



**GROWING AREA WN
Sheepscot River
ANNUAL REVIEW for 2010**

Report Date: 1-30-2012

Glenn Nutting

APPROVAL

Division Director:

Kohl Kanwit

A handwritten signature in blue ink, appearing to read "Kohl Kanwit", written over a light blue rectangular stamp.

1/30/2012

Print name

signature

Date: _____



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Figure 1. Growing Area WN, Upper Sheepscot River, with Active Water Stations, 2010

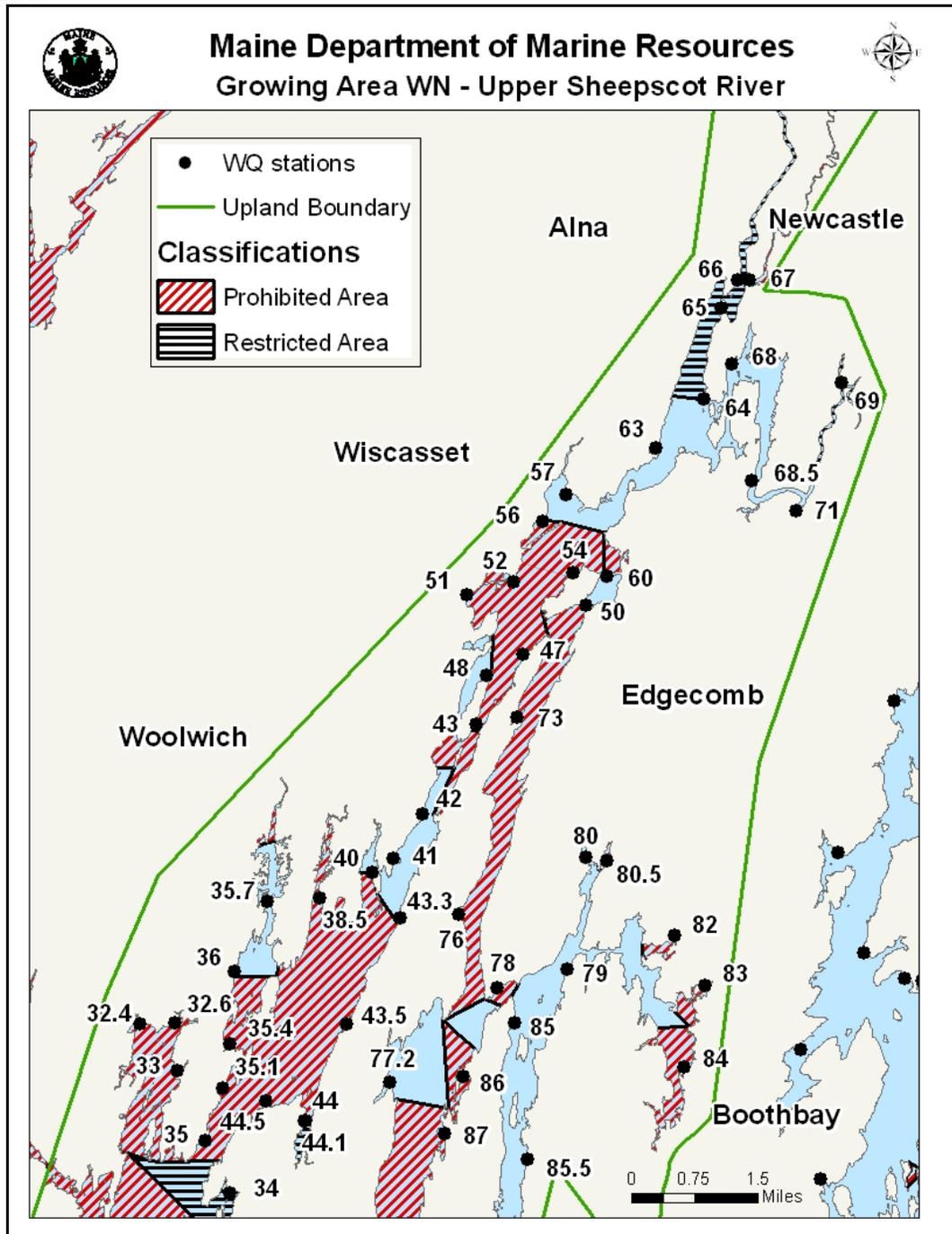
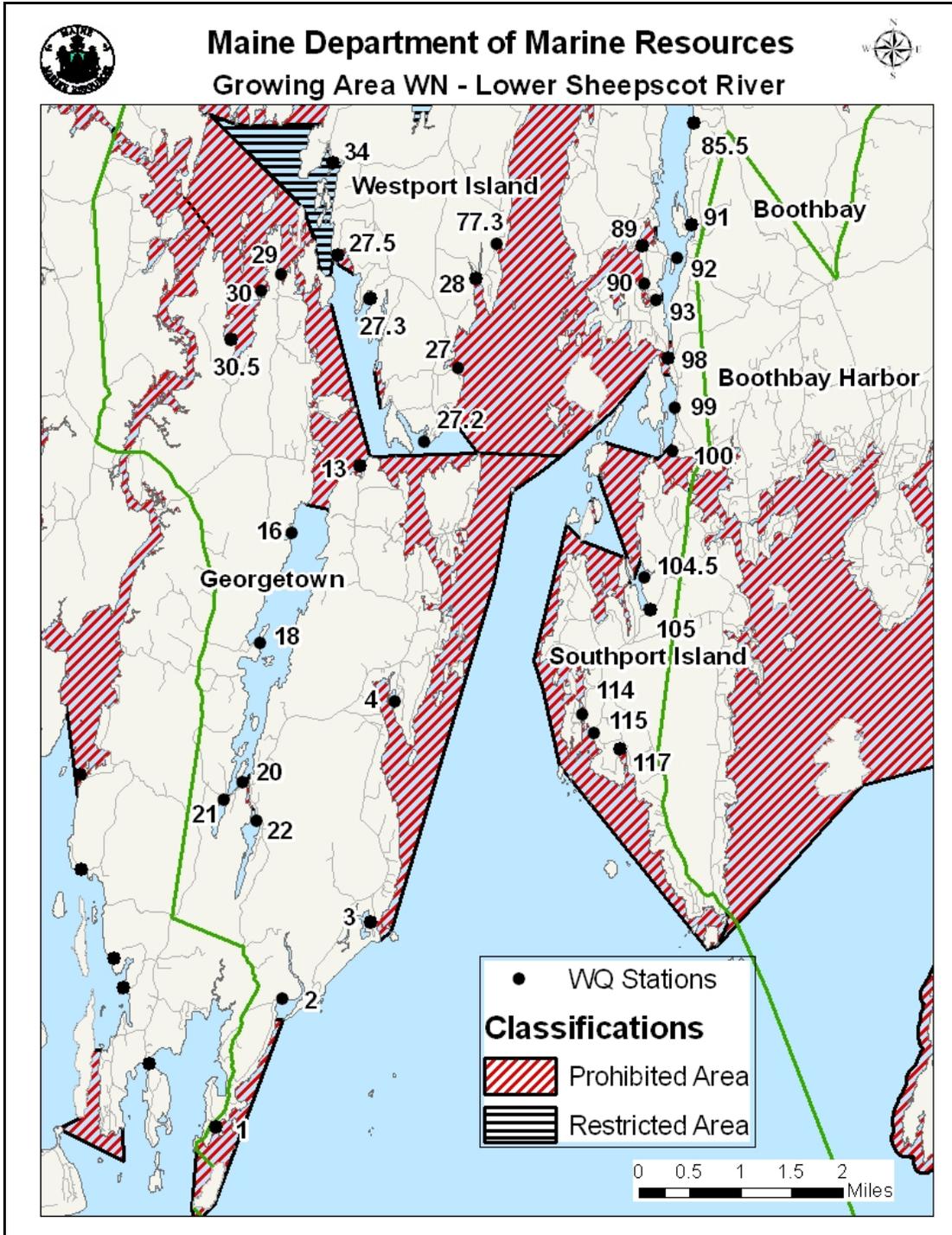




Figure 2. Growing Area WN, Lower Sheepscot River, with Active Water Stations, 2010





Executive Summary

This is an annual report for growing area WN written in compliance with the requirements of the 2009 Model Ordinance and the National Shellfish Sanitation Program. The next triennial report is due in 2012 and the next sanitary survey report is due in 2020.

During the 2010 review year, no water quality stations were deactivated, and one new station was activated. Eight over board discharges (OBDs) were removed; three each from Boothbay Harbor and Southport, and two from Boothbay. There were no downgrades in classification of shellfish growing areas. There were several upgrades in classification for areas that had remediated pollution sources or water quality improvement: Griffith Head Lagoon, Georgetown from prohibited to approved due to water quality meeting the approved standard; the area between Boothbay and Barter's Island from prohibited to approved due to the remediation of three pollution sources, and Montsweag Brook, Woolwich/Wiscasset, from prohibited to approved, due to the remediation of two pollution sources and water quality meeting the approved standard. Three areas were recommended for upgrade in classification: Harmon Harbor (Georgetown); Sherman Creek and Wildcat Creek (Edgecomb) and Lower Cross River (Boothbay).

Growing Area Description

Growing Area WN includes the Sheepscot River estuary, located in Lincoln County, in midcoast Maine (Figures 1 and 2). It encompasses the shellfish growing beds located along the northern and eastern shores of Georgetown, the eastern shore of Woolwich, along the Westport Island shore, the upper Sheepscot River to the head of tide in Alna and the western shores of Edgecomb/Boothbay/Boothbay Harbor/Southport Island.

The towns in growing area WN are all located in Lincoln County, approximately 50 miles northeast of the nearest major city of Portland, Maine. Coastal portions of the towns in area WN are situated on the Back River, Sasanoa River, Cross River, Robinhood Cove, Little Sasanoa River, Harmon's Harbor, Hockomock Bay, Brookings Bay, Chewonki Creek, Montsweag Bay, Cushman Cove, Polly Clark Cove, Pottle Cove, Hilton Cove, Cod Cove, Squam Creek, McCarty Cove, Greenleaf Cove, Long Cove, Jewell Cove and Fowle Cove. All of these towns and water bodies lie within the Sheepscot River watershed. The river flows through the following towns: Alna, Newcastle, Wiscasset, Edgecomb, Westport, Boothbay, Boothbay Harbor, Southport, Georgetown, Woolwich, and Arrowsic. The growing area's head of tide is located at the Head Tide Dam in Alna; from the head of tide down to Wiscasset is a 5 mile long upper estuary with extensive mud flats and salt marshes. Major streams enter the river here, the Dyer River in Sheepscot Village and the Marsh River and Deer Meadow Brook just above Wiscasset. The Sheepscot River estuary is connected with the Kennebec River estuary to the west by the Sasanoa River. The Sheepscot River continues south from Wiscasset for about 17.5 miles before it empties into the Atlantic Ocean.



Current Classification(s)

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

Approved

(31 stations); WN 2, 3, 16, 18, 20, 21, 22, 27.2, 35.7, 36, 40, 41, 42, 43.3, 48, 57, 60, 63, 68, 68.5, 71, 77.2, 79, 80, 85, 85.5, 91, 92, 99, 104.5 and 105.

Restricted

Westport Island (2 stations; poor water quality), WN 34 and 44
Upper Sheepscot River; Wiscasset, Alna, Newcastle (3 stations; poor water quality), WN 64, 65, and 66
Deer Meadow Brook, Newcastle (1 station; poor water quality), WN 69

Prohibited

Woolwich, Arrowsic, Georgetown (8 stations; presence of OBDs and poor water quality), WN 4, 13, 29, 30, 30.5, 35, 35.1 and 35.4.
Sheepscot River; Wiscasset, Edgecomb, Westport Island, Boothbay, Boothbay Harbor (24 stations; Wiscasset WWTP, poor water quality, presence of OBDs and/or identified pollution sources), WN 27, 27.5, 28, 43, 47, 50, 51, 52, 54, 56 (boundary with approved area), 73, 76, 77.3, 78, 80.5, 82, 83, 84, 87, 89, 90, 93, 98 and 100.
Northwest shore of Barters Island, Boothbay (1 station, identified pollution source), WN 86
Southport Island (3 stations; presence of numerous OBDs), WN 114, 115 and 117.

The following three stations have less than 30 data points and are considered "New" stations: WN 27.3, 44.1 and 67; these stations do not have a classification assigned to them.

Please visit the DMR website to view legal notices:

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

Activity during Review Period

The following legal notice amendments occurred during the 2010 review year:

No. 21-C, Back River and Montsweag Bay (Woolwich, Wiscasset, Westport Island)

April 23, 2010: Area No. 21-C, Back River and Montsweag Bay (Woolwich, Wiscasset, Westport Island) was amended to reclassify the majority of Montsweag Brook from prohibited to approved due to water quality meeting the approved standard and the remediation of pollution sources. The upper portion of the brook remains prohibited.



No. 21-D, Sheepscot River (Westport Island, Edgecomb, Boothbay, Boothbay Harbor)

April 28, 2010: Area No. 21-D, Sheepscot River (Westport Island, Edgecomb, Boothbay, Boothbay Harbor) was amended to reclassify a portion of Back River in the vicinity of Sawyer Island, Boothbay from prohibited to approved due to the remediation of multiple pollution sources.

August 24, 2010: Area No. 21-D, Sheepscot River (Westport Island, Edgecomb, Boothbay, Boothbay Harbor) was amended to reclassify a portion of Back River in the vicinity of Sawyer Island, Boothbay from prohibited to approved due to the remediation of a pollution source.

No. 21-F, Lower Sheepscot River and Sheepscot Bay (Georgetown, Southport)

April 23, 2010: Area No. 21-F, Lower Sheepscot River and Sheepscot Bay (Georgetown, Southport) was amended to reclassify Griffith Head area of Georgetown from prohibited to approved due to water quality meeting the approved standard and the remediation of pollution sources.

On May 11, 2010, the Chewonki Foundation announced its plans to remove Lower Montsweag Brook Dam in late summer to restore fish passage and riparian habitat to Montsweag Brook. Removal will directly impact stations WN 35.7 and 36.

Lower Montsweag Brook Dam was constructed by Maine Yankee Atomic Power Company in 1968 to provide a supply of emergency backup water for the former power plant on Bailey Point. As part of the 2008 Natural Resources Damages Restoration Plan and Settlement Agreement (NRDAR) between Maine Yankee and the State of Maine, Chewonki was given ownership of the dam and surrounding property along with the mandate to evaluate alternatives for restoring fish passage and riparian habitat in the lower brook.

Lower Montsweag Brook Dam is the tallest water diversion structure in New England currently scheduled for removal. The impoundment floods approximately 20 acres of riparian habitat and acts as a complete barrier to passage of native and diadromous fish. A recent feasibility study by Stantec Consulting, Inc. of Topsham showed that removal of the concrete dam, which is located about one-quarter mile above head of tide, would be the most effective and least expensive way to restore fish passage. Important fish species expected to benefit from removal of the dam include river herring, rainbow smelt, brook trout and American eel.

Chewonki's stream restoration efforts include a long-term monitoring program that will involve local students and teachers in hands-on field science. A website is under development to document and analyze restoration progress, such as changes to water quality and upstream presence of target fish species. Chewonki will construct an educational trail for the public along the easement corridor within the next several years, and long-term protection of the area will be ensured through a permanent easement held



by the USDA Natural Resources Conservation Service.

Maine Yankee supplied initial funding for the feasibility study and habitat restoration. The project has also received significant funding support from the Gulf of Maine Council/NOAA Habitat Restoration Program, the USDA Natural Resource Conservation Service, the Maine Natural Resource Conservation Program and the American Rivers/NOAA Community-Based Restoration Program.

Conditionally Managed Area(s)

There are no conditionally managed areas in growing WN.

Water Quality Review and Discussion

Table 1 lists all active approved, restricted and prohibited stations in Growing Area WN, with their respective Geomean and P90 calculations for 2010. Please refer to Appendix C 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.

The approved and restricted stations met their respective NSSP classification standards at the end of 2010, with the exception of approved stations WN 40, 41 and 63. These stations were downgraded in 2011; WN 40 was reclassified to seasonal conditionally approved, WN 41 and WN 63 were reclassified to restricted. Stations WN 13, 27.5, 43, 50, 56, 64, 98 and 100 are boundary stations between prohibited or restricted areas and approved areas; these stations must meet the approved classification standard. At the end of 2010, all boundary stations met the approved standard.

Table 1. Geometric Means and P90 Scores, Growing Area WN

Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd_Std	Restr_Std	Min_Date
WN001.00	P	30	28	3.7	0.61	320	22.9	31	169	5/21/2006
WN002.00	A	30	28	4.6	0.61	146	28.4	31	169	5/21/2006
WN003.00	A	30	29	3.3	0.45	56	12.8	31	166	6/25/2006
WN004.00	P	30	28	2.4	0.19	12	4.3	31	169	5/21/2006
WN013.00	P-boundary	30	28	2.9	0.38	104	9.4	31	169	5/21/2006
WN016.00	A	30	28	3.8	0.48	84	15.9	31	169	5/21/2006
WN018.00	A	30	27	4.1	0.47	102	16.9	32	173	3/26/2006



Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd_Std	Restr_Std	Min_Date
WN020.00	A	30	28	3.5	0.42	90	12.4	31	169	5/21/2006
WN021.00	A	30	28	3.7	0.41	92	12.8	31	169	5/21/2006
WN022.00	A	30	28	3.9	0.41	92	13.2	31	169	5/21/2006
WN027.00	P	30	26	2.7	0.47	700	11	32	176	3/21/2006
WN027.20	A	30	26	2.8	0.31	50	7.1	32	176	3/21/2006
WN027.30	New	4	4	10.6	1.46	1700	894.3	31	163	5/10/2010
WN027.50	P-boundary	30	27	3.8	0.44	140	14.4	32	173	5/9/2006
WN028.00	P	30	27	5.9	0.86	1560	77.3	32	173	5/9/2006
WN029.00	P	30	29	6.9	0.58	380	39.5	31	166	6/25/2006
WN030.00	P	30	27	9.7	0.72	440	82.6	32	173	3/26/2006
WN030.50	P	30	28	11.7	0.66	380	82.4	31	169	5/21/2006
WN032.40	P	30	30	7.2	0.58	134	41	31	163	8/21/2007
WN032.60	P	30	30	7.6	0.71	1700	61.7	31	163	8/21/2007
WN033.00	P	30	30	6.4	0.48	96	26.8	31	163	8/21/2007
WN034.00	R	30	26	4.9	0.57	1160	26.6	32	176	3/21/2006
WN035.00	R	30	30	8.8	0.65	820	61.5	31	163	8/21/2007
WN035.10	R	30	30	9	0.6	280	53	31	163	8/21/2007
WN035.40	R	30	30	7.5	0.66	1700	53.3	31	163	8/22/2007
WN035.70	A	30	30	6.7	0.43	60	24.2	31	163	10/6/2008
WN036.00	A	30	30	6.6	0.45	88	25.5	31	163	8/22/2007
WN038.50	P	30	30	5.6	0.5	84	25	31	163	10/6/2008
WN040.00	A	30	26	5.7	0.66	1100	40.5	32	176	3/21/2006
WN041.00	A	30	26	6.1	0.62	320	39.5	32	176	3/21/2006
WN042.00	A	30	27	3.3	0.41	46	11.4	32	173	5/9/2006
WN043.00	P-boundary	30	27	2.7	0.34	54	7.6	32	173	5/9/2006
WN043.30	A	30	26	4.6	0.56	154	24.6	32	176	3/21/2006
WN043.50	P	30	26	6.4	0.59	240	37.4	32	176	3/21/2006
WN044.00	R	30	27	8.5	0.58	94	47.8	32	173	5/9/2006
WN044.10	New	20	20	10	0.71	440	85	31	163	9/18/2007
WN044.50	P	30	26	6	0.47	54	24.4	32	176	3/21/2006
WN047.00	P	30	27	3.2	0.38	43	10.2	32	173	5/9/2006
WN048.00	A	30	28	4.1	0.46	93	16.1	31	169	6/6/2006
WN050.00	P-boundary	30	28	2.6	0.24	16	5.3	31	169	6/28/2006
WN051.00	P	30	30	5.1	0.57	260	27.6	31	163	5/7/2007
WN052.00	P	30	30	9	0.75	1700	82.3	31	163	6/26/2007
WN054.00	P	30	27	2.7	0.27	23	6.1	32	173	3/28/2006
WN056.00	P-boundary	30	26	5.1	0.56	93	26.9	32	176	3/21/2006
WN057.00	A	30	26	4.6	0.61	460	28.4	32	176	3/21/2006
WN060.00	A	30	27	3.1	0.42	68	11.3	32	173	3/28/2006
WN063.00	A	30	26	5.3	0.62	460	33.8	32	176	3/21/2006
WN064.00	R-boundary	30	29	4.9	0.59	600	28.5	31	166	7/25/2006



Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd_Std	Restr_Std	Min_Date
WN065.00	R	30	29	7.3	0.48	92	30.5	31	166	6/28/2006
WN066.00	R	30	26	10.7	0.65	260	73	32	176	3/8/2005
WN067.00	New	27	27	12.1	0.67	440	88.6	31	163	10/3/2006
WN068.00	A	30	27	2.6	0.21	9.1	4.8	32	173	3/28/2006
WN068.50	A	30	27	4.7	0.55	88	24.1	32	173	3/28/2006
WN069.00	R	30	27	18	0.55	280	92.7	32	173	3/28/2006
WN071.00	A	30	27	4.9	0.49	90	21.5	32	173	3/28/2006
WN073.00	P	30	26	4.5	0.57	138	24.7	32	176	3/21/2006
WN076.00	P	30	26	5.2	0.78	1100	53.3	32	176	3/21/2006
WN077.20	A	30	26	3	0.46	160	11.9	32	176	3/21/2006
WN077.30	P	30	26	4.7	0.74	1100	42.4	32	176	3/21/2006
WN078.00	P	30	27	2.7	0.29	28	6.6	32	173	3/28/2006
WN079.00	A	30	27	2.1	0.12	6	3	32	173	3/28/2006
WN080.00	A	30	28	3.4	0.61	1700	21.2	31	169	6/28/2006
WN080.50	P	30	29	5.2	0.74	1700	46.8	31	166	6/28/2006
WN082.00	P	30	30	6.2	0.79	1500	64.6	31	163	8/22/2006
WN083.00	P	30	30	5.8	0.77	1700	57.4	31	163	8/22/2006
WN084.00	P	30	30	4.2	0.57	320	23.1	31	163	9/6/2006
WN085.00	A	30	27	2.1	0.13	6	3.1	32	173	3/28/2006
WN085.50	A	30	27	3.4	0.46	60	13.4	32	173	3/28/2006
WN086.00	P	30	27	3.4	0.45	140	13	32	173	3/28/2006
WN087.00	P	30	27	5.5	0.79	1700	58.7	32	173	3/28/2006
WN089.00	P	30	27	2.9	0.31	28	7.5	32	173	3/28/2006
WN090.00	P	30	27	5.9	0.64	300	39.7	32	173	3/28/2006
WN091.00	A	30	27	2.7	0.28	15	6.3	32	173	3/28/2006
WN092.00	A	30	28	5.3	0.55	240	27.7	31	169	6/28/2006
WN093.00	P	30	27	3.3	0.36	30	10	32	173	3/28/2006
WN098.00	P-boundary	30	27	2.8	0.37	50	8.6	32	173	3/28/2006
WN099.00	A	30	27	3.4	0.6	1100	20.4	32	173	3/28/2006
WN100.00	P-boundary	30	27	3	0.32	24	7.8	32	173	3/28/2006
WN104.50	A	30	26	2.7	0.36	112	8	32	176	12/5/2005
WN105.00	A	30	26	4.1	0.59	380	23.8	32	176	12/5/2005
WN114.00	P	30	26	3.2	0.53	840	15.6	32	176	12/5/2005
WN115.00	P	30	26	2.3	0.17	10	3.8	32	176	12/5/2005
WN117.00	P	30	26	5.2	0.7	1700	41.6	32	176	12/5/2005

With the exception of stations WN 104.5, 105, 114, 115 and 117 (due to a scheduling error only 5 samples were collected), 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 2). At many stations, additional samples were collected under adverse conditions and some stations had additional sampling effort in the open status (extra samples). The classification (noted as Class) noted in Table 2 reflect classification at time of sample collection.



Table 2. WN Samples Collected in 2010

Station	Class	Adverse		Extra		Random		Total	Comments
		Closed	Open	Closed	Open	Closed	Open		
WN001.00	P					7		7	
WN002.00	A						7	7	
WN003.00	A				1		4	5	Reclassified P to A on 5/3/10
	P					3		3	
WN004.00	P					7		7	
WN013.00	P					7		7	
WN016.00	A						7	7	
WN018.00	A						7	7	
WN020.00	A						7	7	
WN021.00	A						7	7	
WN022.00	A						7	7	
WN027.00	P					6		6	
WN027.20	A						6	6	
WN027.30	A-new						4	4	
WN027.50	P					6		6	
WN028.00	P					6		6	
WN029.00	P					6		6	
WN030.00	P					6		6	
WN030.50	P					6		6	
WN032.40	P			12		6		18	
WN032.60	P			12		6		18	
WN033.00	P			12		6		18	
WN034.00	R						6	6	
WN035.00	P			12		6		18	
WN035.10	P			12		6		18	
WN035.40	P			11		6		17	
WN035.70	A			1	9		4	14	Reclassified P to A on 5/3/10
	P			3		2		5	
WN036.00	A			1	9		4	14	Reclassified P to A on 5/3/10
	P			1		2		3	
WN038.50	P			14		6		20	
WN040.00	A						6	6	
WN041.00	A						6	6	
WN042.00	A	29	1				6	36	
WN043.00	P					6		6	
WN043.30	A						6	6	
WN043.50	P					6		6	
WN044.00	R						6	6	
WN044.10	R						6	6	
WN044.50	P					6		6	
WN047.00	P					6		6	
WN048.00	A		1				6	7	



Station	Class	Adverse		Extra		Random		Total	Comments
		Closed	Open	Closed	Open	Closed	Open		
WN050.00	P					6		6	
WN051.00	P					6		6	
WN052.00	P					6		6	
WN054.00	P					6		6	
WN056.00	P					6		6	
WN057.00	A						6	6	
WN060.00	A						6	6	
WN063.00	A						6	6	
WN064.00	R						6	6	
WN065.00	R						6	6	
WN066.00	R						6	6	
WN067.00	P					6		6	
WN068.00	A						6	6	
WN068.50	A						6	6	
WN069.00	R						6	6	
WN071.00	A						6	6	
WN073.00	P					6		6	
WN076.00	P					6		6	
WN077.20	A	25					6	31	
WN077.30	P					6		6	
WN078.00	P					6		6	
WN079.00	A						6	6	
WN080.00	A						6	6	
WN080.50	P					6		6	
WN082.00	P			3		6		9	
WN083.00	P			3		6		9	
WN084.00	P			3		6		9	
WN085.00	A						6	6	
WN085.50	A						6	6	
WN086.00	P					6		6	
WN087.00	P					6		6	
WN089.00	P					6		6	
WN090.00	P					6		6	
WN091.00	A						4	4	Reclassified P to A on 5/3/10
	P					2		2	
WN092.00	A						1	1	Reclassified P to A on 8/24/10
	P					5		5	
WN093.00	P					6		6	
WN098.00	P					6		6	
WN099.00	A						6	6	
WN100.00	P					6		6	
WN104.50	A						5	5	
WN105.00	A						5	5	



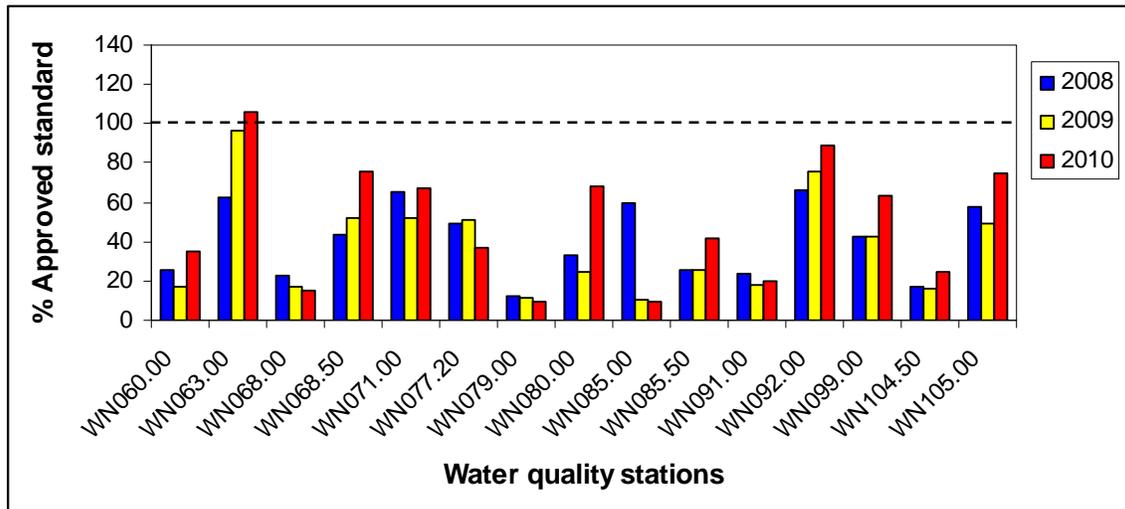
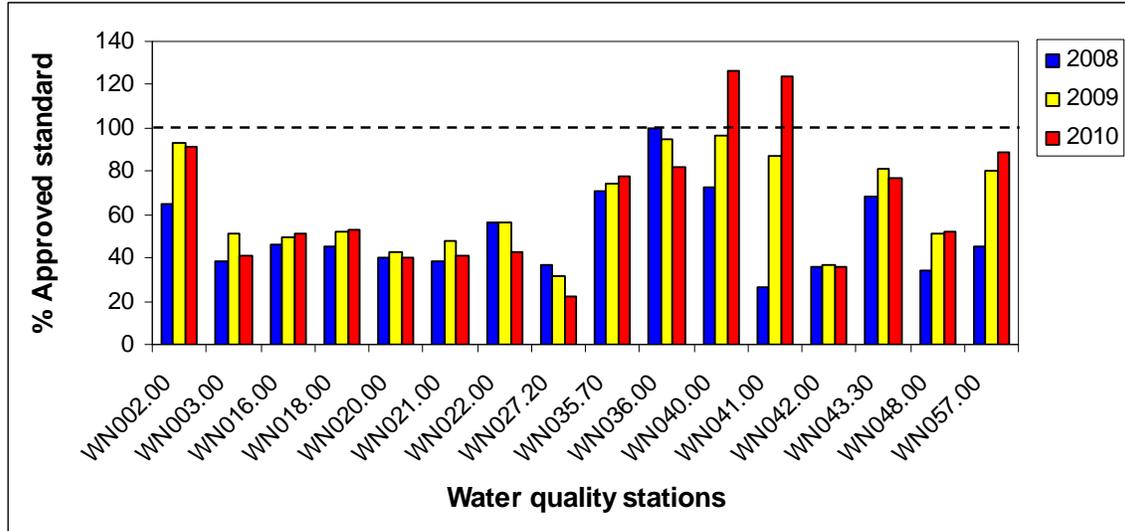
Station	Class	Adverse		Extra		Random		Total	Comments
		Closed	Open	Closed	Open	Closed	Open		
WN114.00	P					5		5	
WN115.00	P					5		5	
WN117.00	P					5		5	

Figure 3 shows the P90 scores, expressed as a percent of the approved standard, for all approved and approved area boundary stations in growing area WN. The dashed line on each graph indicates the approved classification standard limit. During the transition from MPN to MF analysis method, the approved standard will decrease every year, until all samples have been analyzed by the MF method. In order to show the trend of the P90 value over the years, the calculated P90 scores are expressed as a percentage of the standard; any station column on or above 100 percent does not meet its classification standard. At the end of 2010, WN 40, 41 and 63 showed P90 trends not meeting their approved standard, indicating a decline in water quality. These stations were downgraded in 2011 to seasonal conditionally approved (WN 40) and restricted (WN 41 and WN 63). Stations 40 and 41 exceeded their approved standard by approximately 25 percent. The stations are located on the property of Maine Yankee, a decommissioned Nuclear Power Plant, situated on the Wiscasset shore. There is no development in the vicinity of these two stations, however waterfowl has been frequently observed in the vicinity of the sampling stations.

Stations WN 2, 35.7, 36, 43.3, 57, 68.5, 92 and 105 are within 25 percent of the approved classification standard limit. Station WN 2 is located at the mouth of Little River, Georgetown; no known pollution sources were identified in the vicinity of this station during the most recent survey (completed in 2006). A follow up survey should be conducted in this area prior to the next sanitary report. Station WN 43.3, located on the western shore of Westport Island was surveyed in October 2009; no pollution sources were identified at the time of the survey. Station WN 57, located in Polly Clark Cove, is located in an undeveloped area, however there is a stream that flows into the head of this cove. This stream has never been assessed. Station WN 68.5 is located at the head of the Sheepscot River, near the town line dividing Wiscasset and Alna. This area was surveyed in the spring of 2008 and no problems were noted at the time of the survey. The cause of the elevated scores is unknown at this time, and follow up survey work in the vicinity of this station is recommended. Station WN 92 water quality was impacted by a malfunctioning septic system in 2009, remediated in 2010, and then reclassified from prohibited to approved. Although this station meets the approved standard, the water quality has declined over the past three years and should be closely monitored. Station WN 105 is at the foot of a cove where migratory birds have been observed.



Figure 3. P90 trends for Approved Stations in Growing area WN



Classification Changes

During 2010 classification changes occurred for stations WN 3, 35.7, 36, 91 and 92. The stations were reclassified from prohibited to approved based on improved water quality due to remediation of multiple pollution sources. Details for the justifications are summarized in the 2009 WN annual report:

[www.maine.gov/dmr/rm/public_health/G A reports/annualwn2009.pdf](http://www.maine.gov/dmr/rm/public_health/G_A_reports/annualwn2009.pdf) - 2010-03-09



During the review year one area in Georgetown (Harmon Cove) and three areas in the Sheepscot River (Sherman Creek, Wildcat Creek and Lower Cross River) were recommended for upward classification (Appendix A and B of this report).

Shoreline Survey Activity

There were no shoreline surveys during the review year.

Aquaculture/Wet Storage Activity

There are thirteen aquaculture sites in area WN. In the upper Sheepscot River between Cunningham and Lehman Islands there are three aquaculture lease sites. The first shellfish lease (SHE LE) is a 2.96 acre bottom lease for American and European oysters; the lease was issued in 2004 and will expire in 2014. A second shellfish lease (SHE LE2) is 1.57 acres bottom lease on the east side of Lehman Island and is for American and European oysters. SHE LE2 was issued in 2007 and will expire in 2017. The third shellfish lease (STEV4 09) is a 0.01 acre site for overwintering soft bag cultivation for American oysters; this lease will expire on 12/31/2010.

There is an experimental shellfish lease (SHE SP) issued in the Mason Station salt pond for 1.94 acres of bottom or suspended culture of American/European oysters, soft shelled clams, quahogs, surf/hen clams, razor clams and bay scallops. The lease will expire in 2015.

There are two Limited-Purpose Aquaculture (LPA) sites in Oven's Mouth, Edgecomb. PERR 1 09 is a 0.01 acre lease for overwintering cages/soft bag cultivation of oysters, mussels and clams; this lease expired 12/31/09. The second lease site (LEW 1 09) is a 0.01 acre site for overwintering cages/soft bag cultivation and spat collection for oysters and mussels; this lease will expire on December 31, 2010.

There is one LPA site in Chewonki Creek (JAM 3 09). The LPA is a 0.01 acres lease for upweller/FLUPSY units for soft shell clam seed. This LPA expires December 31, 2010.

There are two experimental shellfish leases (SHE SQW and SHE SQ2) and a LPA (HOP 04) issued for the Squam Creek salt pond on Westport Island. SHE SQ2 is for 0.569 acres of bottom/suspended culture of American/European oysters, soft shelled clams, quahogs, surf/hen clams, razor clams and bay scallops and will expire in 2013. SHE SQW is for 1.492 acres of bottom/suspended culture of American/European oysters, soft shelled clams, quahogs and surf/hen clams and will expire in 2013. The LPA HOP 04 site is for 0.01 acre for an overwintering cage of American oysters and will expire on 12/31/2010.

There are two LPA sites of the northwestern shore of Southport Island. Lease sites CHA1 09 and CHA 2 09 are both 0.01 acre lease sites for upweller/FLUPSY units, overwintering cages and soft bag cultivation of European oysters. The leases expire on 12/31/2010.



There is a 0.01 acre LPA (BOL1 10) issued for Robinhood Cove, Georgetown, for an overwintering cage of American oysters and will expire on 12/31/2010.

Additional information on these lease sites/LPAs can be found at the DMR website:
<http://www.maine.gov/dmr/aquaculture/leaseinventory/sheepscotriver.htm>

There are no shellfish wet storage permits issued for area WN.

Recommendation for Future Work

- 1) Accelerated sample collection in Woolwich, including Brookings Bay and Chewonki Creek (stations WN 32.4, 32.6, 33, 34, 35, 35.1, 35.4, 36, 38.5). Stream sample collection for major streams that drain into this area is also recommended, to be collected on the same dates as accelerated samples. This work has already been scheduled to be completed in 2011.
- 2) Extra sample collection at Sherman Creek, Wildcat Creek and Lower Cross River, and, especially after rainfall and between the months of October and April (stations WN 82, 83, and 84). Stream samples that drain in the vicinity of these stations should be collected on the same dates.
- 3) Extra sample collection at Squam Creek, Westport Island (Stations WN 34, 44, 44.1, 43.5 and 44.5). Samples should be collected after rainfall; extra effort should be allotted for the time period between October and May.
- 4) Boat activity should be monitored for Harmon's Harbor, Georgetown (WN 4).
- 5) Collect additional data in December and January, during the 2011 and 2012 field seasons in Griffith Head lagoon, Georgetown.
- 6) Collect additional stream data in Polly Clark Cove (WN 57).

References

DMR legal notices

<http://www.maine.gov/dmr/rm/publichealth/closures/closedarea.htm#N>

DMR 2009 Annual Report

www.maine.gov/dmr/rm/publichealth/G_A_reports/annualwn2009.pdf - 2010-03-09

Aquaculture lease sites

<http://www.maine.gov/dmr/aquaculture/leaseinventory/sheepscotriver.htm>



Appendix A. Upward Classification of Sherman Creek, Wildcat Creek and Lower Cross River

Sherman Creek, Wildcat Creek and Lower Cross River, monitored by stations WN 82, WN 83 and WN 84, respectively, are being proposed for an upgrade in classification from prohibited to conditionally approved based on season (OPEN status from September 1 to May 31). Due to non-point pollution sources negatively impacting water quality, stations WN 82 and WN 83 were reclassified from approved to prohibited in March 1994; station WN 84 was reclassified from approved to prohibited in June 2006.

In May 2008, shoreline surveys were completed in Boothbay and Edgecomb by DMR and DEP staff. No actual or potential problems were observed that would impact the shore or nearby streams in the vicinity of the stations recommended for upgrade.

Table 1 shows all SRS, extra and adverse (flood closure excluded) water quality scores for stations WN 82, WN 83 and WN 84 from 2000 through 2010; daily rainfall amounts within four days of sample collection, as well as the cumulative rainfall amount and tidal stages are also presented in this table. Since 2000, all stations have occasionally exceeded the approved standard throughout the year, however the exceeded scores were primarily isolated to the summer months (June-August). From 2004 through 2010 each station exceeded the approved standard only once (elevated scores highlighted in turquoise, with the exception during the summer months. Station WN 82 had a score of 58 following 0.38 inch of rain (cumulative four days) in March 2007. Stations WN 83 and WN 84 had scores of 93 and 43, respectively, following 1.19 inches of rain (cumulative four days) in May 2004. The tidal effect was negligible since the high scores occurred during both flood and ebb cycles.

A stream drains into each of the heads of Sherman Creek (WN 82) and Wildcat Creek (WN 83), and a small stream flows into an unnamed cove in the Lower Cross River growing area more than 500 feet from station WN 84 (Table 2). Water quality in these growing areas may be intermittently impacted by non-point source pollution, especially after rainfall events when stream flow rates increase. In order to assess the impact to the growing areas, 13 stream samples were collected under various flow conditions in the spring and summer from August 2001 to June 2010. Of the 13 samples the stream in the vicinity of station WN 84 was sampled on one date (April 9, 2009). Results of the stream samples are presented in Table 2; flow conditions were estimated at time of sample collection. On three dates stream samples were collected on the same day as growing area samples WN 82 and WN 83, and for those dates, both the stream and the marine sample results are shown in Table 2. Station WN 82 stream fecal score exceeded the P90 approved standard in June 2010 with a score of >1600 (medium runoff condition), and station WN 83 stream fecal scores exceeded the P90 approved standard in June 2009 and 2010 with scores of 66 and >1600, respectively (high and medium runoff conditions, respectively). Station WN 84 stream fecal score met the P90 approved standard with a score of <2 (high runoff condition). The remaining 9 samples met their P90 approved standard.



A rainfall assessment was completed for all three stations using data collected after more than 0.5 inch of cumulative rainfall throughout the year (Table 1). Data where the cumulative rainfall within four days of collection exceeded 0.5 inch are highlighted in yellow. The approved standard was exceeded 39 times , throughout the year; 15 for station WN 82, 14 for station WN 83 and 10 for station WN 84. The grayed out months are the proposed CLOSED status period. Table 3 shows a further assessment of the impact of rainfall on water quality. The P90 scores were recalculated using only data collected after 0.5 inch of rainfall (cumulative four days), during the proposed OPEN status months. All stations met the approved standard.

Geometric means and P90 scores calculated using the 30 most recent stratified random samples (SRS) collected from 2004 through 2010, during the proposed OPEN status September 1 through May 31, are presented in Table 4. The calculated data for all stations met the approved classification standard. Based on these data, stations WN 82, WN 83 and WN 84 are recommended for an upgrade from prohibited to a conditionally approve OPEN status from September 1 through May 31.

Figure 1. Sherman Creek, Wildcat Creek and Cross River with Proposed Classifications

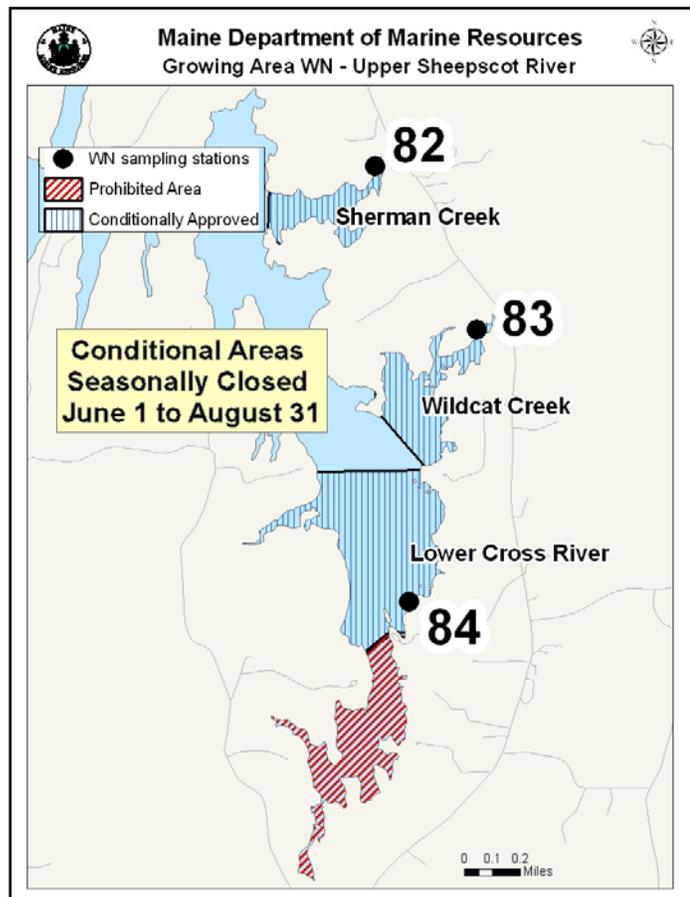




Table 1. Stations WN 82 (Sherman Creek), WN 83 (Wildcat Creek), WN 84 (Lower Cross River) Rainfall and Seasonal Assessment, 2000-2010

Station	Date	Tide	Sal	Rain 0	Rain 24	Rain 48	Rain 72	Rain Sum	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
WN082.00	06-Apr-00	HE	10	0	0.03	0.8	0.32	1.15				2.9									
WN082.00	27-May-00	F	4	0	0	0.3	1.01	1.31					2.9								
WN082.00	23-Jun-00	F	11	0.12	0.26	0	0	0.38						1100							
WN082.00	21-Jul-00	H	18	0	0	0.2	0.04	0.24							15						
WN082.00	30-Aug-00	F	30	0	0	0	0	0								75					
WN082.00	22-Sep-00	E	16	0	0	1.7	0	1.7									93				
WN082.00	06-Oct-00	F	19	1.1	0	0.01	0	1.11										460			
WN082.00	27-Apr-01	HF	2	0	0	0.01	0	0.01				2.9									
WN082.00	13-May-01	LF	25	0	0	0	0	0					3.6								
WN082.00	24-Jun-01	H	5	0	0.13	0	0	0.13						23							
WN082.00	22-Jul-01	HF	30	0	0	0	0	0							7.3						
WN082.00	13-Aug-01	H	30	0.01	0	0	0	0.01								9.1					
WN082.00	03-Apr-02	H	5	0.12	0.01	0.43	0	0.56				2.9									
WN082.00	05-Jun-02	HE	6	0.01	0	0	0.02	0.03						43							
WN082.00	17-Jul-02	E	(blank)	0.02	1.27	0.01	0	1.3							23						
WN082.00	01-Aug-02	E	30	0	0	0.05	0.11	0.16								23					
WN082.00	10-Dec-02	HF	0	0	0	0	0	0												3.6	
WN082.00	17-Dec-02	HF	1	0	0	0.47	1.04	1.51													43
WN082.00	08-Apr-03	HF	0	0	0	0.05	0.31	0.36				2.9									
WN082.00	17-Jun-03	F	2	0	0.02	0.15	0.64	0.81						43							
WN082.00	22-Jul-03	E	30	0	0	0	0	0							23						
WN082.00	14-Oct-03	F	20	0	0.77	0.12	0	0.89										43			
WN082.00	10-Dec-03	E	0	0	0	0.06	0.74	0.8													9.1
WN082.00	16-Dec-03	H	0	0	1.64	0	0	1.64													93
WN082.00	13-Jan-04	HF	0	0.01	0.05	0	0	0.06	3.6												
WN082.00	03-Feb-04	HF	26	0	0	0	0	0		2.9											



Station	Date	Tide	Sal	Rain 0	Rain 24	Rain 48	Rain 72	Rain Sum	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WN082.00	02-Mar-04	HE	14	0	0	0	0	0			9.1									
WN082.00	06-Apr-04	H	0	0	0	1	0.19	1.19				2.9								
WN082.00	04-May-04	HF	2	1	0.19	0	0	1.19					15							
WN082.00	08-Jun-04	F	2	0	0.11	0	0	0.11						2.9						
WN082.00	13-Dec-04	H	15	0.01	0.2	0.43	0	0.64												2.9
WN082.00	08-Feb-05	HF	5	0	0	0	0	0		9.1										
WN082.00	11-Apr-05	F	10	0	0	0	0.12	0.12				2.9								
WN082.00	21-Jun-05	F	10	0	0	0	0.05	0.05						23						
WN082.00	28-Nov-05	H	22	0.07	0.01	0.01	0.04	0.13											9.1	
WN082.00	15-Dec-05	F	3	(blank)	(blank)	0	0	0												9.1
WN082.00	28-Mar-06	H	27	0	0	0	0	0			2.9									
WN082.00	28-Jun-06	E	6	0.39	0	0.19	0.01	0.59						149						
WN082.00	19-Jul-06	LF	18	0	0.01	0	0	0.01							15					
WN082.00	22-Aug-06	H	27	0	0.11	0.29	0	0.4								8				
WN082.00	03-Oct-06	H	24	0	0.45	0	0	0.45										6		
WN082.00	28-Nov-06	F	14	0.01	0	0	0	0.01											2	
WN082.00	14-Mar-07	HE	0	0.01	0	0	0.37	0.38			58									
WN082.00	12-Apr-07	E	8	0.03	0	0	0	0.03				<2								
WN082.00	08-May-07	HF	17	0	0	0	0	0					<2							
WN082.00	27-Jun-07	E	29	0	0	0	0	0						<2						
WN082.00	22-Aug-07	E	32	0	0	0	0	0								<2				
WN082.00	22-Oct-07	H	0	0	0	0.59	0.05	0.64										22		
WN082.00	08-Jan-08	HE	2	0	0.01	0	0	0.01	4											
WN082.00	04-Mar-08	HE	2	0.03	0.01	0.01	0.69	0.74			<2									
WN082.00	28-May-08	HF	24	0.03	0.04	0	0	0.07					<2							
WN082.00	24-Jun-08	F	28	0.04	0.29	0.02	0	0.35						6						
WN082.00	13-Aug-08	HF	20	0	1.1	0	0.01	1.11								280				
WN082.00	07-Oct-08	HF	22	0	0	0	0	0										2		
WN082.00	18-Feb-09	F	2	0	0	0.01	0	0.01		<2										
WN082.00	27-Apr-09	H	4	0	0	0	0	0				<2								



Station	Date	Tide	Sal	Rain 0	Rain 24	Rain 48	Rain 72	Rain Sum	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WN082.00	01-Jun-09	E	4	0.12	0.01	0.44	0.23	0.8						25						
WN082.00	15-Jun-09	F	9	0.4	0.46	0	1.71	2.57						156						
WN082.00	19-Aug-09	H	28	0	0	0	0	0								72				
WN082.00	09-Sep-09	H	29	0	0	0	0	0									2			
WN082.00	21-Oct-09	F	25	0	0	0.6	0.06	0.66										2		
WN082.00	01-Feb-10	HE	8	0	0	0	0.04	0.04		<2										
WN082.00	16-Mar-10	HE	20	0	0.71	0.24	0	0.95			<2									
WN082.00	05-May-10	H	24	0.04	0.09	0	0.02	0.15					2							
WN082.00	28-Jun-10	E	4	1.48	0.01	0.01	0	1.5						1500						
WN082.00	10-Aug-10	HE	28	0	0.12	0	0	0.12								29				
WN082.00	28-Sep-10	F	28	0.1	0.02	0	0.01	0.13									2			
WN082.00	30-Nov-10	F	22	0	0	0.01	0	0.01											<2	
WN082.00	28-Dec-10	F	16	0.06	0.71	0	0	0.77												<2
WN083.00	06-Apr-00	HE	0	0	0.03	0.8	0.32	1.15				2.9								
WN083.00	27-May-00	F	17	0	0	0.3	1.01	1.31					2.9							
WN083.00	23-Jun-00	F	12	0.12	0.26	0	0	0.38						9.1						
WN083.00	21-Jul-00	H	26	0	0	0.2	0.04	0.24							9.1					
WN083.00	30-Aug-00	F	30	0	0	0	0	0								43				
WN083.00	22-Sep-00	E	23	0	0	1.7	0	1.7									240			
WN083.00	06-Oct-00	F	20	1.1	0	0.01	0	1.11											150	
WN083.00	27-Apr-01	HF	9	0	0	0.01	0	0.01				23								
WN083.00	13-May-01	LF	20	0	0	0	0	0					23							
WN083.00	24-Jun-01	H	10	0	0.13	0	0	0.13						93						
WN083.00	22-Jul-01	HF	30	0	0	0	0	0							23					
WN083.00	13-Aug-01	H	30	0.01	0	0	0	0.01								23				
WN083.00	26-Dec-01	HE	12	0.01	0.06	1.29	0	1.36												43
WN083.00	03-Apr-02	H	10	0.12	0.01	0.43	0	0.56				2.9								
WN083.00	05-Jun-02	HE	29	0.01	0	0	0.02	0.03						2.9						
WN083.00	17-Jul-02	E	30	0.02	1.27	0.01	0	1.3							15					



Station	Date	Tide	Sal	Rain 0	Rain 24	Rain 48	Rain 72	Rain Sum	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WN083.00	01-Aug-02	E	29	0	0	0.05	0.11	0.16								2.9				
WN083.00	10-Dec-02	HF	10	0	0	0	0	0												2.9
WN083.00	17-Dec-02	H	2	0	0	0.47	1.04	1.51												150
WN083.00	08-Apr-03	HF	30	0	0	0.05	0.31	0.36				2.9								
WN083.00	17-Jun-03	F	22	0	0.02	0.15	0.64	0.81						9.1						
WN083.00	22-Jul-03	E	30	0	0	0	0	0							9.1					
WN083.00	14-Oct-03	HF	30	0	0.77	0.12	0	0.89										3.6		
WN083.00	10-Dec-03	E	5	0	0	0.06	0.74	0.8												15
WN083.00	16-Dec-03	H	0	0	1.64	0	0	1.64												15
WN083.00	13-Jan-04	HF	21	0.01	0.05	0	0	0.06	2.9											
WN083.00	03-Feb-04	HF	25	0	0	0	0	0		2.9										
WN083.00	02-Mar-04	E	18	0	0	0	0	0			9.1									
WN083.00	06-Apr-04	H	10	0	0	1	0.19	1.19				2.9								
WN083.00	04-May-04	HF	2	1	0.19	0	0	1.19					93							
WN083.00	08-Jun-04	F	10	0	0.11	0	0	0.11						2.9						
WN083.00	13-Dec-04	H	24	0.01	0.2	0.43	0	0.64												3.6
WN083.00	08-Feb-05	HF	21	0	0	0	0	0		3.6										
WN083.00	11-Apr-05	F	20	0	0	0	0.12	0.12				3.6								
WN083.00	21-Jun-05	F	10	0	0	0	0.05	0.05						43						
WN083.00	28-Nov-05	HE	20	0.07	0.01	0.01	0.04	0.13											9.1	
WN083.00	15-Dec-05	F	6	(blank)	(blank)	0	0	0												2.9
WN083.00	28-Mar-06	H	28	0	0	0	0	0			2.9									
WN083.00	28-Jun-06	F	15	0.39	0	0.19	0.01	0.59						240						
WN083.00	19-Jul-06	E	27	0	0.01	0	0	0.01							43					
WN083.00	22-Aug-06	H	28	0	0.11	0.29	0	0.4								<2				
WN083.00	03-Oct-06	H	20	0	0.45	0	0	0.45										27		
WN083.00	28-Nov-06	F	25	0.01	0	0	0	0.01											<2	
WN083.00	14-Mar-07	HE	0	0.01	0	0	0.37	0.38			9.1									
WN083.00	12-Apr-07	E	15	0.03	0	0	0	0.03				2								
WN083.00	08-May-07	H	26	0	0	0	0	0					<2							



Station	Date	Tide	Sal	Rain 0	Rain 24	Rain 48	Rain 72	Rain Sum	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WN083.00	27-Jun-07	E	29	0	0	0	0	0						<2						
WN083.00	22-Aug-07	E	30	0	0	0	0	0								<2				
WN083.00	22-Oct-07	H	30	0	0	0.59	0.05	0.64										<2		
WN083.00	08-Jan-08	HE	5	0	0.01	0	0	0.01	8											
WN083.00	04-Mar-08	E	6	0.03	0.01	0.01	0.69	0.74			2									
WN083.00	04-Jun-08	F	28	0.13	0	0	0.05	0.18						20						
WN083.00	24-Jun-08	F	28	0.04	0.29	0.02	0	0.35						<2						
WN083.00	13-Aug-08	HF	7	0	1.1	0	0.01	1.11								440				
WN083.00	07-Oct-08	F	20	0	0	0	0	0										<2		
WN083.00	16-Mar-09	H	6	0	0	0	0	0			<2									
WN083.00	27-Apr-09	HE	16	0	0	0	0	0				2								
WN083.00	01-Jun-09	E	22	0.12	0.01	0.44	0.23	0.8						8						
WN083.00	15-Jun-09	F	5	0.4	0.46	0	1.71	2.57						50						
WN083.00	19-Aug-09	H	29	0	0	0	0	0								29				
WN083.00	09-Sep-09	H	29	0	0	0	0	0									<2			
WN083.00	21-Oct-09	F	29	0	0	0.6	0.06	0.66										2		
WN083.00	01-Feb-10	HE	22	0	0	0	0.04	0.04		<2										
WN083.00	16-Mar-10	HE	24	0	0.71	0.24	0	0.95			<2									
WN083.00	05-May-10	H	24	0.04	0.09	0	0.02	0.15					<2							
WN083.00	28-Jun-10	HE	10	1.48	0.01	0.01	0	1.5						>1600						
WN083.00	10-Aug-10	HE	26	0	0.12	0	0	0.12								54				
WN083.00	28-Sep-10	F	30	0.1	0.02	0	0.01	0.13									<2			
WN083.00	30-Nov-10	F	26	0	0	0.01	0	0.01											22	
WN083.00	28-Dec-10	F	16	0.06	0.71	0	0	0.77												2
WN084.00	06-Apr-00	HE	18	0	0.03	0.8	0.32	1.15				2.9								
WN084.00	27-May-00	F	25	0	0	0.3	1.01	1.31					2.9							
WN084.00	23-Jun-00	F	30	0.12	0.26	0	0	0.38						2.9						
WN084.00	21-Jul-00	H	30	0	0	0.2	0.04	0.24							2.9					
WN084.00	30-Aug-00	F	30	0	0	0	0	0								2.9				



Station	Date	Tide	Sal	Rain 0	Rain 24	Rain 48	Rain 72	Rain Sum	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WN084.00	22-Sep-00	E	29	0	0	1.7	0	1.7									43			
WN084.00	27-Apr-01	HF	28	0	0	0.01	0	0.01				2.9								
WN084.00	13-May-01	HE	30	0	0	0	0	0					240							
WN084.00	24-Jun-01	HE	25	0	0.13	0	0	0.13						23						
WN084.00	22-Jul-01	HF	30	0	0	0	0	0							43					
WN084.00	13-Aug-01	H	30	0.01	0	0	0	0.01								93				
WN084.00	26-Dec-01	HE	19	0.01	0.06	1.29	0	1.36												93
WN084.00	03-Apr-02	H	30	0.12	0.01	0.43	0	0.56				2.9								
WN084.00	05-Jun-02	HE	31	0.01	0	0	0.02	0.03						2.9						
WN084.00	17-Jul-02	E	30	0.02	1.27	0.01	0	1.3							3.6					
WN084.00	01-Aug-02	E	31	0	0	0.05	0.11	0.16								3.6				
WN084.00	10-Dec-02	HF	30	0	0	0	0	0												2.9
WN084.00	17-Dec-02	H	24	0	0	0.47	1.04	1.51												93
WN084.00	08-Apr-03	F	30	0	0	0.05	0.31	0.36				2.9								
WN084.00	17-Jun-03	F	30	0	0.02	0.15	0.64	0.81						3.6						
WN084.00	22-Jul-03	E	30	0	0	0	0	0							2.9					
WN084.00	14-Oct-03	HF	30	0	0.77	0.12	0	0.89										15		
WN084.00	10-Dec-03	E	28	0	0	0.06	0.74	0.8												2.9
WN084.00	16-Dec-03	H	24	0	1.64	0	0	1.64												3
WN084.00	13-Jan-04	HF	30	0.01	0.05	0	0	0.06	2.9											
WN084.00	03-Feb-04	HF	31	0	0	0	0	0		2.9										
WN084.00	02-Mar-04	E	32	0	0	0	0	0			2.9									
WN084.00	06-Apr-04	H	30	0	0	1	0.19	1.19				2.9								
WN084.00	04-May-04	H	6	1	0.19	0	0	1.19					43							
WN084.00	08-Jun-04	F	28	0	0.11	0	0	0.11						2.9						
WN084.00	13-Dec-04	H	16	0.01	0.2	0.43	0	0.64												21
WN084.00	08-Feb-05	H	30	0	0	0	0	0		2.9										
WN084.00	11-Apr-05	F	20	0	0	0	0.12	0.12				2.9								
WN084.00	21-Jun-05	F	26	0	0	0	0.05	0.05						93						
WN084.00	28-Nov-05	HE	22	0.07	0.01	0.01	0.04	0.13											9.1	



Station	Date	Tide	Sal	Rain 0	Rain 24	Rain 48	Rain 72	Rain Sum	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WN084.00	15-Dec-05	F	30	(blank)	(blank)	0	0	0												2.9
WN084.00	28-Mar-06	HE	30	0	0	0	0	0			2.9									
WN084.00	28-Jun-06	F	28	0.39	0	0.19	0.01	0.59						9.1						
WN084.00	22-Aug-06	HF	29	0	0.11	0.29	0	0.4								4				
WN084.00	06-Sep-06	E	29	0.06	0	0.79	0.02	0.87									15			
WN084.00	03-Oct-06	H	29	0	0.45	0	0	0.45										2		
WN084.00	28-Nov-06	F	25	0.01	0	0	0	0.01											<2	
WN084.00	11-Dec-06	H	29	0	0	0	0.36	0.36												<2
WN084.00	22-Jan-07	F	28	0	0	0	0.34	0.34	<2											
WN084.00	14-Mar-07	HE	28	0.01	0	0	0.37	0.38			<2									
WN084.00	05-Jun-07	F	26	0.61	0.68	1.23	0	2.52						11						
WN084.00	27-Jun-07	E	30	0	0	0	0	0						<2						
WN084.00	22-Aug-07	E	31	0	0	0	0	0								<2				
WN084.00	22-Oct-07	H	30	0	0	0.59	0.05	0.64										<2		
WN084.00	08-Jan-08	E	30	0	0.01	0	0	0.01	2											
WN084.00	04-Mar-08	E	28	0.03	0.01	0.01	0.69	0.74			<2									
WN084.00	28-May-08	HF	30	0.03	0.04	0	0	0.07					<2							
WN084.00	24-Jun-08	F	28	0.04	0.29	0.02	0	0.35						12						
WN084.00	13-Aug-08	F	20	0	1.1	0	0.01	1.11								320				
WN084.00	07-Oct-08	F	28	0	0	0	0	0										<2		
WN084.00	18-Feb-09	F	30	0	0	0.01	0	0.01		<2										
WN084.00	27-Apr-09	HE	26	0	0	0	0	0				<2								
WN084.00	01-Jun-09	E	28	0.12	0.01	0.44	0.23	0.8						80						
WN084.00	19-Aug-09	H	29	0	0	0	0	0								29				
WN084.00	09-Sep-09	H	29	0	0	0	0	0									<2			
WN084.00	21-Oct-09	F	29	0	0	0.6	0.06	0.66										<2		
WN084.00	16-Mar-10	H	22	0	0.71	0.24	0	0.95			<2									
WN084.00	14-Apr-10	HE	25	0	0	0	0	0				<2								
WN084.00	05-May-10	H	28	0.04	0.09	0	0.02	0.15					<2							
WN084.00	28-Jun-10	HE	28	1.48	0.01	0.01	0	1.5						10						



Station	Date	Tide	Sal	Rain 0	Rain 24	Rain 48	Rain 72	Rain Sum	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WN084.00	10-Aug-10	HE	29	0	0.12	0	0	0.12								18				
WN084.00	28-Sep-10	F	30	0.1	0.02	0	0.01	0.13									10			
WN084.00	30-Nov-10	F	30	0	0	0.01	0	0.01											6	
WN084.00	28-Dec-10	HF	28	0.06	0.71	0	0	0.77												2



Table 2. Fecal Scores from Streams Draining into Sherman Creek, Wildcat Creek and Lower Cross River, 2001-2010

Station	Date	Stream Fecal Score (fcu/100ml)	Marine Sample Fecal Score	Flow Conditions
S1WN82	8/13/2001	23	9.1	Low
	4/3/2003	<3		High
	4/7/2004	3.6		
	4/9/2009	12		High
	6/15/2009	20	156	High
	6/28/2010	>1600	1500	Med
S1WN83	8/13/2001	3.6	23	Low
	3/7/2002	<3		High
	4/3/2003	<3		High
	4/9/2009	2		High
	6/15/2009	66	50	High
	6/28/2010	>1600	>1600	Med
S1WN84	4/9/2009	<2		High

Table 3. Sherman Creek, Wildcat Creek and Lower Cross River Geometric Means and P90 Scores, Data Collected after >0.5 inch of Cumulative Rainfall, September-May, 2004-2010

Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd_Std	Restr_Std	Min_Date
WN082.00	P	8	5	3.7	0.43	22	13.8	36	204	4/6/2004
WN083.00	P	8	5	3.5	0.57	93	20.6	36	204	4/6/2004
WN084.00	P	9	6	4.6	0.54	43	24.2	36	199	4/6/2004

Table 4. Sherman Creek, Wildcat Creek and Lower Cross River Geometric Means and P90 Scores, September-May, 2004-2010

Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd_Std	Restr_Std	Min_Date
WN082.00	P	30	20	3.5	0.38	58	11	36	199	2/3/2004
WN083.00	P	30	19	3.6	0.42	93	12.5	36	203	1/13/2004
WN084.00	P	30	21	3	0.36	43	9	35	195	3/2/2004



Appendix B. Upward Classification of Harmon Harbor (Georgetown)

Harmon Harbor, Georgetown is recommended for an upgrade in classification from prohibited to approved (Figure 1). This area has been classified prohibited due to the presence of a licensed OBD, located at the head of the cove. The current proposal recommends decreasing the size of this closure, and limiting the closure to the area at the head of the cove, where the OBD discharges. The size of this reduced closure should be determined based on the flow of the OBD (300 GPD), the depth of receiving water at mid tide (3 feet), and a standard pre-chlorination fecal concentration of 140,000 FC/100 ML. Based on these numbers, the minimum required closure size surrounding this OBD is 3.1 acres. The proposed closure (considering the hydrography of the area and enforcement lines) is 8 acres.

Table 1 shows the individual sample results for the water quality monitoring station located in Harmon Harbor (WN 4), from 2002 and 2010. All data, excluding that collected during flood closures is presented in the table; cumulative rainfall within 3 days of sample collection and 4 days of sample collection are presented in this table. Since 2002, the station had two elevated scores; both occurred in 2003 (indicated in turquoise). One elevated score occurred after cumulative rainfall of 1.95 inches, while the other elevated score occurred during dry conditions. At the end of the 2010 review year, the P90 score at monitoring station WN 4 was 4.3. The area was surveyed by DMR staff and the municipal warden for the town of Georgetown in 2006; no pollution sources were identified in this area. An interview with the Georgetown Harbor master confirmed that while the area does have 15 boat moorings, only one of the boats that are moored there is large enough to have an on-board head. The remaining boats are working boats and small sailboats.

Geometric means and P90 scores calculated using the 30 most recent stratified random samples (SRS) collected from 2004 through 2010 are presented in Table 2. The calculated data for WN 4 met the approved classification standard. Based on this assessment, the majority of Harmon Harbor is proposed for an upgrade in classification, from prohibited to approved. The head of the Harbor is to remain classified as prohibited.



Figure 1. Harmon Harbor with Current and Proposed Classifications

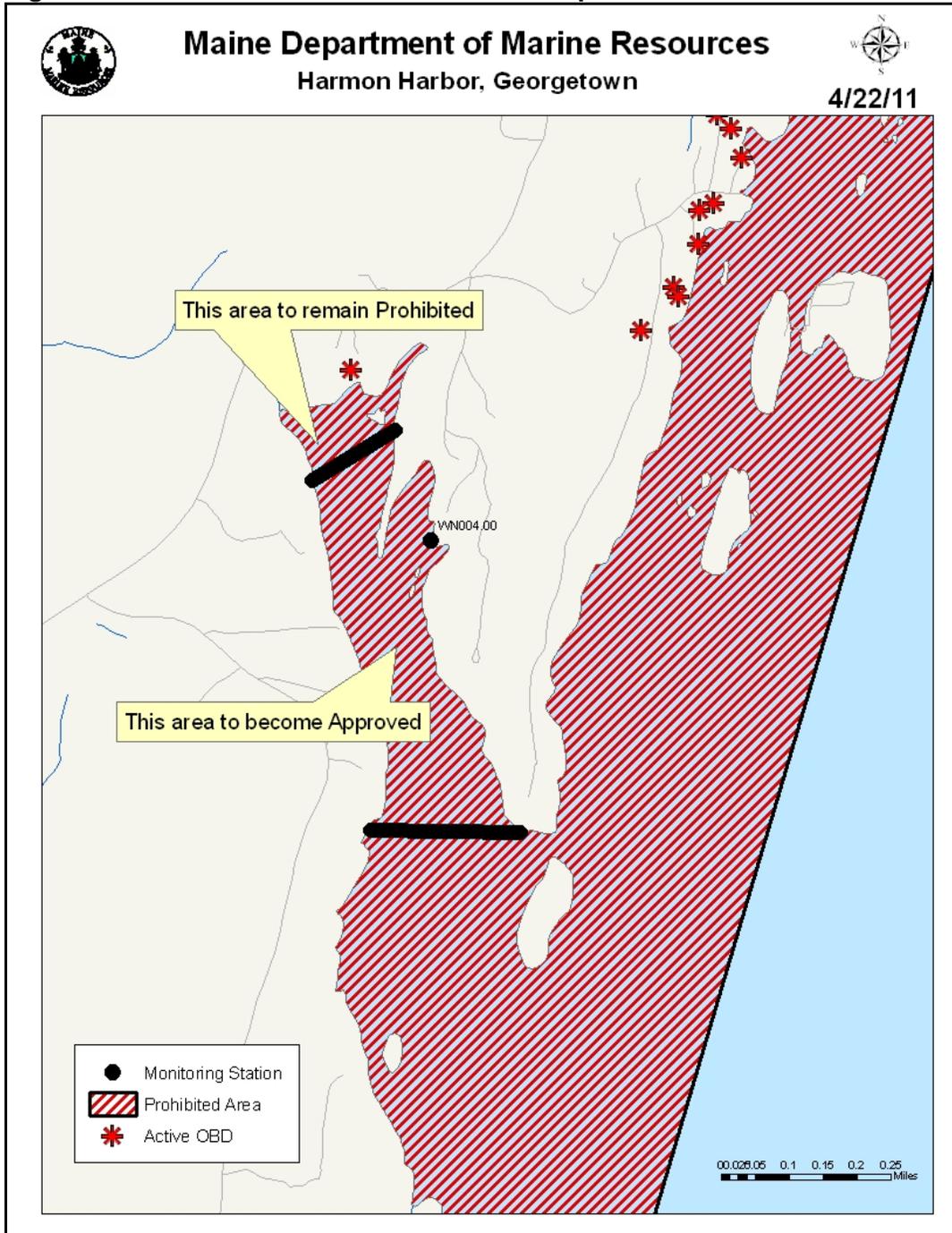




Table 1. Harmon's Harbor (WN 4) Water Quality Data, 2002-2010

Date	Sal	Strategy	Tide	sum 3 day	sum 4 day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
11-Aug-02	30	R	HF	0	0								2.9				
22-Sep-02	30	R	F	0	0									2.9			
02-May-04	28	R	E	0	0					2.9							
13-Jun-04	30	R	H	0	0						2.9						
26-Sep-04	30	R	H	0	0									2.9			
26-Jun-05	30	R	HF	0	0						15						
21-Aug-05	30	R	HF	0	0								9.1				
19-Mar-06	31	R	LF	0	0			2.9									
25-Nov-07	26	R	HF	0	0											4	
13-Oct-08	30	R	H	0	0										1.9		
02-Nov-08	30	R	F	0	0											2	
15-Mar-09	23	R	H	0	0			1.9									
20-Apr-09	20	R	E	0	0				1.9								
20-Sep-09	32	R	F	0	0									1.9			
12-Jan-10	30	R	HF	0	0	1.9											
10-Feb-10	31	R	HF	0	0		1.9										
05-Oct-10	31	R	F	0	0.01											3.6	
21-Apr-02	30	R	HF	0	0.03				2.9								
18-May-03	30	R	F	0	0.04					2.9							
15-Oct-06	28	R	E	0	1.65										2		
29-Jul-07	28	R	F	0.01	0.01							1.9					
24-Oct-04	30	R	HF	0.02	0.02										3.6		
08-Jun-03	28	R	F	0.03	0.67						2.9						
17-Aug-03	30	R	E	0.04	0.04								240				
26-Oct-03	25	R	HF	0.04	0.31										23		
21-Jul-05	30	R	HE	0.08	0.11							9.1					
21-Mar-04	32	R	HE	0.09	0.17			2.9									
15-Jun-08	29	R	F	0.11	0.11						2						



Date	Sal	Strategy	Tide	sum 3 day	sum 4 day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
18-Jul-04	30	R	F	0.14	0.26							9.1					
06-Jul-03	30	R	HF	0.15	0.15							3.6					
05-May-10	30	R	F	0.15	0.25					1.9							
21-Jul-02	30	R	H	0.23	0.34							3					
11-Aug-10	31	R	F	0.25	0.26								1.9				
18-Oct-09	32	R	F	0.26	0.26										1.9		
26-Feb-08	28	R	F	0.36	0.36		1.9										
13-Apr-08	28	R	E	0.37	0.37				1.9								
12-May-02	30	R	HE	0.37	0.73					2.9							
23-Jun-10	29	R	F	0.48	0.8						4						
06-Nov-05	20	R	F	0.49	0.49											23	
16-Sep-07	28	R	L	0.6	0.6									1.9			
31-Aug-09	30	R	F	0.61	0.61								4				
19-Nov-06	24	R	H	0.61	1.19											1.9	
25-Jun-06	28	R	F	0.75	0.76						2.9						
22-May-05	28	R	F	0.79	0.8					23							
10-Aug-08	28	R	HF	0.85	0.85								1.9				
27-Aug-06	25	R	LF	0.86	0.86								2				
23-Mar-03	30	R	HF	0.9	1.04			2.9									
21-May-06	26	R	E	1.06	1.06					3.6							
14-Jun-09	28	R	F	1.15	1.15						1.9						
16-Jun-02	30	R	HF	1.26	1.26						3.6						
27-Apr-03	30	R	HF	1.39	1.44				2.9								
03-Jun-07	24	R	F	1.45	1.46						12						
17-Nov-02	30	R	H	1.54	1.54											3.6	
29-Apr-07	16	R	F	1.67	1.67				7.3								
18-Sep-05	30	R	F	1.79	2.24									9.1			
16-Mar-10	30	R	F	1.84	1.84			1.9									
28-Sep-03	30	R	H	1.95	1.97									240			
18-Mar-07	30	R	F	2.31	2.68			1.9									



Date	Sal	Strategy	Tide	sum 3 day	sum 4 day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
22-Aug-04	24	R	F	3.35	3.35								9.1				



Table 2. Harmon Harbor Geometric Means and P90 Scores, 2004-2010

Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd_Std	Restr_Std	Min_Date
WN004.00	P	30	28	2.4	0.19	12	4.3	31	169	5/21/2006

Appendix C. 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.

Min Date= The date of collection for the least recent sample used for classification