conditionally Approved and Conditionally Restricted Areas, Open Status**

Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd_Std	Restr_Std
ER008.00	CA-boundary	30	30	2.7	0.35	80	8	31	163
ER009.00	CR	30	30	4.1	0.58	560	23.2	31	163
ER010.00	CA-boundary	30	30	3.2	0.33	24	8.7	31	163
ER011.00	CR	30	30	5.6	0.66	480	39.7	31	163
ER012.00	CA-boundary	30	30	3.2	0.34	22	8.8	31	163
ER016.00	CA-boundary	30	30	3.5	0.29	16	8.4	31	163
ER043.00	CA-boundary	30	30	2.8	0.28	16	6.4	31	163
ER045.00	CA-boundary	30	30	2.8	0.3	12	7.1	31	163

All approved, restricted and prohibited stations that were active at the beginning of 2010 were sampled at least 6 times following the systematic random sampling (SRS) schedule (Table 3). At stations ER 5, 8 and 46 samples were collected to reopen the areas after a coast-wide flood closure. The Sanborn Cove-Randall Point conditionally approved and conditionally restricted stations were sampled 10 times in the open status with the exception of ER 11, which was collected 11 times because of a make-up sample done during the open status of the conditional



area. Because the conditional areas were in the closed status for the entire months of September and October, the monthly conditional area samples (12) in the open status requirement could not be met.

**Table 3. Area ER Samples Collected in 2010**

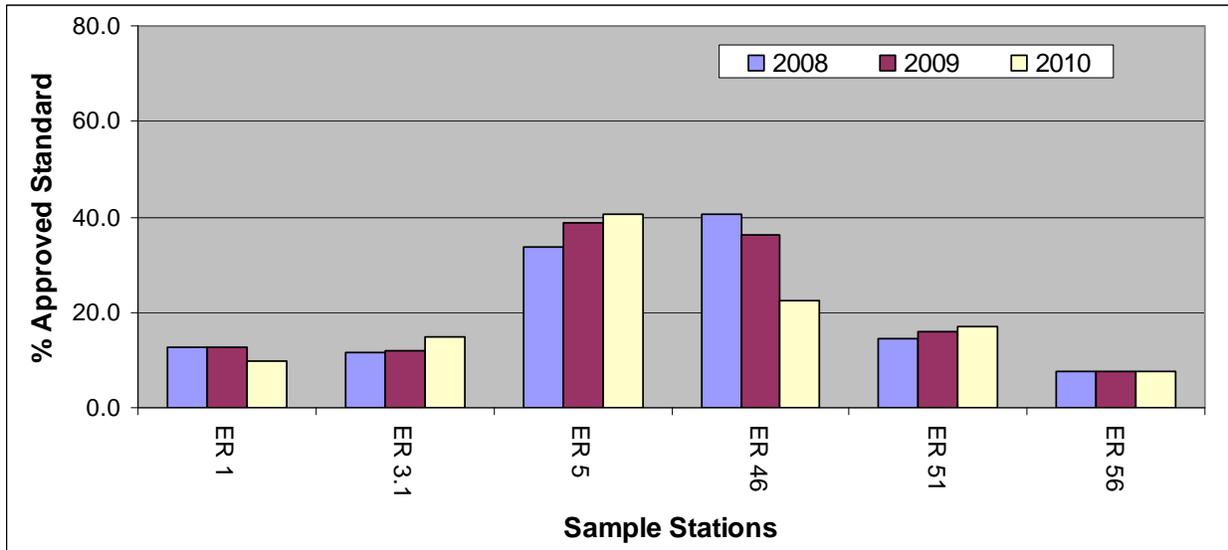
Station	Class	Adverse	Extra	Random		Total	Comments
		Closed	Closed	Closed	Open		
ER001.00	A				6	6	
ER003.10	A				6	6	
ER004.00	R				6	6	
ER005.00	A	12			6	18	Flood samples
ER007.00	R				6	6	
ER008.00	CA	20			10	30	Flood samples
ER009.00	CR	10			10	20	
ER010.00	CA	10			10	20	
ER011.00	CR	6			11	17	
ER012.00	CA	10			10	20	
ER016.00	CA	9			10	19	
ER018.00	P	1		6		7	
ER019.00	P		1	7		8	
ER035.00	P	1		7		8	
ER038.00	P			6		6	
ER039.00	P			6		6	
ER040.00	P			7		7	
ER043.00	CA	10			10	20	
ER045.00	CA	9			10	19	
ER046.00	A	17			6	23	Flood samples
ER047.00	P			6		6	
ER048.00	P			6		6	
ER051.00	A				6	6	
ER056.00	A				6	6	

Figure 2, 3, 4 and 5 are trend graphs of the approved, restricted, conditionally approved and conditionally restricted and prohibited sample stations in the growing area. Station P90 scores are expressed as percents of the approved standard. Conditionally approved values are during the open status only. Overall, 2010 water quality in Area ER has remained constant compared with 2009. Of the 24 sample stations active in 2010, six (ER 11, 12, 18, 38, 47, 48) showed improved water quality and one station (ER 40) showed a decline in water quality (based on a change of greater than twenty percentage points of the approved standard). No reasons for these changes in water quality have been identified. Dredging of the Bucks Harbor mooring field was taking place during the fall months of 2010. No impact on sample site ER 4 was identified. Stations that are approved or conditionally approved in the open status over 90% are at risk of downward classification and require further assessment. No sample stations in the growing area are at risk at this time. Stations ER 4 meets the approved classification standards but is nearby to a non-point pollution source, ER 38 and 39 meet approved classification standards but are within the Machias Wastewater Treatment Plant dilution zone and ER 47 meets the

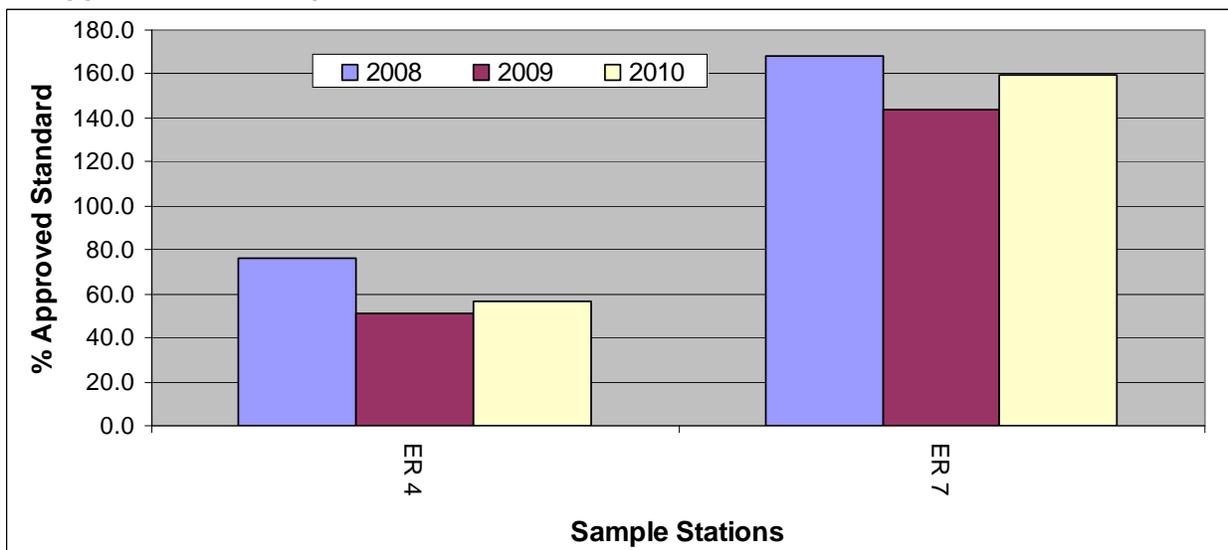


approved classification standards but is nearby to a non-point pollution source that has historically shown high variability.

**Figure 2. Area ER P90 Score Trends for Approved Stations (expressed as the percent of the approved standard), 2008-2010**

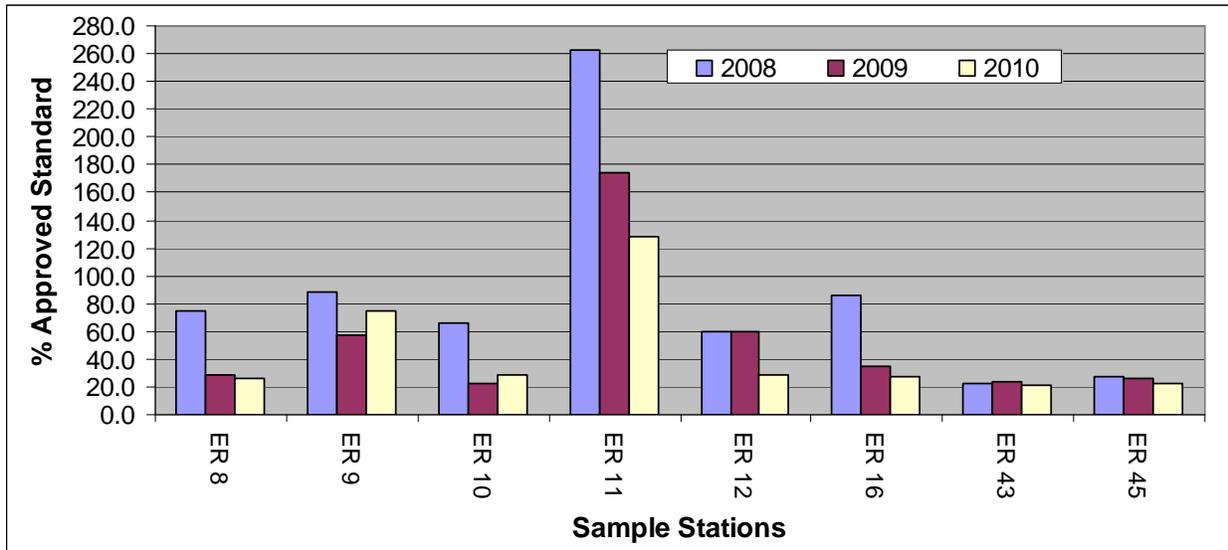


**Figure 3. Area ER P90 Score Trends for Restricted Stations (expressed as the percent of the approved standard), 2008-2010**

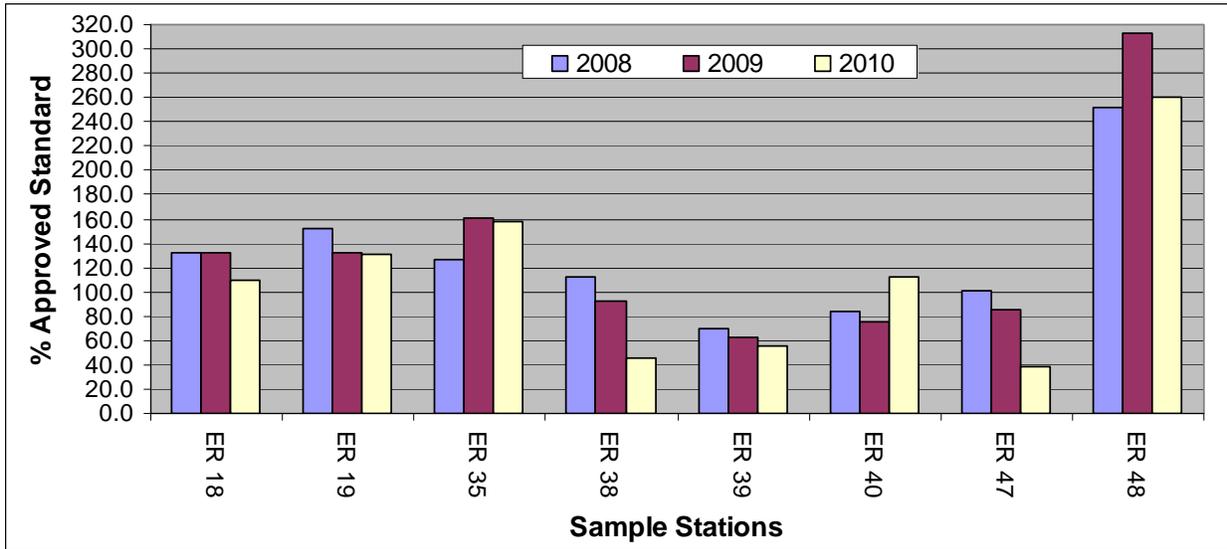




**Figure 4. Area ER P90 Score Trends for Conditionally Approved and Conditionally Restricted Stations (expressed as the percent of the approved standard), 2008-2010**



**Figure 5. Area ER P90 Score Trends for Prohibited Stations (expressed as the percent of the approved standard), 2008-2010**



### Upward Classification Changes

No upward classification changes are recommended at this time.

### Shoreline Survey Activity

July 7, 2010- surveyed area nearby ER 47 to identify the source of bacteria that historically has been impacting the sample station. No source was identified. Water quality at ER 47 now meets the approved standard and will be considered for upward re-classification if the improved water quality trend continues.

Fall 2010- Planned dredging of the Bucks Harbor mooring field was taking place.

September 20, 2010- during flood sampling on September 9, 2010, sample station ER 5 had an elevated score (420 FC/100ml). The area was re-surveyed to determine if anything had changed in the area. A potential source was a nearby horse pasture on Smalls Point. ER 5 has shown an increase of the percent of the approved standard since 2006. The area will be monitored and changes in the classification made if necessary.

October 5, 2010- surveyed area nearby ER 48 to identify the source of bacteria that historically has been impacting the sample station. The only potential source identified was a large number of Canada geese in the water and on the marsh. The area currently does not meet approved standards and no changes in classification are being considered.

October 12, 2010- stream/culvert samples were taken from drainages nearby ER 11, 12 and up-river of ER16 to determine if they were bacterial sources. The culverts at ER 11 (a conditionally restricted area) and up-river of ER 16 (a prohibited area) had elevated bacterial values of 380



FC/100ml and >1600 FC/100ml respectively. No source of the elevated scores was identified. The small stream at ER 12 (a conditionally approved area) had a low score of 16 FC/100ml.

### **Aquaculture/Wet Storage Activity**

There is one large fish-landing wharf in the growing area. It is in Bucks Harbor, Machiasport and is used by the Atlantic Salmon of Maine, LLC and by commercial fishermen to unload catch. Salmon aquaculture farming is practiced in the Buck Harbor area near Starboard, Cross, Stone and Libby Islands. Most near-shore activity involves the boat traffic from the service vessels into the Bucks Harbor fish processing facility. The Maine Department of Marine Resources monitors the effects of the fish pens on the surrounding ecosystem. No impacts on the shellfish harvesting areas have been identified at present. There no wet storage sites in the area.

**Table 4. Aquaculture Sites**

<b>Site Number</b>	<b>Company</b>	<b>Acres</b>	<b>Species</b>
MACH CI	Atlantic Salmon of Maine, LLC	25	Salmon
MACH CIN	Atlantic Salmon of Maine, LLC	35	Salmon, shellfish
MACH CW2	Phoenix Salmon US, Inc	35	Salmon
MACH II	Atlantic Salmon of Maine, LLC	40	Salmon, blue mussels
MACH LI	Atlantic Salmon of Maine, LLC	20	Salmon
MACH ST	Atlantic Salmon of Maine, LLC	10	Salmon

### **Recommendation for Future Work**

1. Re-look at Corn Hill, Machiasport village area, due to elevated scores in culvert up-river from ER 16.

### **References**

Maine Department of Environmental Protection Licensed Overboard Discharge data base.

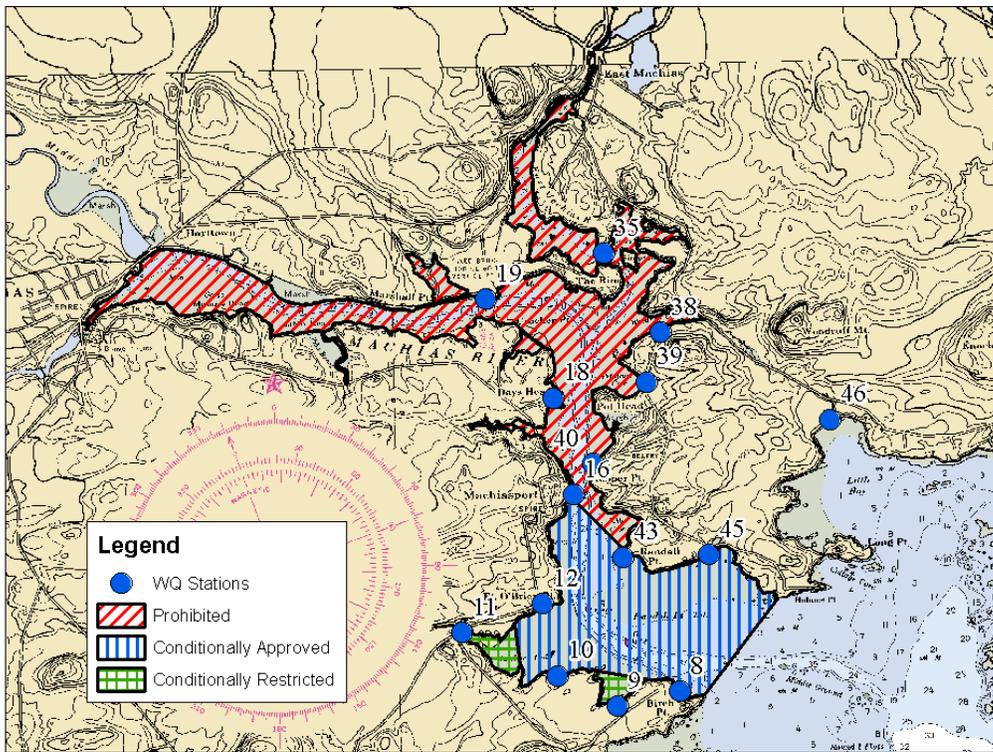
2007-2008 Maine Municipal Directory



## Appendix A. Annual Review of Area 55 (parts B, C and D) Conditional Area Management Plan

### Scope

Area No. 55 (parts B, C, D), Randall Point Flats and Sanborn Cove, are classified as Conditionally Approved and Conditionally Restricted based on the performance of the Machias WWTP. These conditionally approved and conditionally restricted areas are available for harvesting based on the lack of combined sewer overflow activity at the Machias Wastewater Plant collection system. The areas include defined polygons situated between the Machiasport boat launch ramp adjacent to the historical society and Birch Point. The polygons include Randall Point Flats and three separate areas of Sanborn Cove. Machias WWTP officials are working with the Maine Department of Environmental Protection to eliminate the combined sewer overflows in the area.



Area 55 Machias Rivers  
Maine Marine Resources

### Compliance with management plan

The management plan requires that the Randall Point conditionally approved area and the Sanborn Cove conditionally approved and conditionally restricted areas be closed immediately after a malfunction/CSO event occurs at the Machias Wastewater Treatment Plant. All the



monitoring stations were in the closed status due to flows from the Machias plant combined sewer outfalls for the dates listed in Table 1.

**Table 1. Conditional Area Closed Status Dates and Number of Days**

Closure Date (STP=P)	Plan Followed	Date Area Sampled Passed=P	Days Closed	Opening Date	Comments
1/25/10=P	Yes	Water-clams; 2/8/10=P	14	2/11/10	
2/26/10=P	Yes	Water-clams; 3/15/10=P	20	3/18/10	
6/7/10=P	Yes	Waters-clams; 6/21/10, ER 8, 9,12,16, 43, 45 =P ER 10 =NP	17	6/24/10	Re-opened Randall Point, Sanborn Cv remained closed
		Water-clams; 6/29/10=P	21	7/1/10	Sanborn Cv re-opened
9/4/10=P	Yes	Water-clams; 9/21/10=NP Water-clams; 10/4/10=NP Water-clams; 10/12/10=P Water-clams; 11/1/10=P	60	11/3/10	TS Earl, overlapping CSO events
9/17/10=P	No				
10/15/10=P	Yes				
11/5/10=P	Yes	Water-clams; 11/22/10=P	19	11/24/10	Overlapping CSO events
11/8/10=P	Yes				
12/13/10=P	Yes	Water-clams; 12/28/10=P	17	12/30/10	

**Adequacy of reporting and cooperation of involved persons**

Cooperation between the Machias Wastewater Treatment Plant staff and the DMR during open harvest period ensures that the conditional areas meet open status harvesting criteria. Signed agreements address the importance of alerting the DMR in the event of any CSO flow. The Machias plant staff has met the requirement that they notify the Maine Marine Patrol, DMR Public Health staff and the local Machiasport shellfish committee immediately when there is an overflow from the combined sewer outfalls.

Maine Marine Patrol logs indicate law enforcement activity during closed and prohibited periods. The officers take an active role in managing the harvest of the resource during the open status and prevention of contaminated product reaching the market during the closed status.

**Compliance with conditionally approved and conditionally restricted growing area criteria**

All monitoring stations within the conditional approved and restricted areas meet their classification standards during the open status based on geometric means, P90 values and lack of combined sewer outfall flows. The Geomean-P90 scores in the Table 2 reflect the open status only.



**Table 2. Geometric means and P90 Scores, Open Status**

Station	Class	Count	MFCOUNT	GM	SDV	MAX	P90	Appd_Std	Restr_Std
ER008.00	CA	30	30	2.7	0.35	80	8	31	163
ER009.00	CR	30	30	4.1	0.58	560	23.2	31	163
ER010.00	CA	30	30	3.2	0.33	24	8.7	31	163
ER011.00	CR	30	30	5.6	0.66	480	39.7	31	163
ER012.00	CA	30	30	3.2	0.34	22	8.8	31	163
ER016.00	CA	30	30	3.5	0.29	16	8.4	31	163
ER043.00	CA	30	30	2.8	0.28	16	6.4	31	163
ER045.00	CA	30	30	2.8	0.3	12	7.1	31	163

**Field inspection of critical pollution sources**

The Machias Wastewater Treatment Plant operational review was last done in December 2010. There were no facility permit violations in 2010.

**Water sampling compliance history**

Due to the conditional management plan being based on the absence of pollution from a wastewater combined sewer outfall, the NSSP requires monthly water samples when the growing area is in the open status. Monitoring stations for the conditional areas include ER 8, 9, 10, 11, 12, 16, 43 and 45. The Sanborn Cove-Randall Point conditionally approved and conditionally restricted stations were sampled 10 times in the open status with the exception of ER 11, which was collected 11 times because of a make-up sample done during the open status of the conditional area. Because the conditional areas were in the closed status for the entire months of September and October, the monthly conditional area samples (12) in the open status requirement could not be met. In conjunction with samples from the monitoring stations, shellfish (clams) are collected at sample stations ER 12, 16 and 43 to reopen the area after a closure of the conditional area.

**Analysis and Recommendations**

Area No. 55 (parts B, C, D), Randall Point Flats and Sanborn Cove, are Conditionally Approved and Conditionally Restricted areas open to harvesting based on the lack of combined sewer overflow activity at the plant and siphon chamber outfalls in the Machias Wastewater Plant collection system. The Machias plant staff has met the requirement that they notify the Maine Marine Patrol, DMR Public Health staff and the local Machiasport shellfish committee immediately when there is an overflow from the combined sewer outfalls. Water quality meets the standard for approved and restricted classification during the open status. The management plan accomplishes its stated purpose. No recommendations for changes to the current management plan or conditional area classification status are needed at this time.



## Appendix B. Key to Water Quality Table Headers

Station = water quality monitoring station

Class = classification assigned to the station; prohibited (P), restricted (R), conditionally restricted (CR), conditionally approved (CA) and approved (A).

Count = the number of samples evaluated for classification, must be a minimum of 30.

MFCNT = the number of samples evaluated with the MTec method (included in the total Count column)

Geo\_Mean = means the antilog (base 10) of the arithmetic mean of the sample result logarithm (base 10).

SDV = standard deviation

Max = maximum score of the 30 data points in the count column

P90 = 90<sup>th</sup> percentile

APPD\_STD = the 90<sup>th</sup> percentile, at or below which the station would meet approved criteria in the absence of pollution sources or poisonous and deleterious substances.

RESTR\_STD = the 90<sup>th</sup> percentile, at or below which the station would meet restricted criteria.