



**GROWING AREA EQ
Roque Bluffs, Machias and Machiasport**

ANNUAL REVIEW for 2010

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APPROVAL

Division Director:

Linda Mercer
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signature

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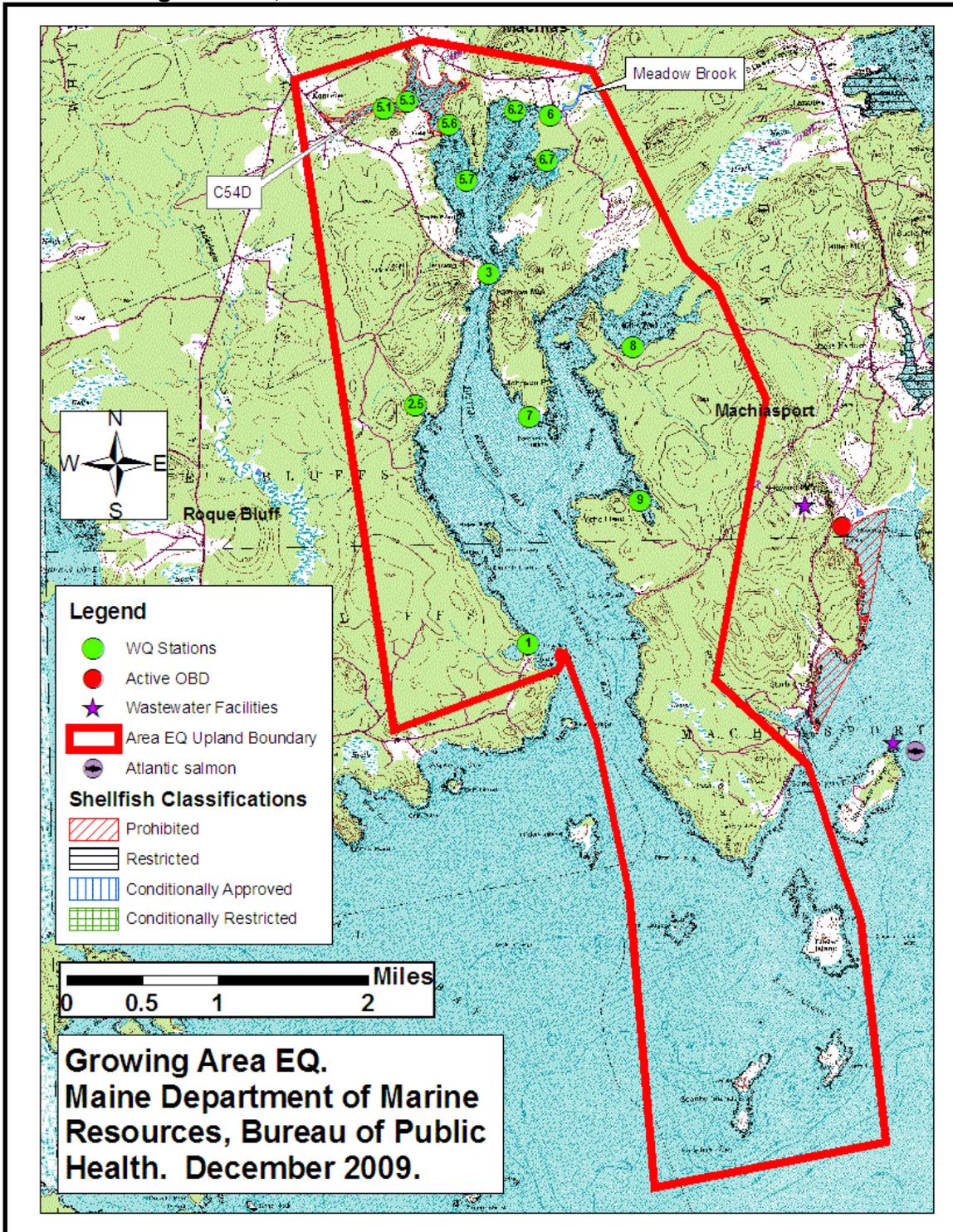
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Figure 1. Growing Area EQ, with Active Water Stations.





Executive Summary

This is an annual report for growing area EQ written in compliance with the requirements of the 2007 Model Ordinance and the National Shellfish Sanitation Program (NSSP). The next triennial report is due in 2011; the next sanitary survey report is due in 2020. Growing Area EQ is comprised of Little Kennebec Bay and some offshore islands near Machiasport in Washington County.

The growing area includes Approved and Prohibited areas. There are no municipal waste water treatment plants (WWTP) in this growing area.

During the 2010 year end review station EQ5.10 failed to meet the "Approved Standard" and Pollution Area 54D was expanded. All other sample stations met the sampling requirements for their classifications for this time period. Station EQ6.00 has scores that meet the approved standard but the P90 scores exceed 90% of the approved standard. If the downward water quality trend at this station continues a classification change may be required during 2011. In response to the expansion of the "Prohibited Area", one water quality station was added and two inactive stations were reactivated. No stations were deactivated during this review period. One station was reclassified during this review period. In response to elevated scores noted during the 2009 annual report, streams at the head of the East and West branch of Little Kennebec were sampled.

There are no aquaculture or wet storage facilities in growing area EQ.

Growing Area Description

Growing area EQ is located in the towns of Roque Bluffs (pop. 264), Machais (pop. 2,353) and Machiasport (pop. 1,160), Washington County, Maine (US Census 2000); and is primarily a rural area with low population density and no municipal services such as water or sewer (Breau, D.P. 2011). There are 4,400 acres of marine habitat of which about 870 acres are intertidal along 27 miles of coastline.

The area EQ shoreline stretches from Seawall Point, Roque Bluffs around Little Kennebec Bay and Point of Maine to Starboard Island, Machiasport (Figure 1). The shore is sparsely populated with the village of Little Kennebec at the head of the West Branch of Little Kennebec Bay and no other villages around the shoreline. The shoreline in this area is dominated by extensive sheltered mud flats and ledge shores on the offshore islands. Water quality is monitored by 13 stations (Figure 1 and Table 1). Area EQ has Approved and Prohibited areas, a detailed description of the entire boundary of area EQ can be found in the Department of Marine Resources (DMR) central files.

There is one prohibited area (Area No. 54D) in the northwest corner of area EQ.



The known pollution sources for this area are non-point pollution from streams and small moorings for workboats. The growing area is influenced by numerous small streams. There are three drainages greater than one square mile. These drainages are Marsh Stream (3.1 mi²), Little Kennebec stream (2.34 mi²) and the Mill Pond Drainage (1.1 mi²). Sheep (<50) are seasonally pastured upland of the eastern arm of Little Kennebec Bay in the Marsh Stream drainage. Horses (<10) are pastured along streams in Little Kennebec drainage.

Small groups of workboat moorings (<5) are at Seawall Point, Marston Point and Yoho Head. There are no listed pumpout stations associated with these moorings (Maine DEP 2010). There are no wastewater treatment facilities or licensed overboard discharges within the margins of the growing area. There are no light or heavy industry within the boundaries of the growing area.

There are no aquaculture or wet storage activities in Area EQ.

Current Classification(s)

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

Approved- 9 sample stations(EQ1.00, 2.50, 3.00, 5.60*, 5.70, 6.00, 6.20, 6.70, 7.00, 8.00, 9.00)

Conditionally Approved- No shores or waters of the growing area are conditionally approved.

Restricted- No shores or waters of the growing area are restricted.

Conditionally Restricted- No shores or waters of the growing area are conditionally restricted.

Prohibited- Area No. 54D, stations EQ5.10 and 5.30 due to water quality not meeting approved standard.

New Stations (less than 30 samples and not evaluated against a NSSP standard)
Station 6.20.

Asterisk * denotes boundary station.

Please visit the DMR website to view legal notices:

http://www.maine.gov/dmr/rm/public_health/closures/closedarea.htm#

Activity during Review Period

- **Classification Changes:** The prohibited zone (Area No. 54D) in the northwest head of Little Kennebec Bay was expanded by 52 acres because water quality at the boundary station no longer met the "Approved" (DMR Chapter 95.09(W), Area No. 54-D, West Branch of Little Kennebec Bay (Machias).



- **OBDs:** There are no known OBDs in Area EQ (Maine DEP 2009a, Maine Office of GIS 2010).
- **MEPDES permits:** none (EPA NPDES. 2010).
- **Enforcement Actions:** no known enforcement actions (Maine DEP MER. 2010).

Conditionally Managed Area(s) - There are no conditional areas in EQ.

Water Quality Review and Discussion

Table 1 lists all active approved and prohibited stations in growing area EQ, with their respective Geomean and P90 calculations for 2010. Please refer to Appendix A 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 versus 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

One active station failed to meet the water quality standards required by the NSSP classification assigned to it at the beginning of 2010 and was reclassified. All other active stations met the NSSP classification currently assigned to them. Station EQ5.10 and surrounding waters were reclassified from "Approved" to "Prohibited" (DMR Chapter 95.09(W), Area No. 54-D January 19, 2011). Station EQ6.00 is approaching the NSSP limit for the approved standard and warrants closer observation during 2011. Stations EQ 5.30, EQ 5.60 and EQ 6.20 are new stations and do not yet have 30 samples. They were added or re-activated during 2010 in response to elevated scores observed at Stations EQ 5.10 and EQ 6.00.



Table 1 . Area EQ P90s

Area EQ P90's									
Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd_Std	Restr_Std
EQ001.00	A	30	27	2.2	0.27	54	5	32	173
EQ002.50	A	30	26	2.5	0.32	42	6.6	32	176
EQ003.00	A	30	26	2.7	0.23	14	5.4	32	176
EQ005.10	P	30	29	6.3	0.59	280	36.5	31	166
EQ005.30	P	8	8	3.6	0.43	29	13.5	31	163
EQ005.60	A	10	10	2.6	0.31	11	6.8	31	163
EQ005.70	A	30	26	2.9	0.37	100	8.8	32	176
EQ006.00	A	30	29	5.6	0.57	240	31.3	31	166
EQ006.20	A	6	6	2.7	0.17	4	4.6	31	163
EQ006.70	A	30	27	2.7	0.4	74	9.2	32	173
EQ007.00	A	30	26	2.4	0.33	106	6.4	32	176
EQ008.00	A	30	26	2.4	0.25	20	5.1	32	176
EQ009.00	A	30	26	2.2	0.18	14	3.8	32	176

All approved and prohibited areas were sampled at least six times in the open status during 2010 following a systematic random sampling (SRS) schedule (Table 2). At the end of 2010 there were 13 active stations in Growing Area EQ. Area EQ has two flood stations, EQ 3.00 and EQ 6.00 which were sampled 14 and 13 times, respectively, during adverse (flood) conditions.

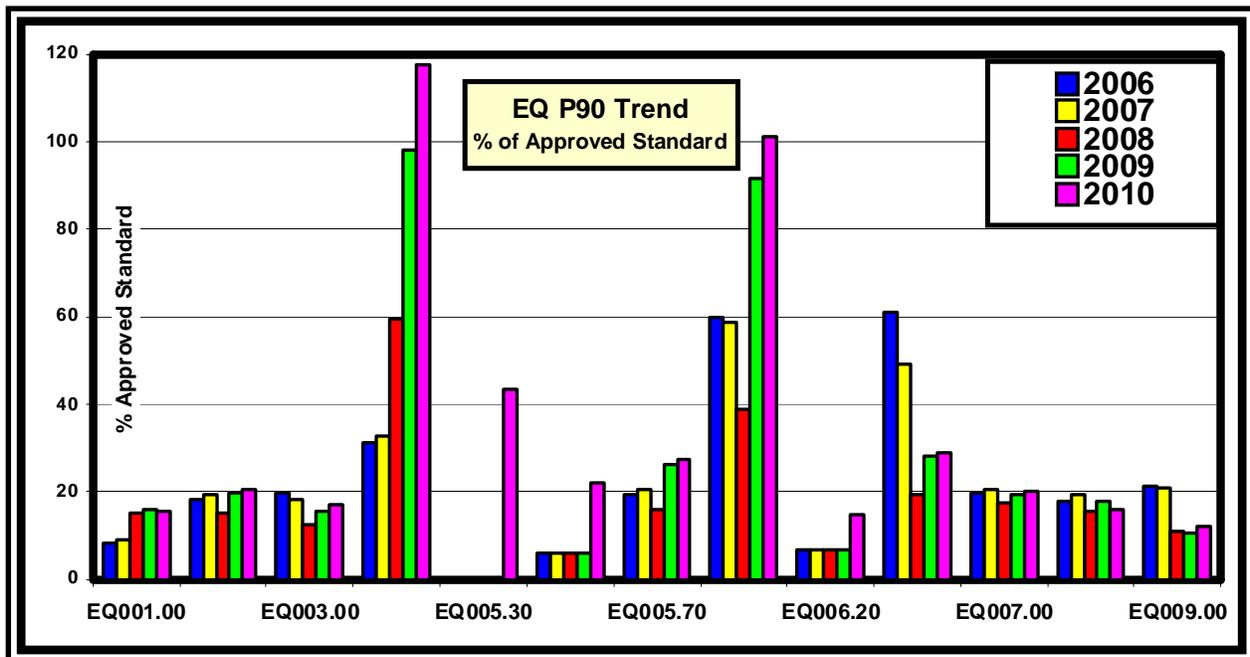
Table 2. Area EQ Sample Count.

Station	CLASS	Adverse		Extra		Random		Total	COMMENTS
		Closed	Open	Closed	Open	Closed	Open		
EQ001.00	A						6	6	
EQ002.50	A						6	6	
EQ003.00	A	14	3				6	23	Flood Station
EQ005.10	P			1		6		7	No longer boundary, reclassify to P, 01-19-11.
EQ005.30	A				2		6	8	New station 4-29-2010; reclassify A to P 1-19-11
EQ005.60	A				4		6	10	Reactivated 4-29-10; Make boundary 01-19-11.
EQ005.70	A						6	6	
EQ006.00	A	13	2				7	22	Flood Station
EQ006.20	A		1				6	7	Reactivate 5-13-10.
EQ006.70	A						6	6	
EQ007.00	A						6	6	
EQ008.00	A						6	6	
EQ009.00	A						6	6	



Figure 2 shows the five year P90 trend (as % of approved standard), for all active stations. Most of the approved stations showed little change in water quality during the past 5 years. Station EQ5.10 (prohibited area-boundary station) exceeded the approved standard in 2010 and has been replaced as a boundary station by EQ5.60. Station EQ6.00 (approved) has reached 100% of the approved standard and a closure will be instituted when and if the P90 score exceeds 100% in accordance with NSSP and SOP.

Figure 2. Five year P90 Trend Chart.



The water quality at station EQ5.10 has steadily decreased for several years and bacterial scores exceeded the “Approved” standard this year. An effort to locate specific pollution sources began in 2010. One intermittent stream which flows through a horse pasture showed bacterial loading in excess of 1600 CFU/100milliliter when tested and discharges into the head of this bay. This may be the source of failing scores. Previous reports identified several houses with questionable leach fields proximate to Kennebec Brook which flows into the head of the cove (Goodwin 2008). A stream draining through the village (EQ132.131) is being sampled to monitor water quality. An alternative margin station (EQ5.30) was established, and inactive station EQ5.60 was reactivated during 2010 in the event EQ5.10 fails to meet the approved criteria.

The water quality in the eastern branch of Little Kennebec Bay has been decreasing for several years. The increased scores at Station EQ6.00 may be associated with agricultural activity (pasture) or wildlife (beavers) located near this station. Previous reports could not identify a pollution source but identified a sheep pasture proximate to Meadow Brook which flows into the head of the cove (Goodwin 2008 & 2009). If the decreasing water quality trend continues it may

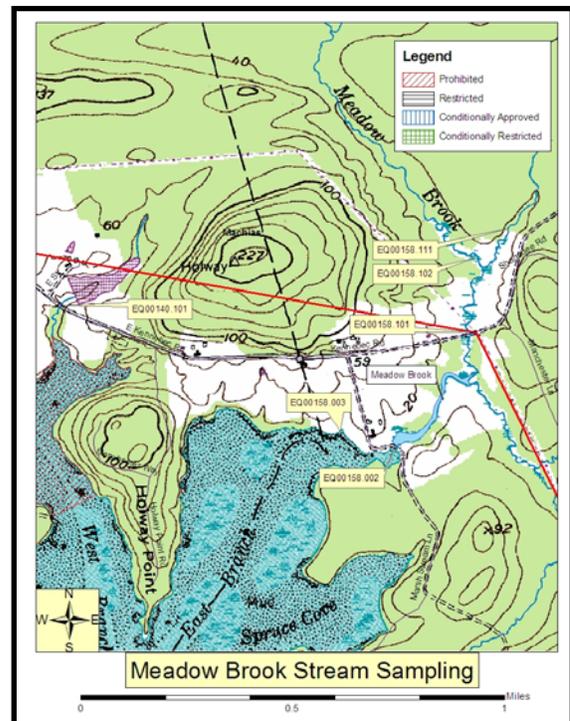
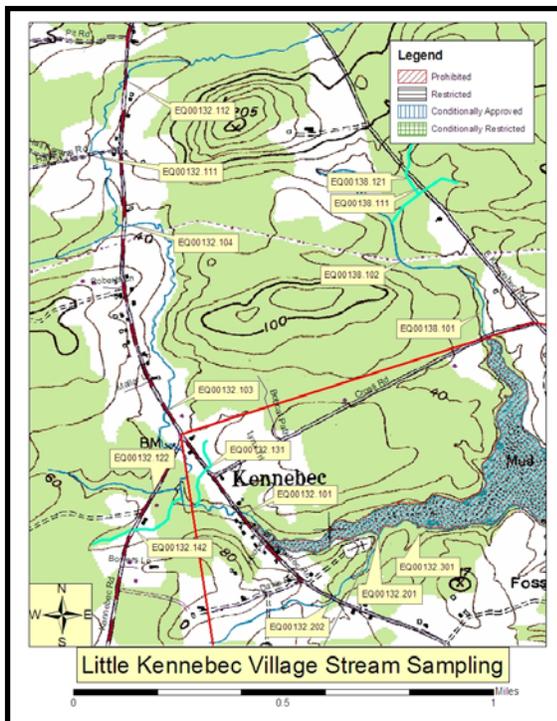


be necessary to re-establish a closure at the head of the bay. Further monitoring (Table 3 and Figure 3) of this site and scores will continue during 2011. An alternative margin station (EQ6.20) was reactivated during 2010 in the event that EQ6.00 fails to meet approved criteria.

Table 3. Stream averages and sample counts.

Identification	Description	Number of samples	Fecal Average	Fecal Minimum	Fecal Maximum
EQ00132.101	Kennebec Creek, Head of tide	4	230	74	600
EQ00132.102	Kennebec Creek, Roques Bluff Rd Bridge	4	128	40	320
EQ00132.103	Kennebec Creek, South of Mallar Ln	1	46	46	46
EQ00132.104	Kennebec Creek, North of Roberts Ln	1	90	90	90
EQ00132.111	Kennebec Creek, Hall Farm Rd	1	118	118	118
EQ00132.112	Kennebec Creek, North of Hall Farm Rd	1	118	118	118
EQ00132.122	Lower horse culvert, Roques Bluff Rd.	2	980	260	>1600
EQ00132.131	Village, little Kennebec	2	507	34	980
EQ00132.142	Upper horse culvert, Roques Bluff Rd	1	>1600	>1600	>1600
EQ00132.201	Cemetary Stream, confluence	1	280	280	280
EQ00132.202	Cemetary Stream, W Kennebec Rd	1	86	86	86
EQ00132.301	Stream at boathouse	1	180	180	180
EQ00138.101	"Cross Road" brook	3	575	1.90	>1600
EQ00138.102	"Cross Road" Brook at Powerlines	2	90	40	140
EQ00138.111	South culvert on East Kennebeck Rd.	1	62	62	62
EQ00138.121	Northern culverts, East Kennebeck Rd.	1	32	32	32
EQ00140.101	"Schoppee Farm East", pond drain	1	480	480	480
EQ00158.002	Meadow Brook, Behind white farmhouse.	1	88	88	88
EQ00158.003	Swail drain, west of white farmhouse.	1	1380	1380	1380
EQ00158.101	Meadow Brook, at East Kennebec Rd	3	1180	540	>1600
EQ00158.102	Meadow Brook, at beaver dam	1	24	24	24
EQ00158.111	Meadow Brook tributary behind pastures	2	103	46	160

Figure 3 . Stream sample locations.





Upward Classification Changes

There are no recommendations for upward classification at this time.

Shoreline Survey Activity

Stream surveys at Marsh Stream, Little Kennebec Stream in 2010.

Aquaculture/Wet Storage Activity

There are no aquaculture or wet storage facilities in area EQ (Maine DMR Aquaculture 2010).

Recommendation for Future Work

Water sampling at several streams with their confluences at the head of the East and West branch of Little Kennebec Bay will be continued and intensified during 2011 to try to identify pollution sources affecting the area. At least two streams which showed high scores will be walked to look for pollution sources.

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Appendix A. 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 = 90th percentile

APPD_STD = the 90th 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 90th percentile, at or below which the station would meet restricted criteria.