



WNP Sanitary Survey 2020

GROWING AREAS WN and WP

Georgetown to Boothbay Harbor

Sanitary Survey Report (Final)

2008-2020

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December 5, 2022

Sanitary Survey Officer signature: _____ *Bryant Lp* _____ Date: December 5, 2022 _____



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Executive Summary

This is a Sanitary Survey report for Growing Areas WN and WP (WNP) ranging from Georgetown to Boothbay Harbor written in compliance with the requirements of the 2019 Model Ordinance and the National Shellfish Sanitation Program. There are two growing area sections in WN that will be reviewed for a possible upgrade based on 2020 data: Pottle Cove (Wiscasset) and Hockomock Bay (Woolwich). Three new investigatory stations were created during the review year: WN027.40, WN030.75 and WN039.25. Station WN030.50 was administratively re-classified from Conditionally Approved to Prohibited due to the station residing within a Prohibited area. Station WN088.00 reached its 30 count and was classified to Restricted to match the water body classification. The next sanitary survey is due in 2032 and the next triennial is due in 2023.

Description of Growing Area

Growing Areas WNP encompasses around 150 square miles and is centered around the Sheepscot River, Back River, Boothbay Harbor and Linekin Bay in Sagadahoc and Lincoln County, Maine. The shoreline included in these growing areas stretches from Salter Island in Georgetown to Ocean Point in East Boothbay and includes the towns of Georgetown (pop. 1,058), Woolwich (pop. 3,068), Wiscasset (pop. 3,742), Westport (pop. 719), Edgecomb (pop. 1,188), Southport (pop. 622), and Boothbay (Boothbay, Boothbay Harbor and East Boothbay) (pop. 3,003) (2020 Census). The largest population concentrations are in Wiscasset and Woolwich. All towns in growing areas WNP have seasonal residents from around June to September with highest seasonal populations residing in Boothbay and Southport. Shoreline development is clustered in Southport, the Boothbay region, and Wiscasset. This is true in some areas of Georgetown, Westport, Edgecomb, and Woolwich while also having some more spacious forested areas along the shoreline as well. There is one wastewater treatment plant (WWTP) located in Wiscasset and one in Boothbay Harbor. There are 218 active overboard discharges (OBD's) in growing areas WNP, and five were removed in towns of Boothbay, Southport, Georgetown, and Edgecomb during the year 2020.

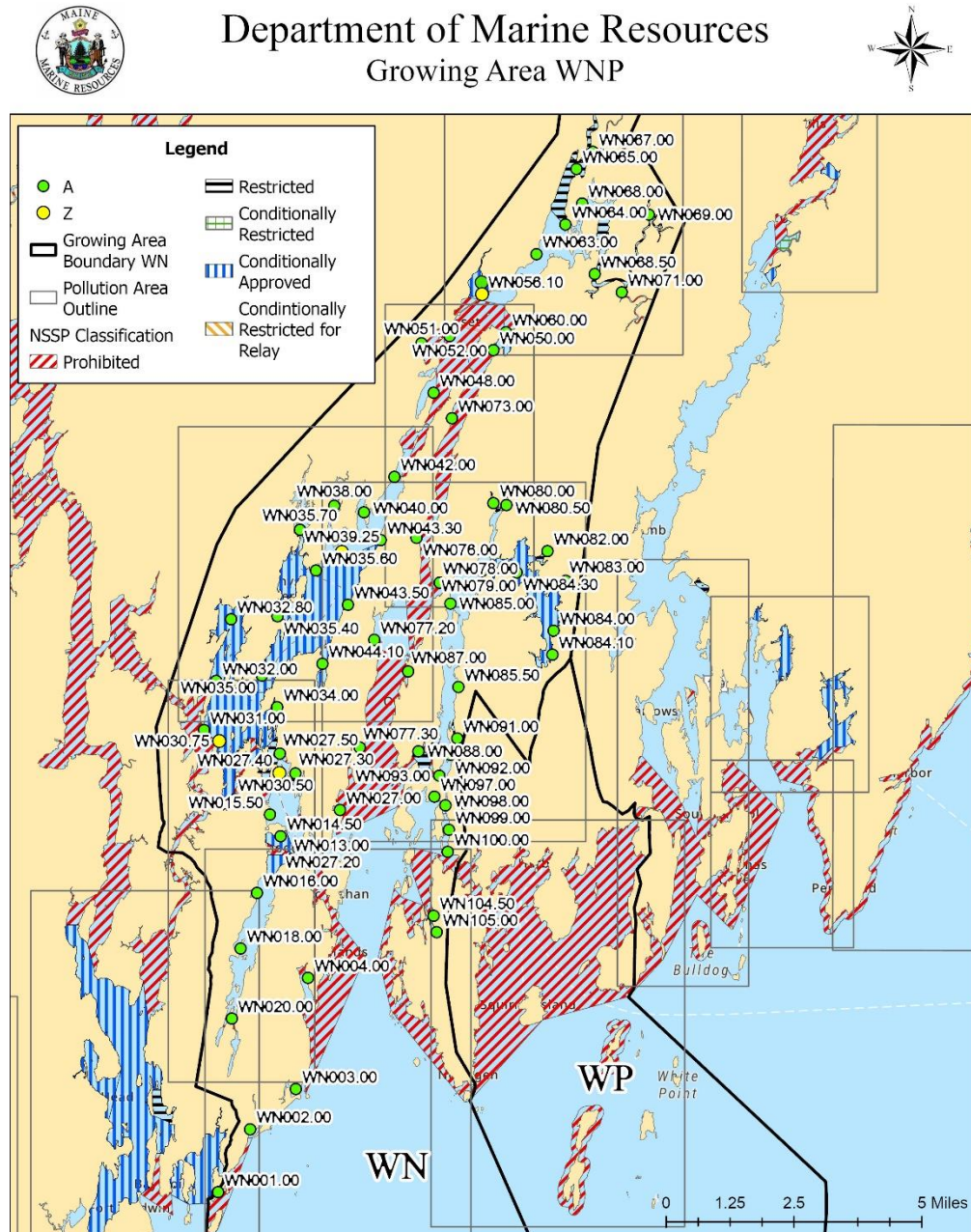
Shellfish Growing Areas WNP includes all the shores, coves, mudflats, and sandy beaches from Salter Island in Georgetown to Ocean Point in East Boothbay. The two main rivers in Growing Areas WNP are Sheepscot and Back River which contain brackish water, estuaries, and freshwater influence from the Sasanoa River filtering in fresh water from the Kennebec and from the upper Sheepscot. Wildlife in the area includes migrating birds, various rodents, deer, harbor seals, raccoons, foxes, etcetera.

There are four shellfish aquaculture leases and 43 shellfish Limited Purpose Aquaculture permits (LPAs) in these growing areas.

Below is the map with growing area boundaries. Closures within the growing areas can be found in legal notices in DMR central files on the DMR website.



Figure 1. Growing Areas WNP Overview Map with Active Water Quality Stations





History of Growing Area Classification

Reclassification addendums to the sanitary survey report are in the DMR central files.

Pollution Sources Survey

Summary of Sources and Location

The growing area shoreline is divided into two-mile segments that are identified using unique Growing Area Shoreline Survey Identification (GASSID) numbers. All properties and potential pollution sources within 250 feet of the shoreline are identified and inspected. The inspection includes a property description, physical address, location of the septic system and any other relevant potential or actual pollution sources. A GPS point to identify the source location(s) and the data are entered electronically in the field and stored in DMR central files.



Figure 2. Growing Area WN, Inset Map A

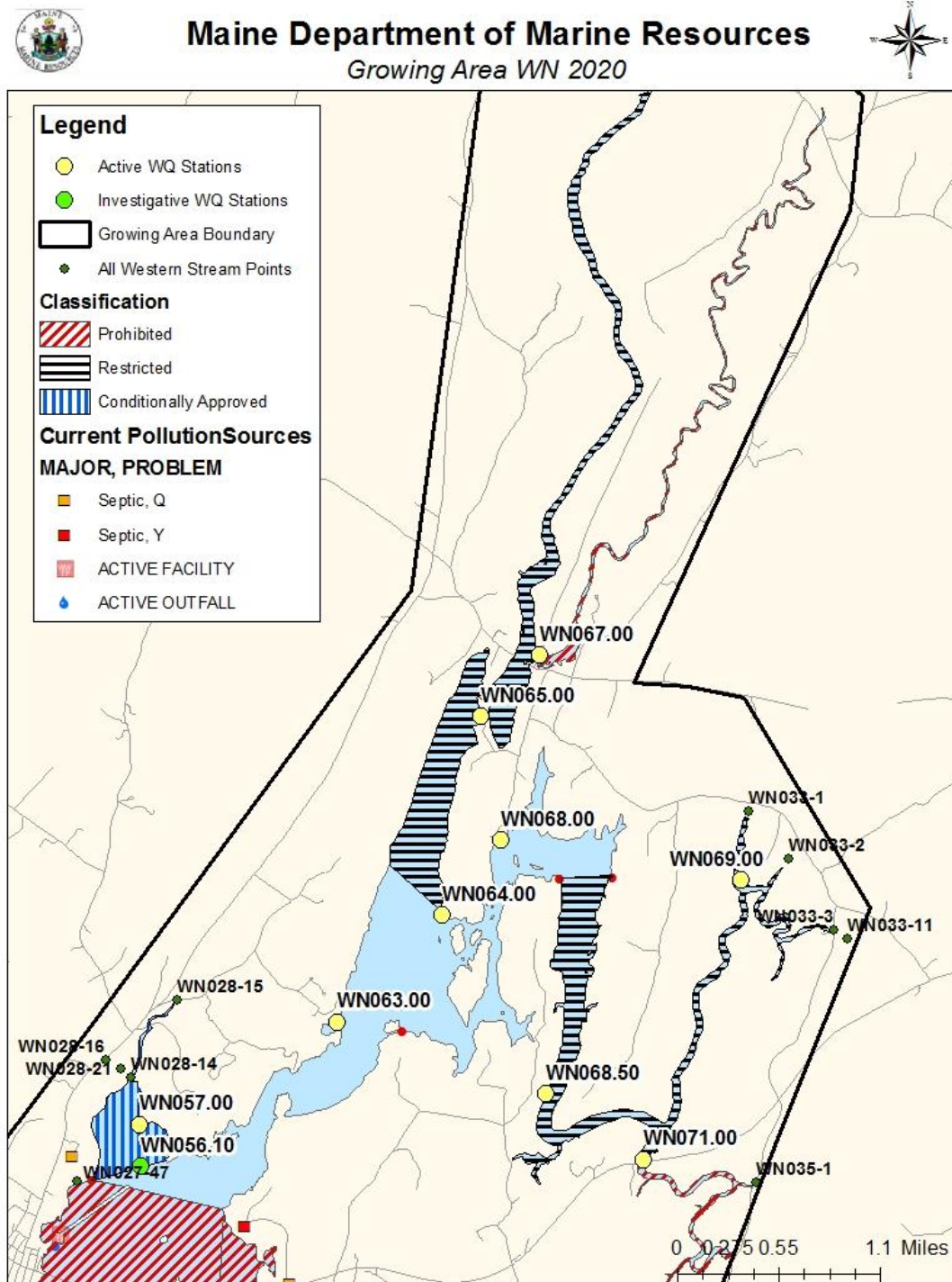




Figure 3. Growing Area WN, Inset Map B

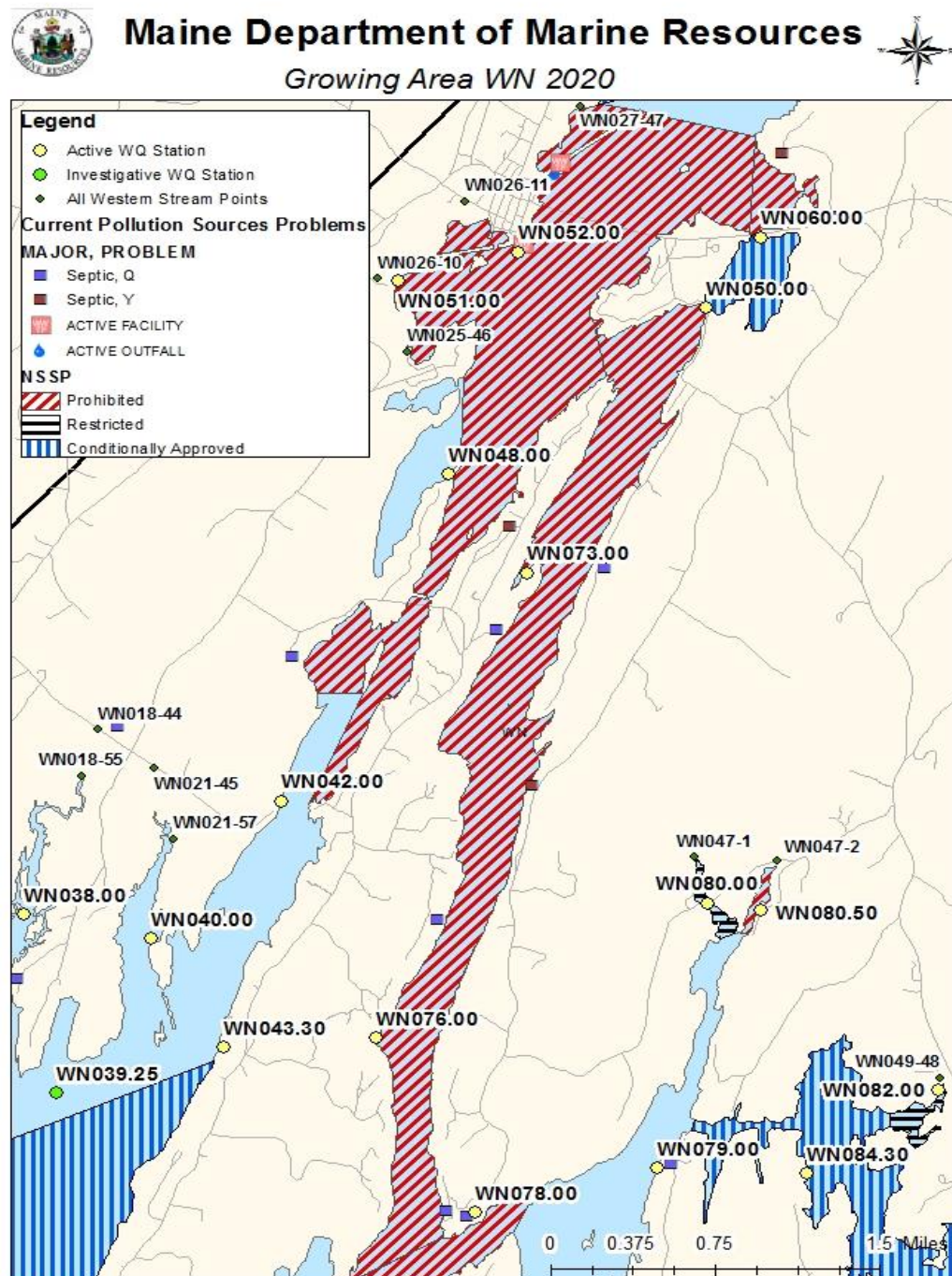




Figure 4. Growing Area WN, Inset Map C

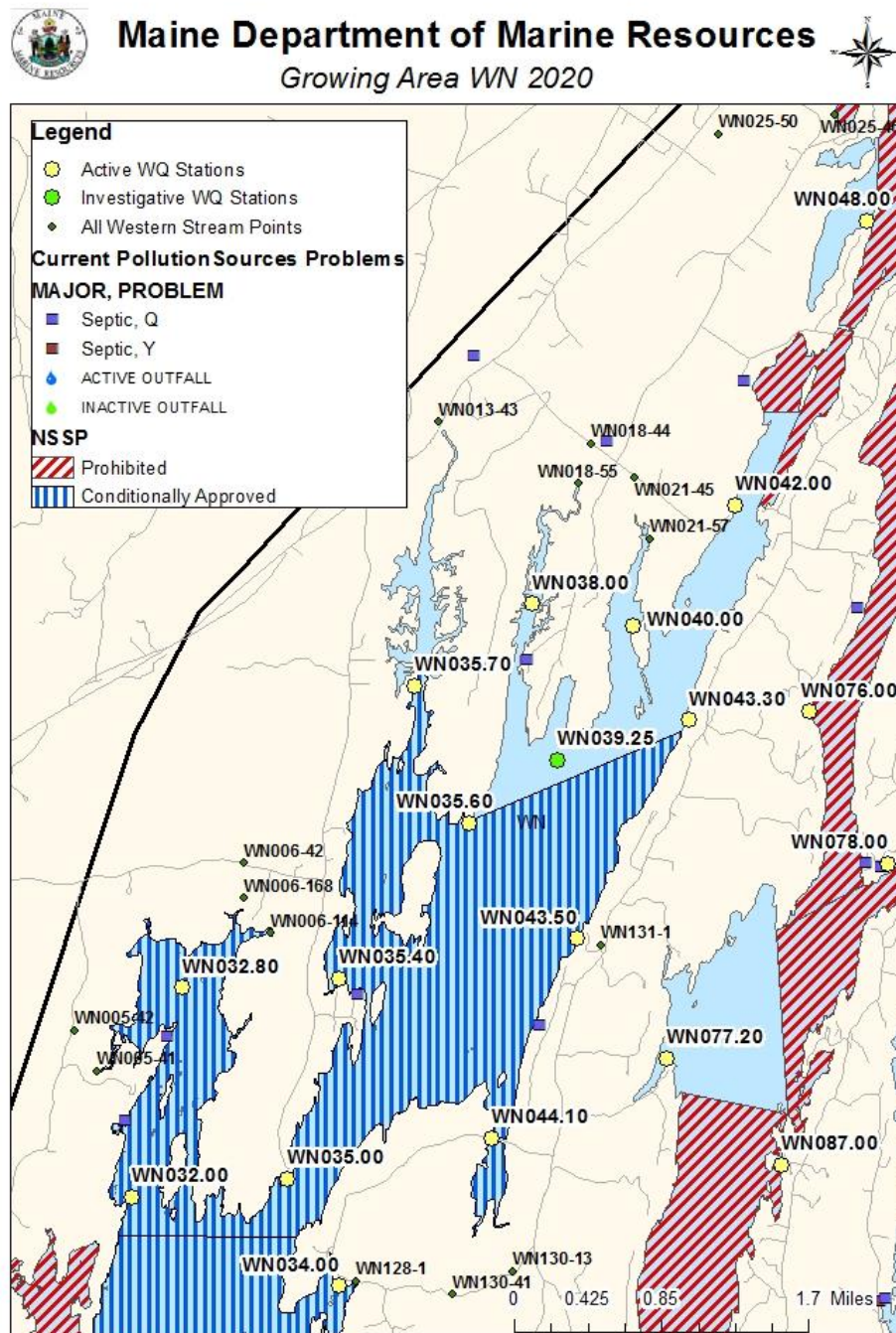




Figure 5. Growing Area WN, Inset Map D

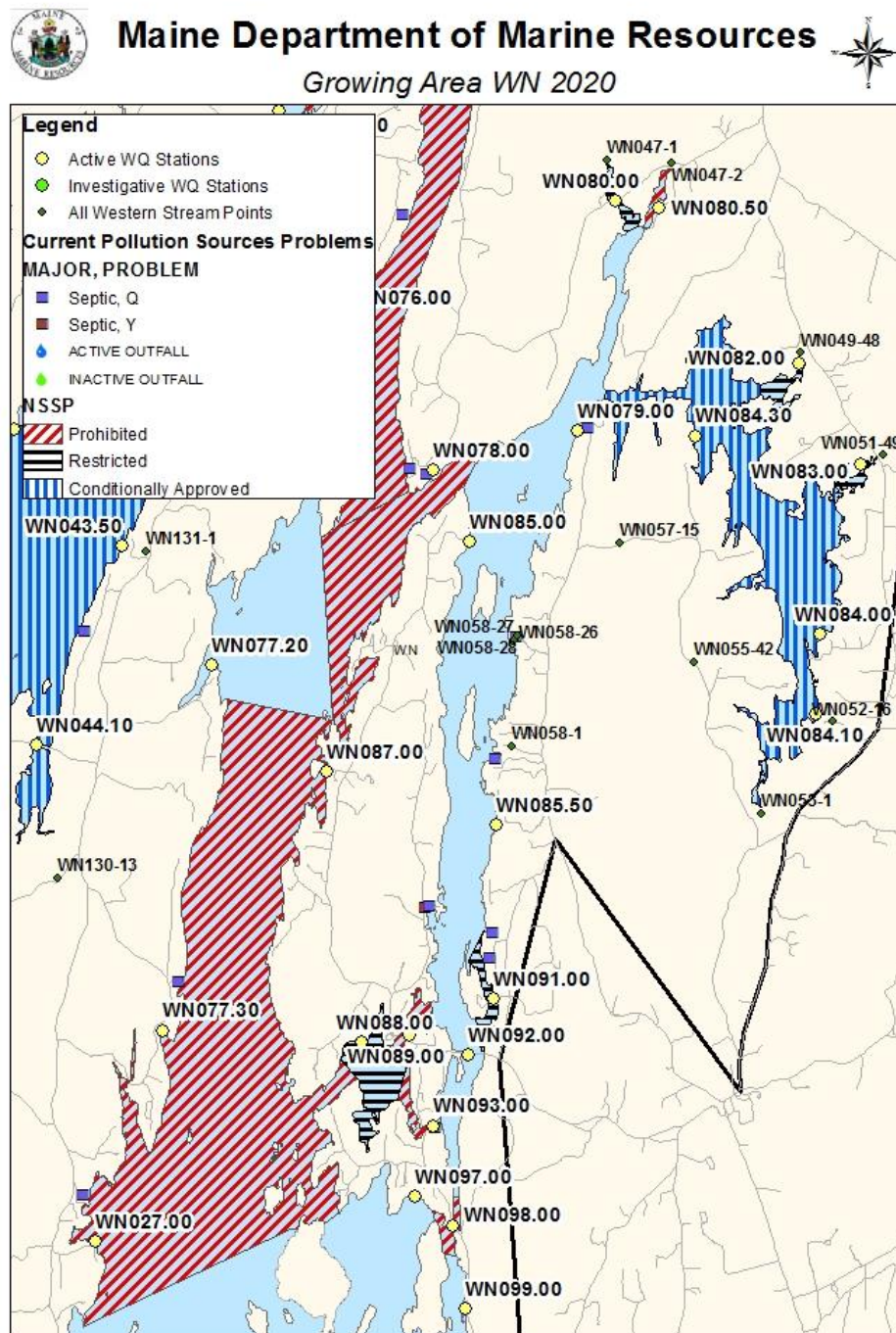




Figure 6. Growing Area WN, Inset Map E

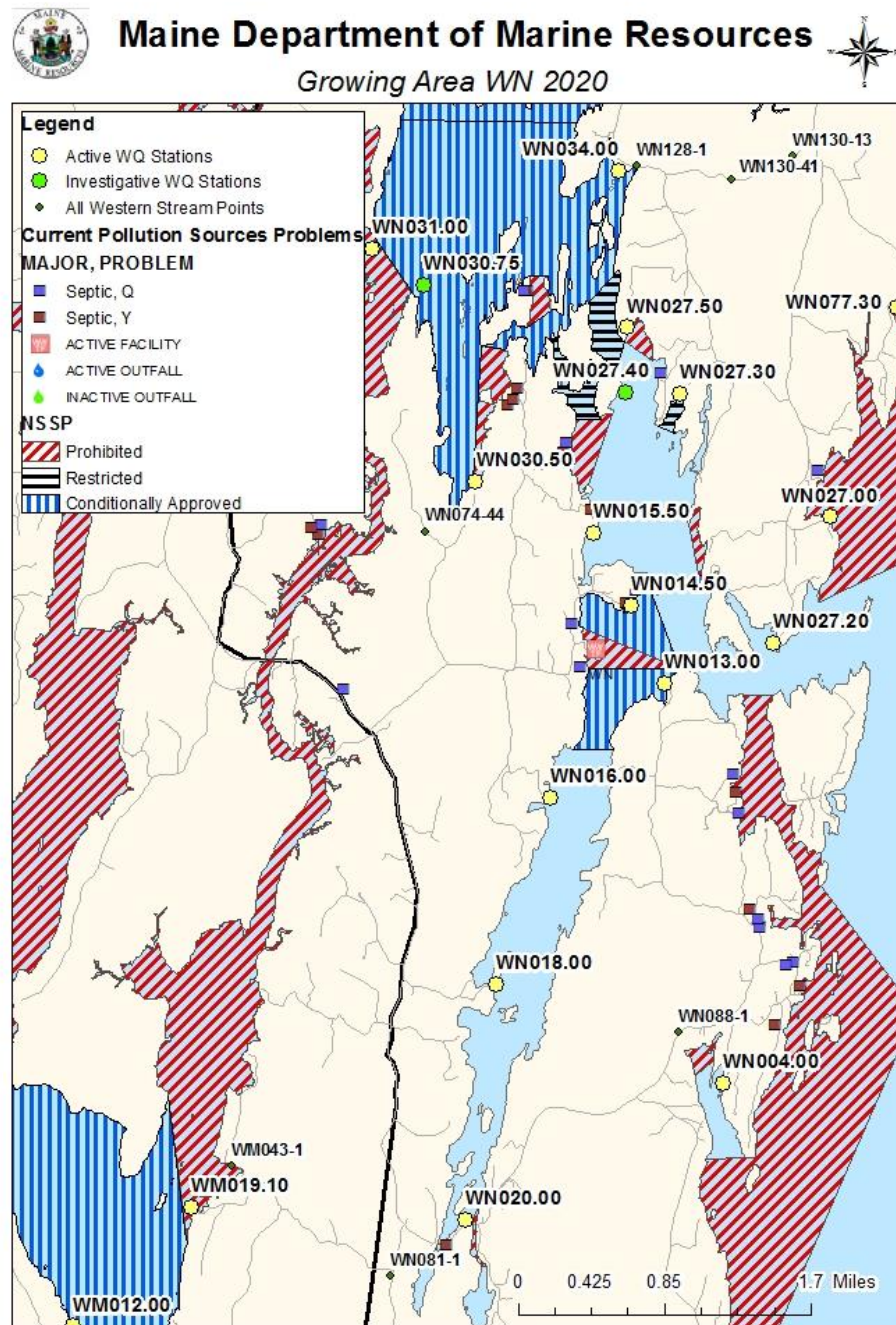




Figure 7. Growing Area WN, Inset Map F

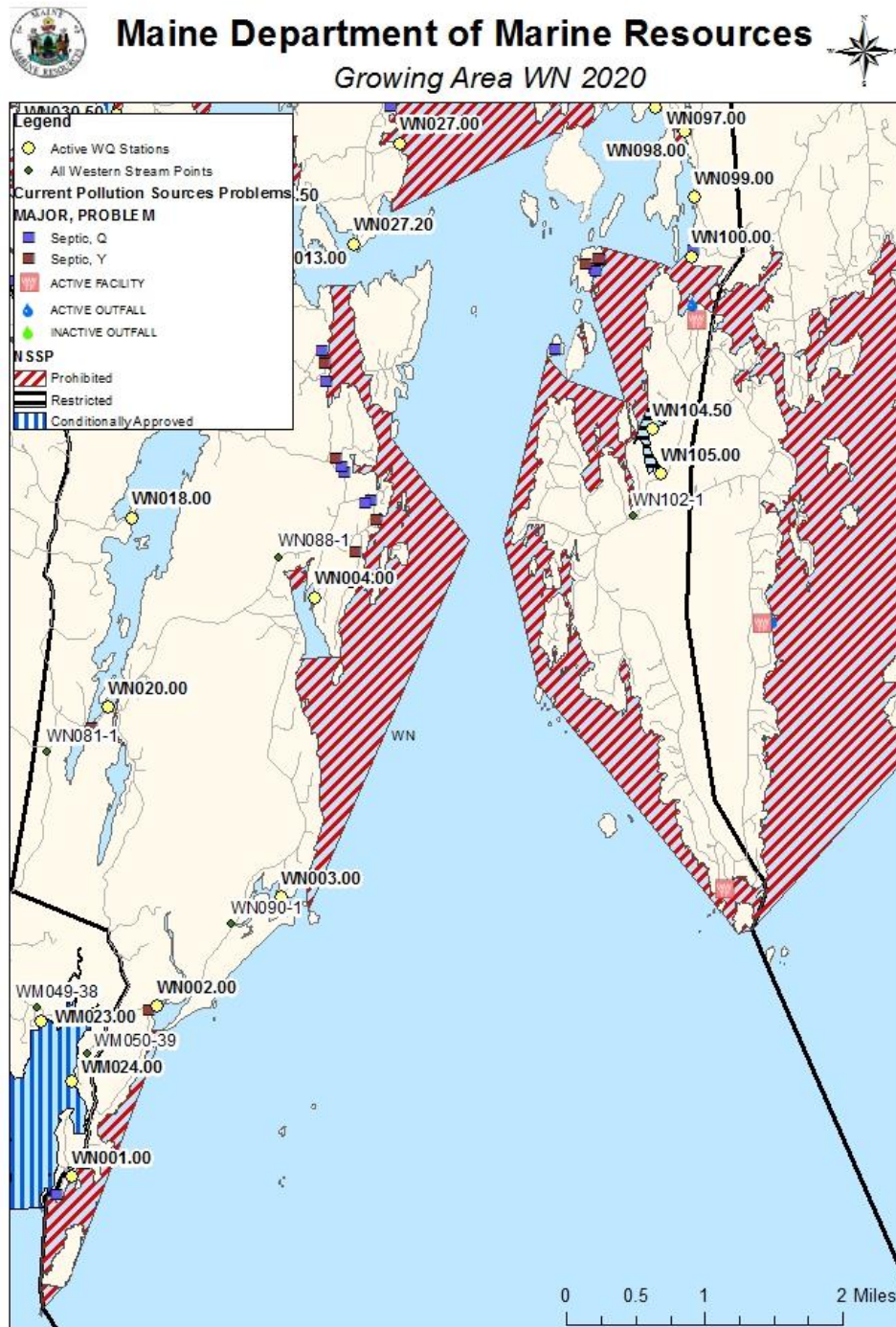
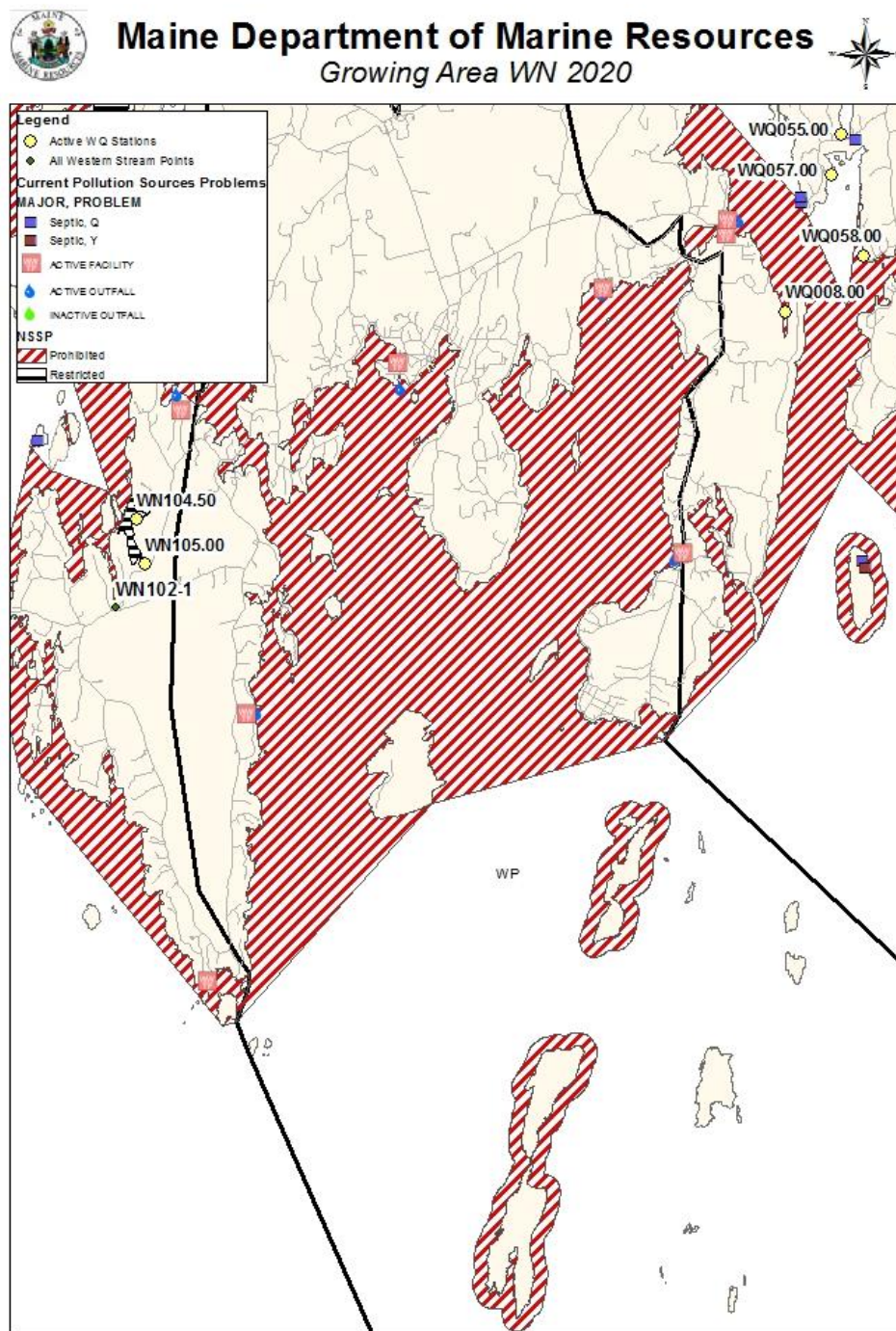




Figure 8. Growing Area WP, Inset Map A





State and Federal Licensed Waste Discharge Permits

Overboard Discharges (OBDs)

An overboard discharge (OBD) is the discharge of wastewater from residential, commercial, and publicly owned facilities to Maine's streams, rivers lakes, and the ocean. Commercial and residential discharges of sanitary waste have been regulated since the mid-1970's when most direct discharges of untreated waste were banned. Between 1974 and 1987 most of the "straight pipes" were connected to publicly owned treatment works or replaced with standard septic systems. Overboard discharge treatment systems were installed for those facilities that were unable to connect to publicly owned treatment works or unable to install a septic system because of poor soil conditions or small lot sizes.

There are 218 overboard discharges (OBDs) that discharge their treated effluent into the waters of Growing Areas WNP. Twenty six OBDs discharge into the waters of the Sheepscot River off of Georgetown, five OBDs discharge into the Sheepcot and Back Rivers from Westport Island, fifteen OBDs discharge into the Sheepscot River off of Edgecomb, five OBDs discharge into the Back River off of Boothbay and Barters Island, thirty six OBDs discharge into the Sheepscot River off of Southport, forty eight OBDs discharge into Boothbay Harbor off of Southport, eighty three OBDs discharge into Boothbay Harbor and Linekin Bay off of Boothbay. Five OBDs were removed in 2020, ten OBDs were removed in 2019, six OBDs were removed in 2018, seven OBDs were removed in 2017, sixteen OBDs were removed in 2016, nine OBDs were removed in 2015, nine OBDs were removed in 2014, nineteen OBDs were removed in 2013, ten OBDs were removed in 2012, and nine OBDs were removed during the years 2009-2011.

All overboard discharge systems include a process to clarify the wastewater and disinfect it prior to discharge. There are two general types of treatment systems: mechanical package plants and sand filters. Sand filter systems consist of a septic tank and a sand filter. In such systems, the wastewater is first directed to a holding tank where the wastewater solids are settled out and undergo partial microbial digestion. The partially treated wastewater then flows from the tank into a sand filter, consisting of distribution pipes, layers of stone and filter sand, and collection pipes within a plastic liner. The wastewater is biologically treated as it filters down through the sand and is then collected and discharged to a disinfection unit. Mechanical package plants consist of a tank, where waste is mechanically broken up, mixed and aerated; mechanical systems require electric power, and must have an operating alarm on a separate electrical circuit that will activate if the treatment unit malfunctions due to a power failure. The aerated treated wastewater is held in a calm condition for a time, allowing for solids to settle and for the waste to be partially digested by naturally occurring bacteria. The clarified water from the tank is then pumped off the top into a disinfection unit. There are two types of disinfection units, UV and chlorinators (most common). In a chlorinator, the treated water contacts chlorine tablets and remains in a tank for at least 20 minutes where bacteria and other pathogens are killed. The treated and disinfected water is discharged from the disinfection unit to below the low water mark of the receiving waterbody (the ocean, a river, or a stream) via an outfall pipe.

OBDs are licensed and inspected by the Maine Department of Environmental Protection (DEP). At each inspection, DEP looks for tags on each treatment unit identifying the service contractor and the last date of service. If an OBD is not properly maintained, or if the OBD malfunctions, it has the potential to directly discharge untreated wastewater to the shore; therefore, preventative closures are implemented surrounding every OBD located in growing areas WNP (Table 1). The size of each closure is determined



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based on a dilution, using the permitted flow rate of the OBD (in gallons per day, GPD), and the depth of the receiving water that each OBD discharges to; the fecal concentration used for this dilution calculation is 1.4×10^5 FC /100 ml. Single OBD systems associated with more than one residence will have multiple permit IDs. All current closures are of adequate size to protect public health.

Table 1. Overboard Discharges (OBDs).

Growing Area	OBD ID#	Location	Receiving Waterbody	Flow (gpd)	Acres Needed for Closure	Current Prohibited Acreage
WN (P3)	6133	BOOTHBAY	BACK RIVER	300	0.3	38.56 acres
WN (P8)	6841	BOOTHBAY		500	1.5	
WP (P1)	1783	SOUTHPORT	BOOTHBAY HARBOR	300	0.9	5332.50 acres
WP (P1)	1790	SOUTHPORT		300	0.2	
WP (P1)	1843	SOUTHPORT		450	0.3	
WP (P1)	2326	SOUTHPORT		270	0.1	
WP (P1)	3044	SOUTHPORT		450	0.3	
WP (P1)	3932	SOUTHPORT		450	1.4	
WP (P1)	8061	SOUTHPORT		4050	1.8	
WP (P1)	1203	BOOTHBAY HARBOR		360	0.4	
WP (P1)	1598	BOOTHBAY HARBOR		300	0.3	
WP (P1)	1770	BOOTHBAY HARBOR		360	0.3	
WP (P1)	1776	BOOTHBAY HARBOR		450	0.3	
WP (P1)	1798	SOUTHPORT		450	0.3	
WP (P1)	1945	BOOTHBAY HARBOR		300	0.3	
WP (P1)	2001	SOUTHPORT		360	0.3	
WP (P1)	2083	SOUTHPORT		450	0.3	
WP (P1)	2161	SOUTHPORT		300	0.2	
WP (P1)	2165	SOUTHPORT		300	0.2	
WP (P1)	2378	BOOTHBAY HARBOR		360	0.3	
WP (P1)	2438	BOOTHBAY HARBOR		300	0.4	
WP (P1)	2833	BOOTHBAY HARBOR		540	0.6	
WP (P1)	2836	SOUTHPORT		300	0.3	
WP (P1)	3750	SOUTHPORT		360	0.2	
WP (P1)	4117	BOOTHBAY HARBOR		300	0.4	



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Growing Area	OBD ID#	Location	Receiving Waterbody	Flow (gpd)	Acres Needed for Closure	Current Prohibited Acreage
WP (P1)	6473	BOOTHBAY HARBOR		300	0.3	
WP (P1)	1779	BOOTHBAY HARBOR	CAMPBELL COVE	630	1	5332.50 acres
WP (P1)	1313	BOOTHBAY	CARD COVE	360	0.3	
WP (P1)	1699	BOOTHBAY		510	0.4	
WP (P1)	1733	BOOTHBAY		360	0.3	
WP (P1)	1742	BOOTHBAY		300	0.2	
WP (P1)	1962	BOOTHBAY		300	0.2	
WP (P1)	1967	BOOTHBAY		300	0.2	
WP (P1)	2269	BOOTHBAY		375	0.3	
WP (P1)	2317	BOOTHBAY		300	0.2	
WP (P1)	2318	BOOTHBAY		840	0.6	
WP (P1)	2355	BOOTHBAY		360	0.3	
WP (P1)	3022	BOOTHBAY		450	0.3	
WP (P1)	3025	BOOTHBAY		300	0.2	
WP (P1)	3052	BOOTHBAY		400	0.3	
WP (P1)	3573	BOOTHBAY		300	0.2	
WP (P1)	3850	BOOTHBAY		450	0.3	
WP (P1)	6701	BOOTHBAY		300	0.2	
WP (P1)	2995	SOUTHPORT	DECKERS COVE	300	0.3	
WP (P1)	4358	SOUTHPORT		300	0.3	
WP (P1)	1256	BOOTHBAY	FISHERMAN ISLAND PASSAGE	360	0.2	
WP (P1)	1700	BOOTHBAY		300	0.2	
WP (P1)	1701	BOOTHBAY		420	0.3	
WP (P1)	1965	BOOTHBAY		360	0.2	
WP (P1)	3901	BOOTHBAY		300	0.2	
WP (P1)	4540	BOOTHBAY		360	0.3	
WP (P1)	4555	BOOTHBAY		450	0.3	
WP (P1)	7381	BOOTHBAY		360	0.2	
WP (P1)	1451	BOOTHBAY		300	0.2	
WP (P1)	1702	BOOTHBAY		300	0.2	
WP (P1)	2908	BOOTHBAY	GRIMES COVE	300	0.9	
WP (P1)	2248	BOOTHBAY HARBOR	LEWIS COVE	300	0.4	
WP (P1)	4549	BOOTHBAY HARBOR		300	0.4	



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Growing Area	OBD ID#	Location	Receiving Waterbody	Flow (gpd)	Acres Needed for Closure	Current Prohibited Acreage
WP (P1)	1051	BOOTHBAY	LINEKIN BAY	300	0.2	5332.50 acres
WP (P1)	1181	BOOTHBAY		300	0.2	
WP (P1)	1363	BOOTHBAY		300	0.2	
WP (P1)	1455	BOOTHBAY		300	0.2	
WP (P1)	1514	BOOTHBAY		1800	1	
WP (P1)	1743	BOOTHBAY		300	0.2	
WP (P1)	1787	BOOTHBAY HARBOR		360	0.2	
WP (P1)	1948	BOOTHBAY HARBOR		300	0.2	
WP (P1)	1960	BOOTHBAY		300	0.2	
WP (P1)	2019	BOOTHBAY HARBOR		300	0.2	
WP (P1)	2148	BOOTHBAY HARBOR		300	0.2	
WP (P1)	2239	BOOTHBAY		300	0.2	
WP (P1)	2252	BOOTHBAY		540	0.3	
WP (P1)	2262	BOOTHBAY HARBOR		300	0.2	
WP (P1)	2372	BOOTHBAY		270	0.2	
WP (P1)	2399	BOOTHBAY		5500	3.1	
WP (P1)	2403	BOOTHBAY HARBOR		300	0.2	
WP (P1)	2452	BOOTHBAY	LINEKIN BAY	300	0.2	
WP (P1)	2760	BOOTHBAY		250	0.2	
WP (P1)	2825	BOOTHBAY HARBOR		300	0.2	
WP (P1)	2831	BOOTHBAY HARBOR		300	0.2	
WP (P1)	3283	BOOTHBAY		300	0.2	
WP (P1)	3456	BOOTHBAY HARBOR		300	0.2	
WP (P1)	3582	BOOTHBAY HARBOR		300	0.2	
WP (P1)	3852	BOOTHBAY		1500	0.8	
WP (P1)	4016	BOOTHBAY		1900	1	
WP (P1)	4509	BOOTHBAY		300	0.2	
WP (P1)	5282	BOOTHBAY HARBOR		300	0.2	
WP (P1)	6013	BOOTHBAY HARBOR		540	0.3	



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Growing Area	OBD ID#	Location	Receiving Waterbody	Flow (gpd)	Acres Needed for Closure	Current Prohibited Acreage
WP (P1)	6220	BOOTHBAY		300	0.2	
WP (P1)	6667	BOOTHBAY HARBOR	LINEKIN BAY	300	0.2	5332.50 acres
WP (P1)	6853	BOOTHBAY		300	0.2	
WP (P1)	7751	BOOTHBAY		300	0.2	
WP (P1)	7956	BOOTHBAY HARBOR		300	0.2	
WP (P1)	8001	BOOTHBAY		300	0.2	
WN (P14)	1689	SOUTHPORT	CAPE NEWAGEN HARBOR	12500	383.6	739.35 acres
WN (P14)	1780	SOUTHPORT	COOLENS GUT	300	0.6	
WN (P14)	7904	SOUTHPORT	COSY HARBOR	450	0.9	
WN (P14)	966	SOUTHPORT		300	1.3	
WN (P14)	1679	SOUTHPORT		300	1.3	
WN (P14)	1725	SOUTHPORT		300	1.3	
WN (P14)	1845	SOUTHPORT		200	0.6	
WN (P14)	3659	SOUTHPORT		300	0.9	
WN (P14)	6444	SOUTHPORT		300	1.3	
WN (P14)	7966	SOUTHPORT		300	0.9	
WN (P14)	8238	SOUTHPORT		360	1.1	
WN (P14)	2817	SOUTHPORT	EBENECOOK HARBOR	300	0.6	
WN (P14)	1788	SOUTHPORT	HENDRICKS HARBOR	450	2.8	
WN (P1)	7796	NEWCASTLE	DYER RIVER	300	0.9	49.17 acres
WN (P15)	3774	GEORGETOWN	FIVE ISLAND HARBOR	300	0.4	1,066.12 acres
WN (P15)	3340	GEORGETOWN		300	0.4	
WN (P15)	7749	GEORGETOWN		300	0.4	
WN (P16)	7828	GEORGETOWN	HARMONS HARBOR	300	1.8	11.78 acres
WN (P9)	3212	GEORGETOWN	KNUBBLE BAY	300	0.3	40.03 acres
WN (P15)	6911	GEORGETOWN	LITTLE SHEEPSCOT RIVER	300	0.2	1,345.71 acres
WN (P15)	3611	GEORGETOWN	WHITES COVE	300	0.3	
WP (P1)	1781	SOUTHPORT	LOVES COVE	360	0.7	1,037.51 acres
WN (P14)	3733	SOUTHPORT	MADDOCKS COVE	300	0.5	



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Growing Area	OBD ID#	Location	Receiving Waterbody	Flow (gpd)	Acres Needed for Closure	Current Prohibited Acreage
WN (P15)	742	GEORGETOWN	SHEEPSCOT BAY	300	0.3	
WN (P14)	1244	SOUTHPORT	SHEEPSCOT BAY	300	0.9	1,037.51 acres
WN (P14)	1564	SOUTHPORT		240	0.2	
WN (P14)	1844	SOUTHPORT		500	0.4	
WN (P14)	2084	SOUTHPORT		360	1.1	
WN (P14)	2261	SOUTHPORT		300	0.2	
WN (P14)	2338	SOUTHPORT		300	0.2	
WN (P14)	2829	SOUTHPORT		360	0.2	
WN (P15)	3392	GEORGETOWN		300	0.1	
WN (P14)	3588	SOUTHPORT		300	0.9	
WN (P15)	4095	GEORGETOWN		900	1.1	
WN (P15)	6244	GEORGETOWN		360	0.3	
WN (P15)	6817	GEORGETOWN		360	0.1	
WN (P14)	9050	SOUTHPORT		300	0.9	
WN (P14)	7109	SOUTHPORT	SHEEPSCOT RIVERS	300	1.6	
WP (P1)	5327	BOOTHBAY	MILL POND	150	0.5	1,286.88 acres
WP (P1)	5253	SOUTHPORT	PIG COVE	360	1.1	26,972.54 acres
WP (P1)	1002	SOUTHPORT		480	1.5	
WP (P1)	1566	SOUTHPORT		300	0.9	
WP (P1)	1652	SOUTHPORT		300	0.9	
WP (P1)	1722	SOUTHPORT		300	0.9	
WP (P1)	1842	SOUTHPORT		450	1.4	
WP (P1)	2542	SOUTHPORT		300	0.9	
WP (P1)	2905	SOUTHPORT		300	0.9	
WP (P1)	3586	SOUTHPORT		150	0.5	
WP (P1)	3593	SOUTHPORT		300	0.9	
WP (P1)	3745	SOUTHPORT		720	2.2	
WP (P1)	4616	SOUTHPORT		180	0.6	
WP (P1)	8033	SOUTHPORT		360	1.1	
WP (P1)	1871	BOOTHBAY HARBOR	LOBSTER COVE	360	0.2	
WP (P1)	2325	SOUTHPORT	SQUIRREL BAY	300	0.1	
WP (P1)	2508	SOUTHPORT		300	0.1	
WP (P1)	6246	SOUTHPORT		360	0.1	



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Growing Area	OBD ID#	Location	Receiving Waterbody	Flow (gpd)	Acres Needed for Closure	Current Prohibited Acreage
WP (P1)	989	SOUTHPORT	TOWNSEND GUT	300	0.2	
WN (P14)	1013	SOUTHPORT		5000	6	
WP (P1)	1639	SOUTHPORT	TOWNSEND GUT	500	0.5	26,972.54 acres
WP (P1)	1703	BOOTHBAY HARBOR		290	0.2	
WP (P1)	1708	SOUTHPORT		360	0.3	
WP (P1)	1775	BOOTHBAY HARBOR		300	0.4	
WP (P1)	1782	SOUTHPORT		300	0.2	
WP (P1)	1793	SOUTHPORT		300	0.2	
WP (P1)	1884	SOUTHPORT		250	0.2	
WP (P1)	1947	BOOTHBAY HARBOR		360	0.3	
WP (P1)	2141	SOUTHPORT		360	0.3	
WP (P1)	2266	BOOTHBAY HARBOR		300	0.3	
WP (P1)	2350	SOUTHPORT		720	0.8	
WP (P1)	2495	SOUTHPORT		300	0.2	
WP (P1)	2834	SOUTHPORT		500	0.4	
WP (P1)	2992	SOUTHPORT		300	0.2	
WP (P1)	3185	SOUTHPORT		360	0.3	
WP (P1)	3669	SOUTHPORT		300	0.2	
WN (P10)	3786	BOOTHBAY HARBOR		300	9.2	
WP (P1)	4083	SOUTHPORT		600	0.5	
WP (P1)	4472	SOUTHPORT		300	0.2	
WP (P1)	7229	SOUTHPORT		540	0.5	
WP (P1)	7734	SOUTHPORT		300	0.2	
WP (P1)	7858	BOOTHBAY HARBOR		450	0.3	
WN (P12)	4947	GEORGETOWN	ROBINHOOD COVE	2400	1.5	907.58 acres
WN (P6)	5139	WESTPORT ISLAND	SASANOVA RIVER	600	0.4	12.51 acres
WN (P11)	5281	WESTPORT ISLAND		300	0.2	
WN (P2)	1037	EDGEComb	SHEEPSHOT RIVER	300	0.2	2,208.08 acres
WN (P2)	1253	EDGEComb		300	0.2	
WN (P14)	1289	SOUTHPORT		300	0.2	
WN (P15)	1448	GEORGETOWN		1080	0.5	



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Growing Area	OBD ID#	Location	Receiving Waterbody	Flow (gpd)	Acres Needed for Closure	Current Prohibited Acreage
WN (P14)	1467	SOUTHPORT	SHEEPSCOT RIVER	630	0.3	2,208.08 acres
WN (P2)	1827	EDGECOMB		300	0.2	
WN (P2)	1829	EDGECOMB		300	0.2	
WN (P2)	1830	EDGECOMB		300	0.2	
WN (P2)	1839	EDGECOMB		360	0.2	
WN (P3)	1903	WESTPORT ISLAND		360	0.2	
WN (P2)	2130	EDGECOMB		300	0.2	
WN (P2)	2307	EDGECOMB		300	0.2	
WN (P2)	2387	EDGECOMB		300	0.2	
WN (P2)	2388	EDGECOMB		300	0.2	
WN (P2)	2448	EDGECOMB		150	0.1	
WN (P15)	2477	GEORGETOWN		300	0.2	
WN (P15)	2702	GEORGETOWN		300	0.2	
WN (P15)	2737	GEORGETOWN		360	0.2	
WN (P8)	2917	BOOTHBAY		300	0.2	
WN (P3)	3017	BOOTHBAY		300	0.2	
WN (P14)	3043	SOUTHPORT		300	0.2	
WN (P15)	3232	GEORGETOWN		300	0.2	
WN (P14)	3465	SOUTHPORT		360	0.2	
WN (P2)	3606	EDGECOMB		300	0.2	
WN (P2)	3752	EDGECOMB		300	0.2	
WN (P2)	4590	EDGECOMB		400	0.2	
WN (P15)	6602	GEORGETOWN		300	0.2	
WN (P3)	6722	WESTPORT ISLAND		300	0.2	
WN (P15)	6855	GEORGETOWN		300	0.2	
WN (P3)	7092	WESTPORT ISLAND		300	0.2	
WN (P15)	7228	GEORGETOWN		300	0.2	
WN (P15)	7636	GEORGETOWN		600	0.3	
WN (P14)	9145	GEORGETOWN		180	0.1	
WN (P19)	1660	GEORGETOWN	TIDEWATERS OF GEORGETOWN	315	0.5	191.59 acres



National Pollutant Discharge and Elimination System (NPDES)

Table 2. NPDES Permitted Discharges

Pollution Area	Permit ID	Type	Facility	Town	Waterbody
WP (P1)	Boothbay Harbor Marina	Pumpout	Boothbay Harbor	Boothbay Harbor	Boothbay Harbor
WP (P1)	Cap'n Fish's Marina	Pumpout	Boothbay Harbor	Boothbay Harbor	Boothbay Harbor
WP (P1)	Tugboat Inn and Marina	Pumpout	Boothbay Harbor	Boothbay Harbor	Boothbay Harbor
WP (P1)	Signal Point Marina	Pumpout	Boothbay Harbor	Boothbay Harbor	Boothbay Harbor
WP (P1)	Browns Wharf and Marina	Pumpout	Boothbay Harbor	Boothbay Harbor	Boothbay Harbor
WP (P1)	Carousel Marina, Ltd	Pumpout	Boothbay Harbor	Boothbay Harbor	Boothbay Harbor
WP (P1)	Boothbay Pumpout Float	Pumpout	Boothbay Harbor	Boothbay Harbor	Boothbay Harbor
WP (P1)	Blakes Boatyard	Pumpout	West Boothbay Harbor	Boothbay Harbor	Boothbay Harbor
WN (P2)	Sheepscot River Resort	Pumpout	Wiscasset	Sheepscot River	Sheepscot River
WN (P2)	Wiscasset Town Pier	Pumpout	Wiscasset	Sheepscot River	Sheepscot River
WN (P14)	Boothbay Region Boatyard	Pumpout	Southport	Sheepscot River	Sheepscot River
WN (P2)	ME0100757	TREATMENT PLANT	WISCASSET WWTF	WISCASSET	Sheepscot River
WN (P2)	MEG210001	MINOR	WISCASSET WASTE SNOW DISCHARGE	WISCASSET	Sheepscot River
WN (P12)	ME0037087	TREATED OUTFALL	ROBINHOOD MARINE CENTER	GEORGETOWN	Robinhood Cove
WN (P14)	ME0036862	MINOR OUTFALL	OCEAN GATE MOTOR INN	SOUTHPORT	Townsend Gut
WN (P14)	ME0021229	OUTFALL	NEWAGEN SEASIDE INN	SOUTHPORT	Kennebec River
WP (P1)	ME0037176	Minor	Gray Homestead Ocean Front Camping	Southport	Pig Cove
WP (P1)	ME0101664	Minor	Bayville Village Corporation	Boothbay Harbor	Linekin Bay
WP (P1)	ME0037150	Minor	Smuggler's Cove Inn	East Boothbay	Linekin Bay
WP (P1)	ME0100064	TREATMENT PLANT	BOOTHBAY HARBOR WWTF	Boothbay Harbor	Mill Cove

There are two wastewater treatment plants/facilities (WWTP/WWTF) in growing areas WNP. Since 2017 the WWTP DEP inspection reports have been available in DMR central files. They are located in



Wiscasset and Boothbay Harbor. Both wastewater facilities discharge into Prohibited Areas that are larger in area than the calculated dilution zones for the effluent.

Wiscasset WWTP

The town of Wiscasset utilizes a public sludge wastewater treatment plant that uses a secondary treatment system and discharges treated wastewater into the Sheepscot River. Licensed monthly average flow is 620,000 gallons per day, and currently averaging around 180,000 gallons per day.

Wiscasset's WWTP includes 14 miles of gravity sewer lines which are eight-inch lines, downtown lines is 14 inch lines, and 18 pump stations. Sludge from the treatment plant is run through a belt filter press, loaded, and sent to a compost facility in Unity.

Boothbay Harbor WWTP

The last approved five-year permit for the Boothbay Harbor Waste Water Treatment Plant was issued in October of 2015. The next five-year permit allowing up to 6,400 gallons of wastewater per day, will be issued in 2020.

Before wastewater is discharged into the waters of Boothbay Harbor, it goes through preliminary/secondary treatment, disinfection, and dichlorination. The following is an excerpt from the 2020 NPDES 0100064 permit, explaining the function of the Boothbay WWTP:

Wastewater entering the plant first flows through a mechanical bar rack to remove screenings. Grit is then separated out through a grit chamber, washed, and removed with a screw conveyor. The grit is stored with the dewatered biosolids. The remaining wastewater is conveyed to the wet well for storage. Sequencing batch reactors (SBRs) are then used to treat the wastewater. As wastewater enters the SBRs, the SBR fills according to the operational phase it is in. Once the fill cycle ends, the flow moves into a second SBR and starts the treatment cycle again. From here the wastewater is allowed to settle. This provides for the separation of activated sludge from the wastewater. After settling, the effluent is discharged to a chlorine contact tank where sodium hypochlorite is added for disinfection. The wastewater remains in contact with the chlorine for 30 minutes. Sodium bisulfite is then added to dechlorinate the water. Any scum or floatable solids are removed, by skimmers, to an aerated sludge holding tank to be thickened for later treatment. The remaining wastewater is discharged to Boothbay Harbor via a pipe measuring 24 inches in diameter with three diffuser ports, each measuring 8 inches in diameter. The depth below mean low water at the outlet is 25 feet. The sludge in the aerated sludge holding tank is thickened to 1 to 2 percent. The sludge is then dewatered with an Andritz centrifuge. Sludge cake out of the centrifuge averages 19 to 22 percent solids. Solid's disposal is accomplished through either composting at the Hawk Ridge Composting facility, located in Unity Maine, or by disposal in the Juniper Ridge Landfill in Old Town.

Residential

All residential pollution sources are reported to the local plumbing inspector (LPI). Once the system has been documented as being fixed, staff members from DMR can re-assess the water quality data and



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shoreline survey information to determine if the area is safe for shellfish harvest. Table 3 shows all new and pre-existing pollution sources in growing areas WNP that are considered discharges into the growing areas and effect water quality.

Table 3: Growing Areas WNP Residential Pollution Sources

Growing Area Section	Location ID	Date Surveyed	Problem	Description	Town
Near WN (P19)	WN093-41	2016	Y	Septic pipe exits cottage on South side. Enters some kind of tank. 2 inch black pipe exits to ground	Georgetown
WN (P18)	WN081-6	2016	Y	lots of jewel weed, owner says LF overflows	Georgetown
WN (P15)	WN087-7	2016	Y	Black pipe exits below deck area on left side as you approach, septic unknown	Georgetown
WN (P15)	WN087-1	2016	Y	White septic pipe disconnected from black pipe in bushes shoreside, system unknown	Georgetown
WN (P15)	WN087-18	2016	Y	Septic pipe exits front of cottage	Georgetown
WN (P15)	WN087-105	2016	Y	Trailer w/ two RV's, no sign of septic beneath piles	Georgetown
WN (P15)	WN086-22	2016	Y	OH next to driveway	Georgetown
WN (CA5)	WN077-11	2016	Y	Black pipe is unknown	Georgetown
WN (P9)	WN076-28	2016	Y	OH to right of house by tree on hill. No pit and in use	Georgetown
WN (P7)	WN075-25	2015	Y	OH to left of house facing shore. OH is active with no holding container.	Georgetown
WN (P7)	WN075-23	2016	Y	gated no access	Georgetown
WN (P7)	WN075-22	2015	Y	OH to left of cabin as facing shore. Waste held by chicken wire.	Georgetown
WN (P4)	WN070-16	2016	Y	AT to left of house up field as facing house. Possible LF in front of AT.	Arrowsic
WN (P4)	WN070-12	2016	Y	OH to right of driveway about 10' from shore	Arrowsic
WN (P5)	WN095-3	2015	Y	OH to left of yellow camp as facing shore	Georgetown
WN (P2)	WN040-10	2016	Y	Bins for composting human waste from sawdust toilet. ~400ft from water	Edgecomb
WN (P2)	WN133-10	2017	Y	LF in woods across from road & driveway. Breakout on left side as facing house.	Westport Island



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Growing Area Section	Location ID	Date Surveyed	Problem	Description	Town
WN (P2)	WN044-3	2016	Y	HT on direct right side of "the woods" cottage, HT is full	Edgecomb
WN (P8)	WN095-96	2015	Y	Pipe exits E side of house, goes to tank + then to shore.	Boothbay
WN (P14)	WN095-130	2017	Y	OH is to right of house with outdoor shower. No hole or container holding waste. Sits on ground.	Boothbay
WN (P14)	WN095-128	2017	Y	OH for all camps, waste sits on ground. No hole or container to hold waste.	Boothbay

Industrial Pollution

Small individual storage tanks for gasoline and diesel were noted at 24 locations in the growing areas. Some of the locations had multiple tanks, making the number of total fuel storage tanks 31. Tanks have containment walls and booms in the event of an accidental leak in a tank or spillage when unloading. The oil response team from the Maine DEP contacts Maine Marine Resources when a spill occurs, and a decision will be made whether a shellfish closure is necessary.

Marinas

The marina community in Maine only operates for a portion of the year due to adverse winter weather conditions. The management of marinas in Maine allows for shellfish growing areas to be available to harvesters, for at least a portion of the year, to direct market harvest by utilizing conditional area management plans. Small mooring fields are scattered throughout the growing area with the largest number (groups of 10 or more moorings) of boats in Wiscasset on the Sheepscot River, Southport Island, Boothbay Harbor and in Robinhood Cove, Georgetown.

The Boothbay Regional Boatyard is located on Southport Island. This marina is seasonally open, with peak season in July and August, and provides 40 slips and 40 moorings. Approximately 80 percent of the moored boats have toilets; a pump-out facility, as well as toilet and shower facilities are available on-site. The marina has double-walled fuel (gasoline and diesel) located 100 ft from shore. Based on the information provided by the marina personnel, this marina requires a 99 acre closure; it is currently located in a closure that is 128 acres.

Robinhood Marina is located in Robinhood Cove, Georgetown. This marina has moorings and slip access in operation from May through November. It provides 135 slips and 72 moorings; and approximately 80 percent of the moored boats have toilets. There is a pump-out facility, as well as toilet and shower facilities available on-site. There are two 3,000 gallon fuel tanks, located 60 feet from shore; both tanks are in secondary containment. Based on the information provided by the marina owner, a closure size of 154 acres is required surrounding this marina; it is currently located in a 179 acre conditional area.

Boothbay Harbor contains three marinas, a large mooring area, and a boatyard. These are all contained within a Prohibited area 26, 972 acres in size.



The Wiscasset Town Landing and the Wiscasset Yacht Club are located on the Sheepscot River, in Wiscasset. There are approximately 110 moorings (all privately owned), which are utilized by both commercial and recreational boats; pump-out facilities and toilets are available on-site. The landing toilet facility is connected to the Wiscasset Wastewater Treatment Facility. The town landing is managed by the Wiscasset Harbor Master. This marina is located within the boundary of the large closure surrounding the Wiscasset Waste Water Treatment plant outfall.

Storm Water

Storm water runoff is generated when precipitation from rain and snowmelt events flows over land or impervious surfaces and does not percolate into the ground. As the runoff flows over the land or impervious surfaces (paved streets, parking lots, and building rooftops), it accumulates debris, chemicals, sediment or other pollutants that could adversely affect water quality if the runoff is discharged untreated (US EPA 2009). Thus, storm water pollution is caused by the daily activities of people within the watershed. Currently, polluted storm water is the largest source of water quality problems in the United States.

The primary method to control storm water discharges is the use of best management practices (BMPs). In addition, most major storm water discharges are considered point sources and require coverage under a NPDES permit. In 1990, under authority of the Clean Water Act, the U.S. EPA promulgated Phase I of its storm water management program, requiring permitting through the National Pollution Discharge Elimination System (NPDES). The Phase I program covered three categories of discharges: (1) “medium” and “large” Municipal Separate Storm Sewer Systems (MS4s) generally serving populations over 100,000, (2) construction activity disturbing five acres of land or greater, and (3) ten categories of industrial activity. In 1999, US EPA issued Phase II of the storm water management program, expanding the Phase I program to include all urbanized areas and smaller construction sites.

Although it is a federal program, EPA has delegated its authority to the Maine DEP to administer the Phase II Small MS4 General Permit. Under the Small MS4 GP, each municipality must implement the following six Minimum Control Measures: (1) Public education and outreach, (2) Public participation, (3) Illicit discharge detection and elimination, (4) Construction site storm water runoff control, (5) Post-construction storm water management, and (6) Pollution prevention/good housekeeping. The permit requires each city or town to develop a draft Storm Water Management Plan that establishes measurable goals for each of the Minimum Control Measures. The City or Town must document the implementation of the Plan, and provide annual reports to the Maine DEP. Currently the discharge of storm water from 30 Maine municipalities is regulated under the Phase II Small MS4 General Permit however, no municipalities located within the boundaries of growing areas WNP fall under these regulations. Additionally, the Maine Storm Water Management Law provides storm water standards for projects located in organized areas that include one acre of more of disturbed area (Maine DEP 2009).

Non-Point Pollution Sources

Non-point source (NPS) pollution is water pollution affecting a water body from diffuse sources, such as polluted runoff from agricultural areas draining into a river, significant rainfall, high river flows or astronomical high tides. Nonpoint source pollution can be contrasted with point source pollution, where discharges occur to a body of water at a discrete and measurable location, such as discharges from a



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chemical factory, urban runoff from a roadway storm drain or from ships at sea. NPS may derive from various sources with no specific solution to rectify the problem, making it difficult to regulate. Freshwater streams, drainage from rainstorm runoff and tidal creeks are the major source of non-point discharge into Growing Areas WNP.

Table 4. Stream Samples in Growing Area WNP 2008-2020; Scores > 163 cfu/100ml are highlighted in red.

Location ID	Sample Date	Pollution Type	Raw Score
S10WN049.00	03/19/12	Stream	2.8
S20WN044.10	04/24/12	Stream	58
S10WN032.20	04/25/12	Stream	120
S10WN035.70	04/25/12	Stream	56
S20WN032.60	04/25/12	Stream	28
S10WN032.60	04/25/12	Stream	12
S10WN044.10	06/04/12	Stream	480
S20WN044.10	06/04/12	Stream	280
S20WN044.10	06/05/12	Stream	84
S20WN044.10	06/05/12	Stream	84
S10WN044.10	06/05/12	Stream	70
S10WN044.10	06/05/12	Stream	70
S10WN032.20	06/26/12	Stream	>1600
S10WN032.20	06/26/12	Stream	>1600
S20WN032.60	06/26/12	Stream	>1600
S20WN032.60	06/26/12	Stream	>1600
S10WN032.60	06/26/12	Stream	200
S10WN032.60	06/26/12	Stream	200
S10WN032.20	06/27/12	Stream	760
S10WN032.20	06/27/12	Stream	760
S10WN044.10	06/27/12	Stream	280
S20WN044.10	06/27/12	Stream	120
S20WN032.60	06/27/12	Stream	90
S20WN032.60	06/27/12	Stream	90
S10WN030.50	06/27/12	Stream	31
S10WN030.50	06/27/12	Stream	31
S10WN032.60	06/27/12	Stream	24
S10WN032.60	06/27/12	Stream	24
S10WN044.10	07/30/12	Stream	160
S20WN044.10	07/30/12	Stream	2
S20WN044.10	08/21/12	Stream	>1600
S20WN032.60	08/21/12	Stream	102
S20WN032.60	08/21/12	Stream	102
S10WN032.60	08/21/12	Stream	78
S10WN032.60	08/21/12	Stream	78
S10WN044.10	08/21/12	Stream	22



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Location ID	Sample Date	Pollution Type	Raw Score
S10WN032.20	08/21/12	Stream	20
S10WN032.20	08/21/12	Stream	20
S10WN044.10	09/05/12	Stream	<2
S20WN044.10	09/05/12	Stream	440
S10WN030.50	09/05/12	Stream	25
S10WN040.00	09/10/12	Stream	200
S10WN040.00	09/10/12	Stream	200
S10WN038.50	09/10/12	Stream	116
S10WN038.50	09/10/12	Stream	116
S10WN079.00	09/10/12	Stream	68
S10WN082.00	09/10/12	Stream	24
S10WN082.00	09/10/12	Stream	24
S10WN083.00	09/10/12	Stream	4
S10WN083.00	09/10/12	Stream	4
S20WN084.00	09/10/12	Stream	3.6
S10WN040.00	09/11/12	Stream	100
S10WN040.00	09/11/12	Stream	100
S10WN040.50	09/11/12	Stream	36
S10WN084.10	09/11/12	Stream	36
S10WN038.60	09/11/12	Stream	32
S10WN038.50	09/11/12	Stream	29
S10WN038.50	09/11/12	Stream	29
S10WN082.00	09/11/12	Stream	13
S10WN082.00	09/11/12	Stream	13
S10WN083.00	09/11/12	Stream	10
S10WN083.00	09/11/12	Stream	10
S10WN057.10	09/11/12	Stream	4
S20WN084.00	09/11/12	Stream	4
S10WN038.50	09/20/12	Stream	>1600
S10WN038.50	09/20/12	Stream	1600
S10WN057.10	09/20/12	Stream	960
S10WN040.00	09/20/12	Stream	620
S10WN040.00	09/20/12	Stream	620
S10WN082.00	09/20/12	Stream	152
S10WN082.00	09/20/12	Stream	152
S10WN083.00	09/20/12	Stream	128
S10WN083.00	09/20/12	Stream	128
S20WN084.00	09/20/12	Stream	84
S10WN084.10	09/20/12	Stream	62
S10WN038.50	10/01/12	Stream	500
S10WN038.50	10/01/12	Stream	500
S10WN057.10	10/01/12	Stream	480



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Location ID	Sample Date	Pollution Type	Raw Score
S10WN040.00	10/01/12	Stream	440
S10WN040.00	10/01/12	Stream	440
S10WN057.10	10/02/12	Stream	300
S20WN032.60	10/02/12	Stream	280
S20WN032.60	10/02/12	Stream	280
S10WN038.50	10/02/12	Stream	128
S10WN038.50	10/02/12	Stream	128
S10WN040.00	10/02/12	Stream	112
S10WN040.00	10/02/12	Stream	112
S10WN040.00	10/02/12	Stream	112
S10WN032.20	10/02/12	Stream	44
S10WN032.20	10/02/12	Stream	44
S10WN032.60	10/02/12	Stream	29
S10WN032.60	10/02/12	Stream	29
S10WN032.20	10/03/12	Stream	>1600
S10WN032.20	10/03/12	Stream	>1600
S10WN032.60	10/03/12	Stream	1140
S10WN032.60	10/03/12	Stream	1140
S20WN032.60	10/03/12	Stream	840
S20WN032.60	10/03/12	Stream	840
S10WN082.00	10/31/12	Stream	60
S20WN044.10	10/31/12	Stream	46
S10WN083.00	10/31/12	Stream	44
S10WN030.50	10/31/12	Stream	22
S10WN044.10	10/31/12	Stream	3.6
S40WN032.60	11/01/12	Stream	540
S20WN032.60	11/01/12	Stream	156
S10WN038.50	11/01/12	Stream	68
S10WN032.60	11/01/12	Stream	22
S10WN040.00	11/11/12	Stream	100
S10WN057.10	11/11/12	Stream	68
S20WN044.10	12/19/12	Stream	400
S20WN032.60	12/19/12	Stream	54
S10WN032.20	12/19/12	Stream	46
S10WN032.60	12/19/12	Stream	30
S10WN044.10	12/19/12	Stream	24
S10WN040.50	09/21/14	Stream	160
S10WN049.00	09/21/14	Stream	114
S10WN035.70	09/21/14	Stream	94
S10WN032.20	09/21/14	Stream	35
S40WN032.60	09/21/14	Stream	15
S10WN038.60	09/21/14	Stream	13



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Location ID	Sample Date	Pollution Type	Raw Score
S10WN056.00	09/21/14	Stream	6
S10WN057.10	09/22/14	Stream	31
S10WN032.20	10/22/14	Stream	>1600
S10WN035.70	10/22/14	Stream	>1600
S10WN040.50	10/22/14	Stream	>1600
S10WN056.00	10/22/14	Stream	720
S10WN038.60	10/22/14	Stream	680
S10WN057.10	10/22/14	Stream	112
S40WN032.60	10/22/14	Stream	70
S10WN049.00	10/22/14	Stream	4
WN035-1	05/12/15	Stream	1700
WN074-44	04/19/16	Stream	100
WN081-1	04/20/16	Stream	1.9
WN088-1	04/20/16	Stream	1.9
WN026-11	04/21/16	Stream	340
WN025-46	04/21/16	Stream	11
WN025-50	04/21/16	Stream	8.9
WN028-15	04/21/16	Stream	8
WN026-10	04/21/16	Stream	4
WN028-16	04/21/16	Stream	1.9
WN028-21	04/21/16	Stream	1.9
WN052-16	04/27/16	Stream	540
WN102-1	04/27/16	Stream	220
WN057-15	04/27/16	Stream	90
WN021-45	04/27/16	Stream	50
WN047-1	04/27/16	Stream	40
WN021-57	04/27/16	Stream	33
WN058-1	04/27/16	Stream	33
WN049-48	04/27/16	Stream	16
WN051-49	04/27/16	Stream	6
WN053-1	04/27/16	Stream	2
WN047-2	04/27/16	Stream	1.9
WN130-13	04/27/16	Stream	1.9
WN131-1	04/27/16	Stream	1.9
WN033-1	05/02/16	Stream	68
WN033-2	05/02/16	Stream	1.9
WN051-49	05/12/16	Stream	68
WN033-11	05/12/16	Stream	10
WN021-57	05/19/16	Stream	1700
WN018-44	05/19/16	Stream	820
WN131-1	05/19/16	Stream	90
WN006-168	05/19/16	Stream	64



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Location ID	Sample Date	Pollution Type	Raw Score
WN013-43	05/19/16	Stream	27
WN006-114	05/19/16	Stream	14
WN021-45	05/19/16	Stream	14
WN074-44	05/19/16	Stream	12
WN130-13	05/19/16	Stream	8
WN005-42	05/19/16	Stream	1.9
WN006-42	05/19/16	Stream	1.9
WN081-1	05/19/16	Stream	1.9
WN088-1	05/19/16	Stream	1.9
WN090-1	05/19/16	Stream	1.9
WN128-1	05/19/16	Stream	1.9
WN028-14	06/02/16	Stream	54
WN028-15	06/02/16	Stream	50
WN027-47	06/02/16	Stream	26
WN026-10	06/02/16	Stream	18
WN026-11	06/02/16	Stream	13
WN025-46	06/02/16	Stream	1.9
WN053-1	06/15/16	Stream	1220
WN058-1	06/15/16	Stream	520
WN055-42	06/15/16	Stream	48
WN049-48	06/15/16	Stream	33
WN102-1	06/15/16	Stream	33
WN057-15	06/15/16	Stream	16
WN047-2	06/15/16	Stream	13
WN047-1	06/15/16	Stream	1.9
WN051-49	06/15/16	Stream	1.9
WN052-16	06/16/16	Stream	260
WN035-1	07/13/16	Stream	420
WN051-49	07/13/16	Stream	144
WN033-2	07/13/16	Stream	136
WN033-3	07/13/16	Stream	46
WN033-1	07/13/16	Stream	9.1
WN090-1	08/18/16	Stream	1140
WN074-44	08/18/16	Stream	500
WN049-48	08/18/16	Stream	146
WN047-1	08/18/16	Stream	68
WN081-1	08/18/16	Stream	15
WN088-1	08/18/16	Stream	1.9
WN018-44	08/31/16	Stream	1700
WN027-47	08/31/16	Stream	940
WN006-114	08/31/16	Stream	320
WN028-14	08/31/16	Stream	280



WNP Sanitary Survey 2020

Location ID	Sample Date	Pollution Type	Raw Score
WN005-42	08/31/16	Stream	120
WN021-45	08/31/16	Stream	120
WN026-10	08/31/16	Stream	120
WN025-50	08/31/16	Stream	116
WN028-15	08/31/16	Stream	68
WN013-43	08/31/16	Stream	64
WN130-41	08/31/16	Stream	52
WN130-13	08/31/16	Stream	42
WN026-11	08/31/16	Stream	40
WN028-16	08/31/16	Stream	22
WN021-57	08/31/16	Stream	6
WN025-46	08/31/16	Stream	1.9
WN128-1	08/31/16	Stream	1.9
WN058-1	09/12/16	Stream	660
WN047-2	09/12/16	Stream	440
WN047-1	09/12/16	Stream	420
WN049-48	09/12/16	Stream	280
WN057-15	09/12/16	Stream	18
WN051-49	09/12/16	Stream	14
WN052-16	09/12/16	Stream	4
WN033-2	09/21/16	Stream	320
WN035-1	09/21/16	Stream	260
WN033-3	09/21/16	Stream	66
WN051-49	09/21/16	Stream	48
WN033-1	09/21/16	Stream	7.3
WN006-114	09/22/16	Stream	1700
WN006-42	09/22/16	Stream	1700
WN018-44	09/22/16	Stream	1700
WN005-42	09/22/16	Stream	460
WN021-45	09/22/16	Stream	104
WN013-43	09/22/16	Stream	84
WN130-41	09/22/16	Stream	42
WN025-50	09/22/16	Stream	33
WN028-15	09/22/16	Stream	29
WN028-16	09/22/16	Stream	24
WN028-14	09/22/16	Stream	10
WN025-46	09/22/16	Stream	2
WN128-1	09/22/16	Stream	1.9
WN130-13	09/22/16	Stream	1.9
WN033-1	09/29/16	Stream	29
WN035-1	09/29/16	Stream	11
WN018-44	10/03/16	Stream	108



WNP Sanitary Survey 2020

Location ID	Sample Date	Pollution Type	Raw Score
WN018-55	10/03/16	Stream	60
WN013-43	10/03/16	Stream	12
WN130-13	10/03/16	Stream	6
WN128-1	10/03/16	Stream	1.9
WN081-1	10/04/16	Stream	35
WN074-44	10/04/16	Stream	18
WN088-1	10/04/16	Stream	1.9
WN102-1	10/18/16	Stream	66
WN053-1	10/18/16	Stream	60
WN051-49	10/18/16	Stream	16
WN047-1	10/18/16	Stream	12
WN047-2	10/18/16	Stream	7.3
WN049-48	10/18/16	Stream	1.9
WN026-10	10/25/16	Stream	74
WN026-11	10/25/16	Stream	48
WN025-46	10/25/16	Stream	42
WN028-14	10/25/16	Stream	42
WN025-50	10/25/16	Stream	29
WN028-16	10/25/16	Stream	25
WN028-15	10/25/16	Stream	24
WN033-1	11/29/16	Stream	22
WN035-1	11/29/16	Stream	11
WN033-3	11/29/16	Stream	6
WN058-26	04/04/17	Stream	300
WN058-28	04/04/17	Stream	300
WN058-27	04/04/17	Stream	220
WN090-1	06/24/19	Stream	40
WN088-1	06/24/19	Stream	18
WN047-1	06/24/19	Stream	1.9
WN081-1	06/24/19	Stream	24
WN005-42	06/24/19	Stream	1.9
WN006-42	06/24/19	Stream	60
WN035-1	06/26/19	Stream	780
WN033-1	06/26/19	Stream	600
WN033-2	06/26/19	Stream	240
WN033-11	06/26/19	Stream	200
WN033-3	06/26/19	Stream	540
WN055-42	07/01/19	Stream	15
WN025-50	07/01/19	Stream	280
WN057-15	07/01/19	Stream	29.1
WN013-43	07/01/19	Stream	1020
WN028-15	07/01/19	Stream	400



WNP Sanitary Survey 2020

Location ID	Sample Date	Pollution Type	Raw Score
WN018-44	07/01/19	Stream	560
WN047-2	07/01/19	Stream	116
WN130-13	07/01/19	Stream	18
WN102-1	07/01/19	Stream	152
WN130-41	07/01/19	Stream	100
WN131-1	07/01/19	Stream	400
WN028-16	07/01/19	Stream	340
WN021-45	07/01/19	Stream	300
WN049-48	07/01/19	Stream	108
WN051-49	07/01/19	Stream	280
WN102-1	08/28/19	Stream	84
WN047-2	08/28/19	Stream	22
WN051-49	08/28/19	Stream	14
WN049-48	08/28/19	Stream	48
WN057-15	09/11/19	Stream	8
WN102-1	09/11/19	Stream	860
WN049-48	09/11/19	Stream	66
WN058-1	09/11/19	Stream	84
WN051-49	09/11/19	Stream	5.5
WN047-2	09/11/19	Stream	35
WN033-11	10/02/19	Stream	102
WN074-44	10/02/19	Stream	160
WN081-1	10/02/19	Stream	80
WN033-1	10/02/19	Stream	33
WN035-1	10/02/19	Stream	40
WN006-42	10/02/19	Stream	880
WN090-1	10/02/19	Stream	9.1
WN088-1	10/02/19	Stream	4
WN005-42	10/02/19	Stream	4
WN033-3	10/02/19	Stream	112
WN035-1	10/09/19	Stream	16
WN028-16	10/09/19	Stream	48
WN025-50	10/09/19	Stream	72
WN033-11	10/09/19	Stream	148
WN021-45	10/09/19	Stream	106
WN018-44	10/09/19	Stream	86
WN130-41	10/09/19	Stream	56
WN131-1	10/09/19	Stream	24
WN130-13	10/09/19	Stream	8
WN013-43	10/09/19	Stream	160
WN033-3	10/09/19	Stream	110
WN028-15	10/09/19	Stream	112



WNP Sanitary Survey 2020

Location ID	Sample Date	Pollution Type	Raw Score
WN033-1	10/09/19	Stream	16
WN047-2	10/15/19	Stream	8
WN051-49	10/15/19	Stream	10
WN102-1	10/15/19	Stream	52
WN057-15	10/15/19	Stream	1.9
WN049-48	10/15/19	Stream	8
WN074-44	10/22/19	Stream	1.9
WN081-1	10/22/19	Stream	25
WN088-1	10/22/19	Stream	4
WN130-13	10/23/19	Stream	1700
WN033-11	10/23/19	Stream	1700
WN021-45	10/23/19	Stream	1700
WN028-16	10/23/19	Stream	1700
WN131-1	10/23/19	Stream	640
WN013-43	10/23/19	Stream	1120
WN033-3	10/23/19	Stream	1700
WN035-1	10/23/19	Stream	1700
WN130-41	10/23/19	Stream	1700
WN025-50	10/23/19	Stream	1700
WN033-1	10/23/19	Stream	860
WN028-15	10/23/19	Stream	1700
WN018-44	10/23/19	Stream	1700
WN025-50	10/25/16	Stream	29
WN028-15	10/25/16	Stream	36
WN021-45	11/18/19	Stream	52
WN131-1	11/18/19	Stream	1.9
WN130-41	11/18/19	Stream	33
WN130-13	11/18/19	Stream	1.9
WN028-16	11/18/19	Stream	16
WN018-44	11/18/19	Stream	660
WN006-42	11/20/19	Stream	38
WN005-42	5/19/16	Stream	1.9
WN088-1	8/18/16	Stream	1.9
WN081-1	11/20/19	Stream	2
WN090-1	11/20/19	Stream	20
WN074-44	11/20/19	Stream	148
WN090-1	06/24/19	Stream	40
WN088-1	06/24/19	Stream	18
WN047-1	06/24/19	Stream	1.9
WN081-1	06/24/19	Stream	24
WN005-42	06/24/19	Stream	1.9
WN006-42	06/24/19	Stream	60



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Location ID	Sample Date	Pollution Type	Raw Score
WN035-1	06/26/19	Stream	780
WN033-1	06/26/19	Stream	600
WN033-2	06/26/19	Stream	240
WN033-11	06/26/19	Stream	200
WN033-3	06/26/19	Stream	540
WN055-42	07/01/19	Stream	15
WN025-50	07/01/19	Stream	280
WN057-15	07/01/19	Stream	29.1
WN013-43	07/01/19	Stream	1020
WN028-15	07/01/19	Stream	400
WN018-44	07/01/19	Stream	560
WN047-2	07/01/19	Stream	116
WN130-13	07/01/19	Stream	18
WN102-1	07/01/19	Stream	152
WN130-41	07/01/19	Stream	100
WN131-1	07/01/19	Stream	400
WN028-16	07/01/19	Stream	340
WN021-45	07/01/19	Stream	300
WN049-48	07/01/19	Stream	108
WN051-49	07/01/19	Stream	280
WN102-1	08/28/19	Stream	84
WN047-2	08/28/19	Stream	22
WN051-49	08/28/19	Stream	14
WN049-48	08/28/19	Stream	48
WN057-15	09/11/19	Stream	8
WN102-1	09/11/19	Stream	860
WN049-48	09/11/19	Stream	66
WN058-1	09/11/19	Stream	84
WN051-49	09/11/19	Stream	5.5
WN047-2	09/11/19	Stream	35
WN033-11	10/02/19	Stream	102
WN074-44	10/02/19	Stream	160
WN081-1	10/02/19	Stream	80
WN033-1	10/02/19	Stream	33
WN035-1	10/02/19	Stream	40
WN006-42	10/02/19	Stream	880
WN090-1	10/02/19	Stream	9.1
WN088-1	10/02/19	Stream	4
WN005-42	10/02/19	Stream	4
WN033-3	10/02/19	Stream	112
WN035-1	10/09/19	Stream	16
WN028-16	10/09/19	Stream	48



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Location ID	Sample Date	Pollution Type	Raw Score
WN025-50	10/09/19	Stream	72
WN033-11	10/09/19	Stream	148
WN018-44	08/05/20	Stream	1700
WN033-3	08/05/20	Stream	400
WN035-1	08/05/20	Stream	240
WN025-50	08/05/20	Stream	200
WN130-41	08/05/20	Stream	180
WN033-2	08/05/20	Stream	140
WN021-45	08/05/20	Stream	130.9
WN013-43	08/05/20	Stream	90.9
WN028-15	08/05/20	Stream	66
WN028-16	08/05/20	Stream	48
WN051-49	08/05/20	Stream	44
WN033-1	08/05/20	Stream	16.3
WN130-13	08/05/20	Stream	1.9
WN018-44	08/26/20	Stream	1700
WN021-45	08/26/20	Stream	500
WN025-50	08/26/20	Stream	160
WN051-49	08/26/20	Stream	158
WN013-43	08/26/20	Stream	132
WN028-15	08/26/20	Stream	29
WN130-13	08/26/20	Stream	16
WN033-1	09/01/20	Stream	118
WN033-3	09/01/20	Stream	110
WN035-1	09/01/20	Stream	78
WN018-44	10/13/20	Stream	1160
WN021-45	10/13/20	Stream	320
WN130-41	10/13/20	Stream	300
WN025-50	10/13/20	Stream	94
WN013-43	10/13/20	Stream	80
WN130-13	10/13/20	Stream	70
WN033-3	10/13/20	Stream	52
WN033-2	10/13/20	Stream	18
WN033-1	10/13/20	Stream	16
WN035-1	10/13/20	Stream	12
WN051-49	10/13/20	Stream	8
WN028-15	10/13/20	Stream	6
WN018-44	12/02/20	Stream	1700
WN051-49	12/02/20	Stream	124
WN013-43	12/02/20	Stream	96
WN033-1	12/02/20	Stream	74
WN025-50	12/02/20	Stream	70



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Location ID	Sample Date	Pollution Type	Raw Score
WN028-15	12/02/20	Stream	66
WN035-1	12/02/20	Stream	48
WN033-3	12/02/20	Stream	44
WN028-16	12/02/20	Stream	35
WN033-2	12/02/20	Stream	33
WN131-1	12/02/20	Stream	27
WN006-42	12/02/20	Stream	25
WN130-13	12/02/20	Stream	25
WN130-41	12/02/20	Stream	11

Agricultural Activities

There are no large-scale agriculture facilities in growing areas WNP. There are several small farms located in Wiscasset, Edgecomb, Westport Island, and Boothbay. All farms could be potential non-point pollution sources due to large rainfall events or snow melt causing runoff into surrounding waters. Smaller farms are encouraged to follow best management practices to help avoid effects animal waste and agricultural pollutants can have on water quality.

Wildlife Activity

Wildlife activity in growing areas WNP include the more common species of animals in Maine such as dogs, cats, deer, racoons, fox, squirrels, skunks, mice, bats, chipmunks, and rabbits. There have also been sightings of bobcats and weasels in some of the marsh areas. Commonly observed bird species include a variety of gulls, sea and inland ducks, geese, great blue herons, and others.

Recreation Areas (beaches, campgrounds, etc.)

Public beaches located in growing areas WNP include Reid State Park and Mile Beach in Georgetown; and Knickerbocker Lakes, Bayville Community Dock and Beach, and Ocean Point Beach in Boothbay. There are also several campgrounds in Southport, Georgetown, and Wiscasset. All public areas that allow dogs have signage about picking up feces. All beaches and campgrounds located in Boothbay and Southport are located in a Prohibited area. Camp Chewonki located in Wiscasset is monitored by a water quality station. Reid State Park and Mile Beach in Georgetown are both located in approved areas with water quality stations on each end.

Hydrographic and Meteorological Assessment

Tides

Coastal Maine experiences a mixed, semi-diurnal tide, with diurnal inequalities that are more pronounced on spring tides. Except for very few isolated areas with extensive saltwater marshes, tides are not



considered to be contributors to fecal contamination. The DMR Boothbay Harbor Environmental Monitoring Program collected data for Boothbay Harbor which indicates a mean tidal range of 8.8 feet and a spring tidal range of 10.1 feet. The mean tidal range for most of Maine is nine feet to thirteen feet. This extreme volume exchange results in significant bacterial dilution. Currents in the area are predominantly driven by the tides. There are no conditional areas in Growing Areas WNP that are managed based on tides.

Rainfall

The wettest months are generally April, October, and November while August is typically the driest month. Much of the precipitation in the winter comes as snow and may affect runoff rates in spring upon melting. Flood closures are implemented when areas receive greater than two inches of rainfall in a twenty-four-hour period. Rainfall is monitored by numerous rain gauges located along the entire Maine coast and reported primarily through the Weather Underground website. Some areas of Maine have documented fecal influences resulting from rainfall of greater than one inch in a twenty-four-hour period. These areas are considered rainfall conditional areas and are Conditionally Approved based on the one-inch closure trigger.

There are two rainfall conditional areas located in growing areas WNP. The largest rainfall conditional area is in the Back River and Hockomock Bay. It is surrounded by the towns of Southport, Georgetown, and Woolwich. There are eleven water quality stations and two boundary water quality stations monitoring this rainfall conditional area.

The second rainfall conditional area is in Cross River. It is surrounded by the towns of Boothbay and Edgecomb. There are four water quality stations and one boundary station monitoring this rainfall conditional area.

Winds

Migratory weather systems cause winds that frequently change in strength and direction. Gulf of Maine winds are generally westerly, but often take on a northerly component in winter and a southerly one in summer. Strongest winds are generated by lows and cold fronts in fall and winter and by fronts and thunderstorms during spring and summer. Extreme winds are usually associated with a hurricane or severe nor'easter and can reach 125 knots. In Maine, wind is not a contributor to fecal pollution because marine currents are primarily influenced by the size and duration of the normal tidal cycle.

River discharge

Streamflow in Maine exhibits seasonal variation, with the highest flows occurring in the spring (due to snowmelt, spring rains, and low evapotranspiration) and the mid-to-late fall (due to fall rains and low evapotranspiration). Many small streams discharge into the growing area. These streams are discussed in the section about nonpoint source pollution.



Hydrographic influence

The Sheepscot River is an estuary system, and receives both salt water inputs from the south and fresh water inputs from the north and west. The Sheepscot River estuary system is connected with the Kennebec River estuary to the west by the Sasanoa River, which drains into the Hockomock Bay. Montsweag Bay is a significant part of the Sheepscot River estuary, and it communicates with the main body of the estuary at the north through Cowseagan Narrows (McAlice and Jaeger 1983). Montsweag Bay is a shallow body of water, and at mean low water, approximately 50 percent of its area has less than six feet of water (McAlice and Jaeger 1983). The main channel of the Sheepscot River lies east of Westport Island.

Water circulation in the Sheepscot River is dominated by tides. The average tidal range at spring tides is about 10.47 ft, and the annual average tidal range is 9.1 ft. (NOAA 2009). Tides are semi-diurnal, with a slight diurnal inequality (McAlice and Jaeger 1983). The tidal cycle is 12 hours and 25 minutes long. Tide levels may fluctuate throughout the month. These fluctuations and the speed and direction of the tidal currents constantly change during a tidal cycle. Tidal currents have the greatest energy when water is pushed in and out of bays and channels during the highest and lowest tide levels. In Montsweag Bay and in the main channel of the Sheepscot River estuary, slack water occurs about 30-45 minutes before the times of low and high tide.

The water column in Cowseagan Narrows is almost always well-mixed, consistent with the increased tidal flows, while the southern half of Montsweag Bay has strong vertical stratification (McAlice and Jaeger 1983). The strongest ebbing tide occurs in Lower Hell Gate and Goose Rock Passage, with maximum ebb currents of about 4 knots. A prominent clockwise eddy forms off Robinhood Cove during the strongest part of the ebb tide, and a prominent convergence front occurs east of Clous and Middle Ledges where the outflow from the passage pushes into the Sheepscot River (Brooks 2006). The flooding tide is strongest along the west side of the Sheepscot River, until it turns into Goose Rock Passage (Brooks 2006). The flood impinges directly on Robinhood Point, where it splits, most going north toward Hells Gate, Hockomock Bay, and Montsweag Bay (Back River) (Brooks 2006). The tide floods simultaneously north and south in Back River, meeting near Cowseagan Narrows.

As part of the Maine Yankee Nuclear Power Plant decommissioning in 1996 (permanent shut-down in August 1997), Maine Yankee funded a study on the dynamics of the Sheepscot River estuary, including a tidal transport analysis of the estuarine system. This analysis showed that the greatest tidal transport ($>5000 \text{ m}^3 \text{ s}^{-1}$) occurs in the main channel of the river (east of Westport Island), and a moderate amount of transport ($1000 \text{ to } 5000 \text{ m}^3 \text{ s}^{-1}$) occurs along the south east shore of Westport Island and Cowseagan Narrows and the least amount of tidal transport ($<1000 \text{ m}^3 \text{ s}^{-1}$) occurring in Montsweag Bay and Davis Island, Edgecomb (Figure 13). The study also identified an area of almost no tidal movement, in an area between Young Point, Wiscasset and Westport Island; this area was determined to be the product of merging tidal waves that circuit the estuary's largest island (Westport Island) (Hess et al. 2005).

Water Quality Studies

Map of Sampling Stations

DMR uses Systematic Random Sampling (SRS) with a pre-established schedule at an adequate frequency to capture all meteorological, hydrographic and/or other pollution events that trigger non-point pollution



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contribution. Using SRS will detect intermittent and unfavorable changes in water quality and the program accepts the estimated 90th percentile (P90) as the standard to measure variance of a data set.

There are presently 73 active water sampling sites in Growing Areas WNP and four investigative stations which do not currently have enough data to calculate a P90. It is recognized that access, icing, and safety considerations prevent some stations from being sampled on scheduled dates. Currently all stations in Growing Areas WNP meet their current NSSP classification standard. Five water quality stations (WN 27.3, 68.5, 71, 80, 80.5) now have water quality that meets the standards for Approved harvest. Water quality station WN08.30 meets standards to be Conditionally Approved. These will be evaluated for an upgrade in 2021.

Water Quality Discussion and Classification Determination

P90s for all active stations with a minimum of 30 samples were calculated and all stations meet their classification standards (Tables 5-10). The percent change in P90 from 2019 to 2020 was calculated and only two of the approved status stations showed a substantial increase in P90 score. These stations still have low scores and are not in danger of failing to meet their classification standards. Overall, the water quality in growing areas WNP appears to be remaining constant.

Table 5. P90 calculations for stations with a minimum of 30 samples. Geomeans and P90s not meeting current classifications are highlighted in red.

Station	Class	Count	GM	SDV	MAX	P90	Min_Date	Comments
WN001.00	P	30	2.9	0.41	100	10.1	4/13/2016	
WN002.00	A	30	3	0.36	48	8.9	4/13/2016	
WN003.00	A	30	5.1	0.57	220	28.3	4/13/2016	
WN004.00	A	30	3.4	0.33	22	9.4	4/13/2016	
WN015.50	A	30	3.2	0.46	106	12.6	4/13/2016	
WN016.00	A	30	2.8	0.26	18	6.2	4/13/2016	
WN018.00	A	30	2.7	0.24	13	5.7	5/17/2016	
WN020.00	A	30	4.1	0.41	40	13.8	5/17/2016	
WN027.00	P	30	2.1	0.14	6	3.3	5/17/2016	
WN027.20	A	30	2.3	0.17	6	3.9	5/17/2016	
WN027.30	A	30	3.9	0.4	78	13	6/28/2016	
WN027.50	P	30	5	0.65	960	34.6	5/4/2016	
WN030.50	P	30	3.7	0.44	36	13.9	5/4/2016	
WN031.00	P	30	6.5	0.53	120	31.8	4/19/2016	
WN038.00	A	30	3.5	0.43	130	12.5	3/16/2016	
WN040.00	A	30	3.5	0.4	50	11.5	4/6/2016	
WN042.00	A	30	2.6	0.28	42	6	4/6/2016	
WN043.30	A	30	3.3	0.33	24	9	3/16/2016	



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Station	Class	Count	GM	SDV	MAX	P90	Min_Date	Comments
WN048.00	A	30	2.2	0.23	35	4.4	3/16/2016	
WN050.00	P	30	3.5	0.54	660	17.8	4/19/2016	
WN051.00	P	30	3.1	0.3	38	7.7	5/17/2016	
WN052.00	P	30	2.8	0.39	132	8.8	5/17/2016	
WN063.00	A	30	4.2	0.46	124	17	1/26/2016	
WN064.00	A	30	3.5	0.44	134	13	1/26/2016	
WN065.00	R	30	6.6	0.54	104	33.4	1/26/2016	
WN067.00	P	30	5.7	0.4	54	19.1	1/26/2016	
WN068.00	A	30	3.1	0.38	42	9.9	10/4/2016	
WN068.50	A	30	4.3	0.49	52	18.4	1/26/2016	
WN069.00	R	30	13.1	0.55	180	67.7	1/26/2016	
WN071.00	A	30	4	0.43	94	14.6	1/26/2016	
WN073.00	P	30	3.8	0.54	180	19.4	1/22/2018	
WN076.00	P	30	2.5	0.29	14	6	1/26/2016	
WN077.20	A	30	2.3	0.3	58	5.7	1/26/2016	
WN077.30	P	30	3.5	0.48	150	14.6	1/26/2016	
WN078.00	P	30	4.4	0.61	680	26.8	1/26/2016	
WN079.00	A	30	2.3	0.25	31	5	1/22/2018	
WN080.00	A	30	4	0.45	70	15.3	1/26/2016	
WN080.50	A	30	4.9	0.45	70	19	1/26/2016	
WN082.00	R	30	7.9	0.72	1700	67	1/26/2016	
WN085.00	A	30	2.3	0.29	70	5.5	4/13/2016	
WN085.50	A	30	4.1	0.45	110	15.8	4/13/2016	
WN087.00	P	30	5	0.65	340	34.2	4/13/2016	
WN088.00	R	30	4.5	0.53	110	21.6	4/13/2016	
WN089.00	P	30	3.3	0.34	29	9.1	4/13/2016	
WN091.00	R	30	4.5	0.66	1020	32.3	4/13/2016	
WN092.00	A	30	5.5	0.48	60	23.3	5/17/2016	
WN093.00	P	30	3.8	0.45	48	14.5	5/17/2016	
WN097.00	A	30	2.9	0.47	146	12.2	5/17/2016	
WN098.00	P	30	4	0.44	50	14.7	5/17/2016	
WN099.00	A	30	2.4	0.24	15	4.9	6/28/2016	
WN100.00	P	30	2.9	0.56	1480	15.7	5/4/2016	
WN104.50	R	30	3	0.58	520	17.3	5/4/2016	
WN105.00	R	30	4.6	0.68	680	35.3	4/19/2016	

Emergency Closures: The reports summarizing emergency closures such as flood and biotoxin closures for the entire state are in the DMR central files.



Reclassifications: Reclassification addendums to the sanitary survey report are in the DMR central files.

CAMP Reviews, Inspection Reports, and Performance Standards

Robinhood Cove- Georgetown, is classified as Conditionally Approved based on the presence or absence of ten or more boats with heads at Robinhood Marina, which may discharge into the cove. This area has an open status from November 16th through April 30th. Robinhood Cove is monitored by stations WN13 and WN14.5. Marine Patrol and/or local Shellfish Wardens monitor illegal harvesting activity for this area during the closed period (5/1 to 11/15). Robinhood Cove conditional area continues to follow the management plan.

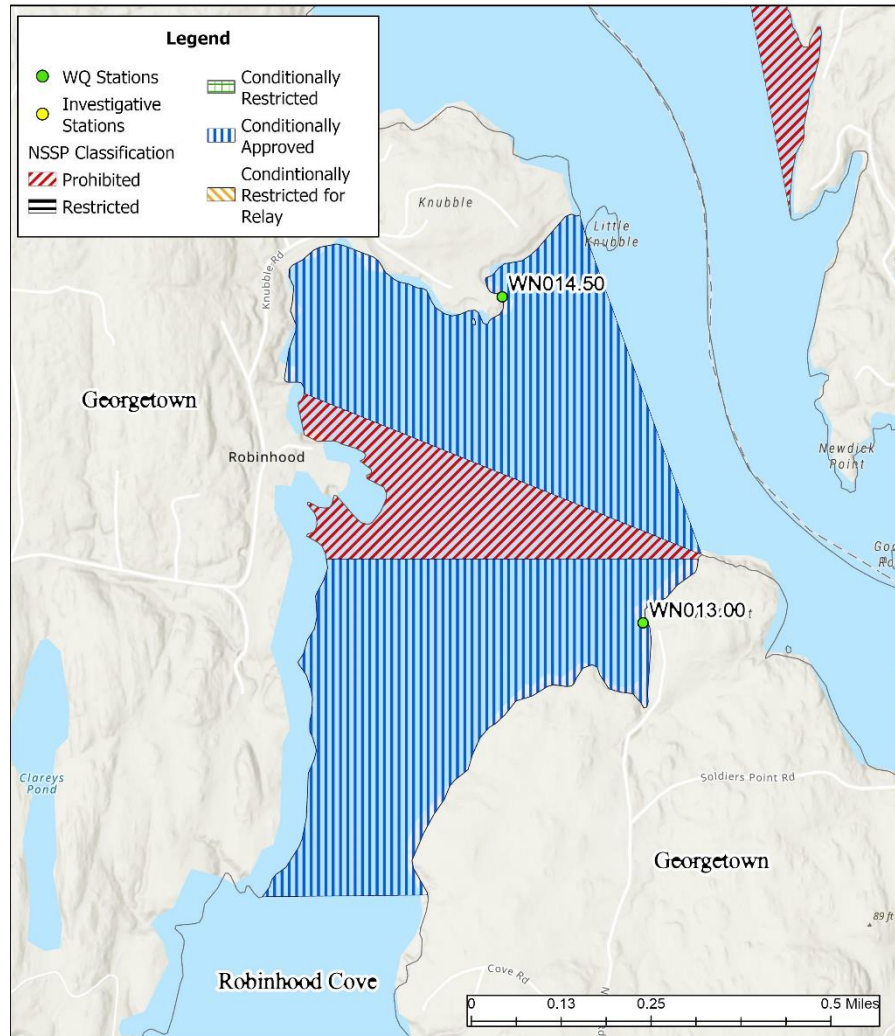
Table 6. Robinhood Marina Conditional Area, closed 5/1-11/15, Geometric Mean, Count, and P90 (OPEN status)

Station	Class	Count	GM	SDV	MAX	P90	Min_Date
WN013.00	CA	30	3.4	0.43	56	12.6	2/10/2014
WN014.50	CA	30	2.3	0.23	24	4.7	1/13/2014

Figure 8. Growing Area WN, Robinhood Cove Conditional Area, Map Inset A



Department of Marine Resources Growing Area WNP



Hockomock and Montsweag Bay- Woolwich, is classified as Conditionally Approved based on rainfall and closed when rainfall total exceeds one inch in a 24-hour period. Hockomock Bay and Montsweag Bay are monitored by stations WN32, WN32.8, WN34, WN35, WN35.4, WN35.6, WN35.7, WN43.5, and WN44.1. It is also monitored by boundary stations WN30.5 and WN31 which are classified as Prohibited and WN43.3 which is classified as Approved. Marine Patrol and/or local Shellfish Wardens monitor illegal harvesting activity for this area during rainfall closures. Hockomock and Montsweag Bay conditional area continues to follow the management plan.

Table 7. Hockomock Bay Rainfall Conditional Area, Geometric Mean, Count, and P90 (OPEN status)

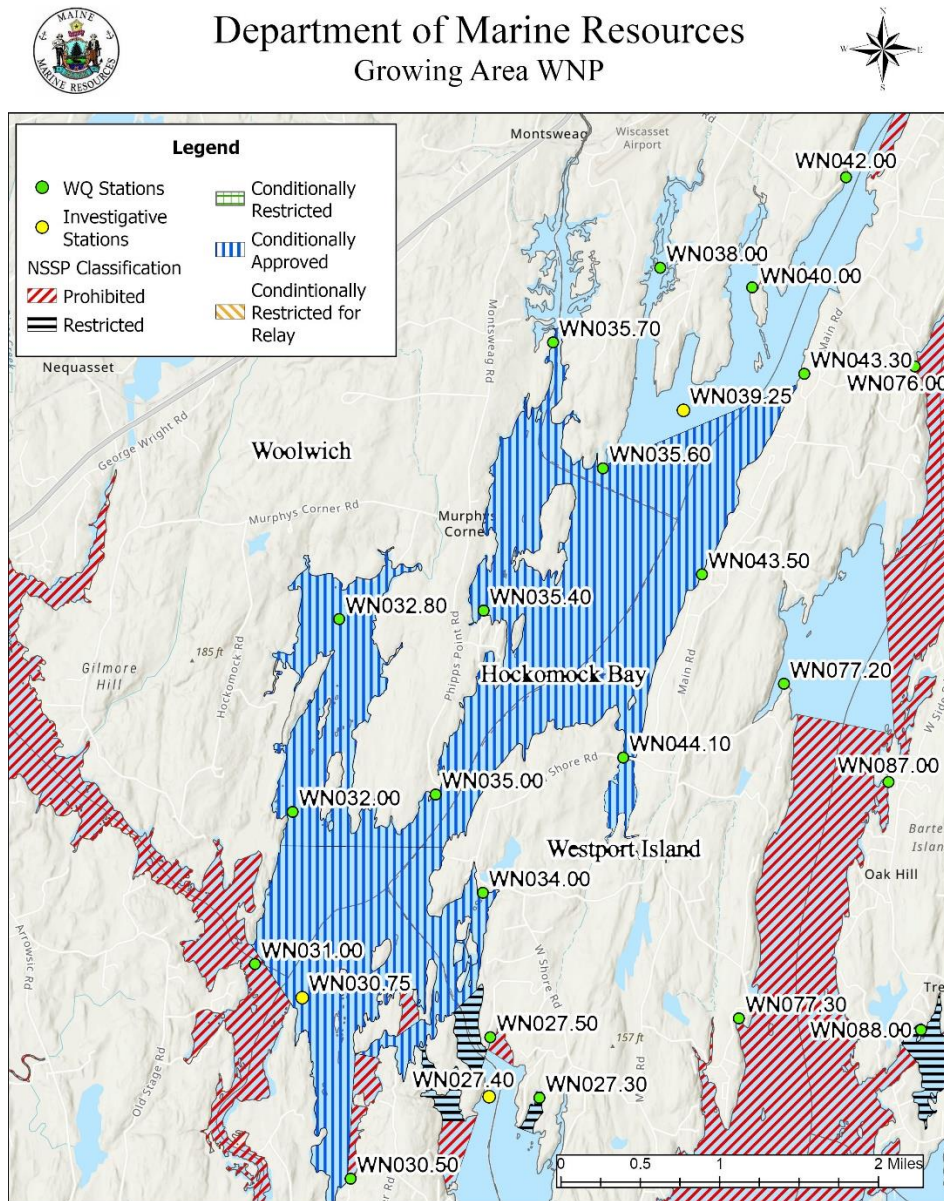


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Station	Class	Count	GM	SDV	MAX	P90	Min_Date
WN030.50	P (Boundary)	30	3.1	0.29	18	7.5	09-Jun-15
WN031.00	P (Boundary)	30	6.2	0.53	120	30	05-Nov-14
WN032.00	CA	30	4.1	0.37	27	12.5	05-Nov-14
WN032.80	CA	30	5.7	0.45	80	21.9	28-Oct-15
WN034.00	CA	30	3	0.3	16	7.5	10-Jun-15
WN035.00	CA	30	3.8	0.41	33	12.8	23-Mar-15
WN035.40	CA	30	5.5	0.44	80	20.6	27-May-15
WN035.60	CA	30	4.7	0.45	88	18.3	05-Nov-14
WN035.70	CA	30	4.3	0.39	25	13.8	19-May-16
WN043.30	A (Boundary)	30	2.9	0.28	20	6.7	24-Nov-15
WN043.50	CA	30	3.6	0.39	29	11.6	17-Mar-15
WN044.10	CA	30	3.8	0.36	29	11.1	28-Jul-15



Figure 9. Growing Area WN, Hockomock Bay Conditional Area, Map Inset B



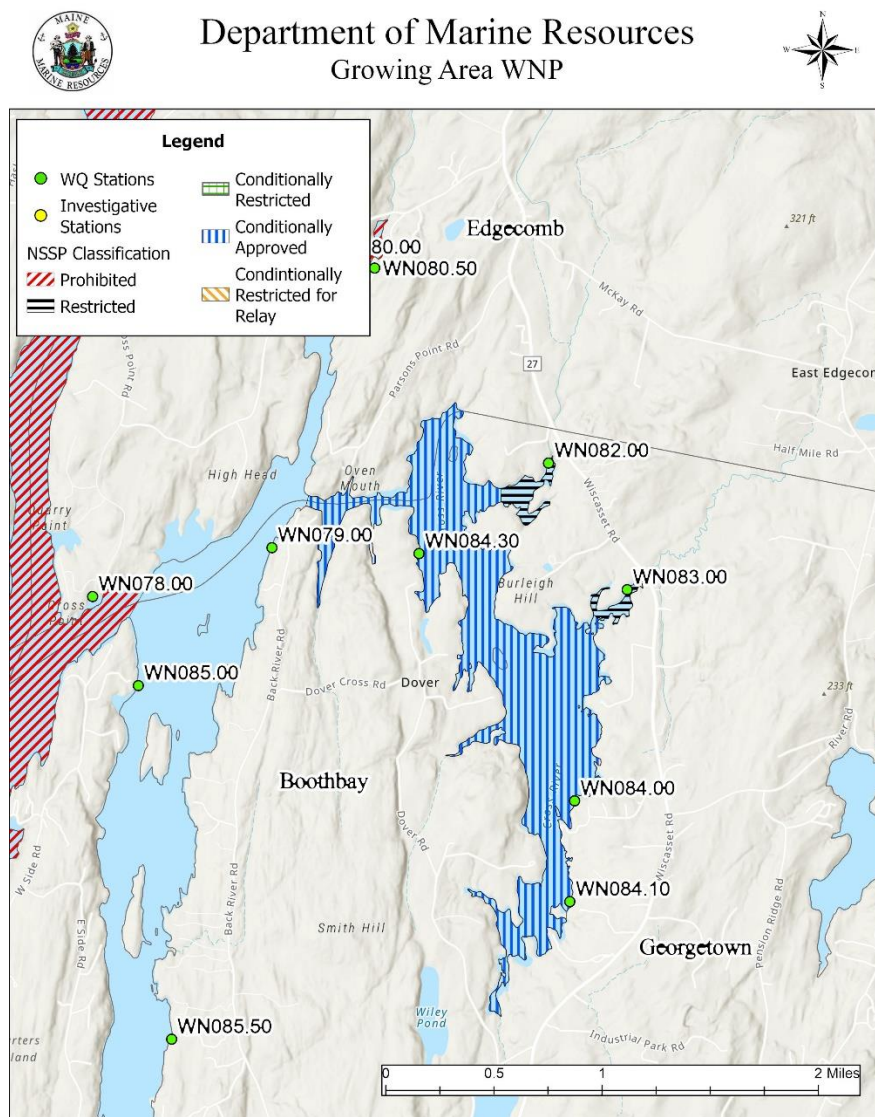
Cross River- Edgecomb, is classified as a Conditionally Approved area based on rainfall and is closed when rainfall totals exceed one inch over a 24-hour period. Cross River is monitored by stations WN084, WN84.1, and WN84.3. It is also monitored by boundary station WN79 which is classified as Approved. Marine Patrol and/or local Shellfish Wardens monitor illegal harvesting activity for this area during rainfall closures. Cross River conditional area continues to follow the management plan.



Table 8. Cross River Rainfall Conditional Area, Geometric Mean, Count, and P90 (OPEN status)

Station	Class	Count	GM	SDV	MAX	P90	Min_Date
WN079.00	A (Boundary)	30	2.1	0.14	5.5	3.3	21-Sep-15
WN084.00	CA	30	3.5	0.34	18	9.7	21-Sep-16
WN084.10	CA	30	5.5	0.56	240	29	04-Oct-16
WN084.30	CA	30	2.5	0.23	18	5.1	14-Nov-16

Figure 10. Growing Area WN, Cross River Conditional Area, Map Inset C



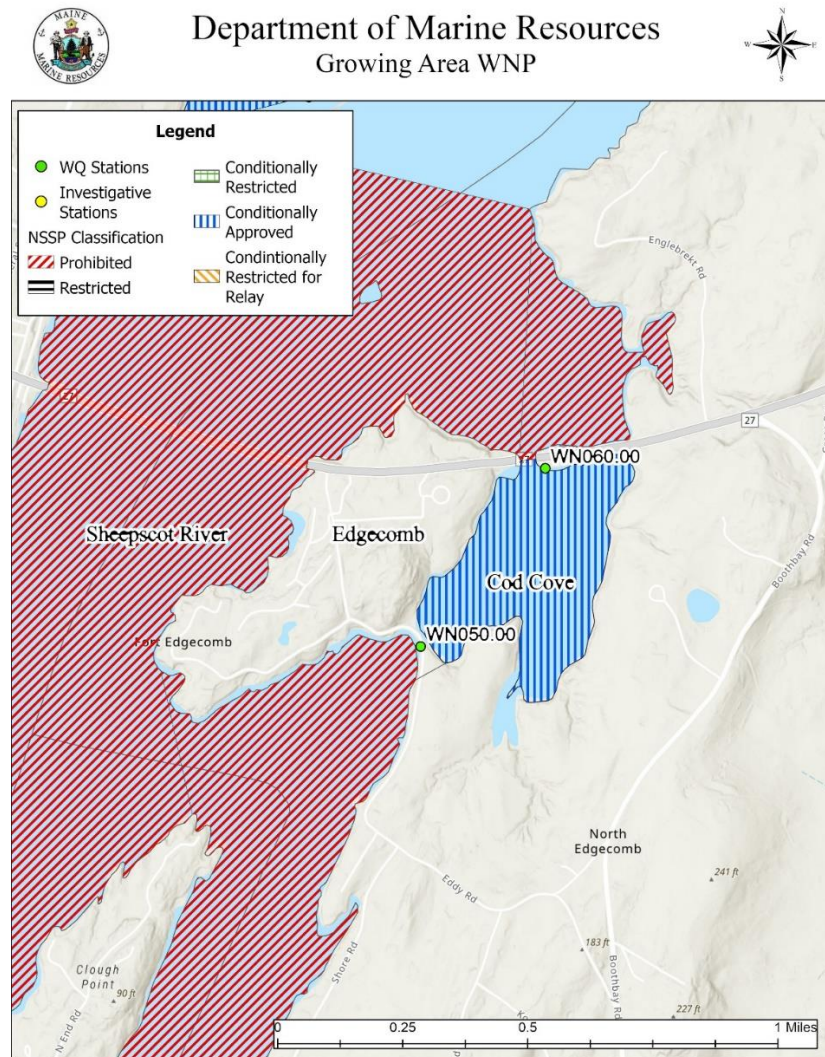


Cod Cove- Edgecomb, is classified as Conditionally Approved based on seasonal variation in water quality. The southern part of Cod Cove is open from September 1st through May 31st. Station WN60 monitors the water flowing in and out of the southern seasonal conditional area of Cod Cove. Marine Patrol and/or local Shellfish Wardens monitor illegal harvesting activity for this area during the closed period. Cod Cove conditional area continues to follow the management plan.

Table 9. Cod Cove Seasonal Conditional Area, closed 6/1-8/31, Geometric Mean, Count, and P90 (OPEN status)

Station	Class	Count	GM	SDV	MAX	P90	Min_Date
WN060.00	CA	30	4.5	0.55	280	23.3	4/6/2016

Figure 11. Growing Area WN, Cod Cove Conditional Area, Map Inset D



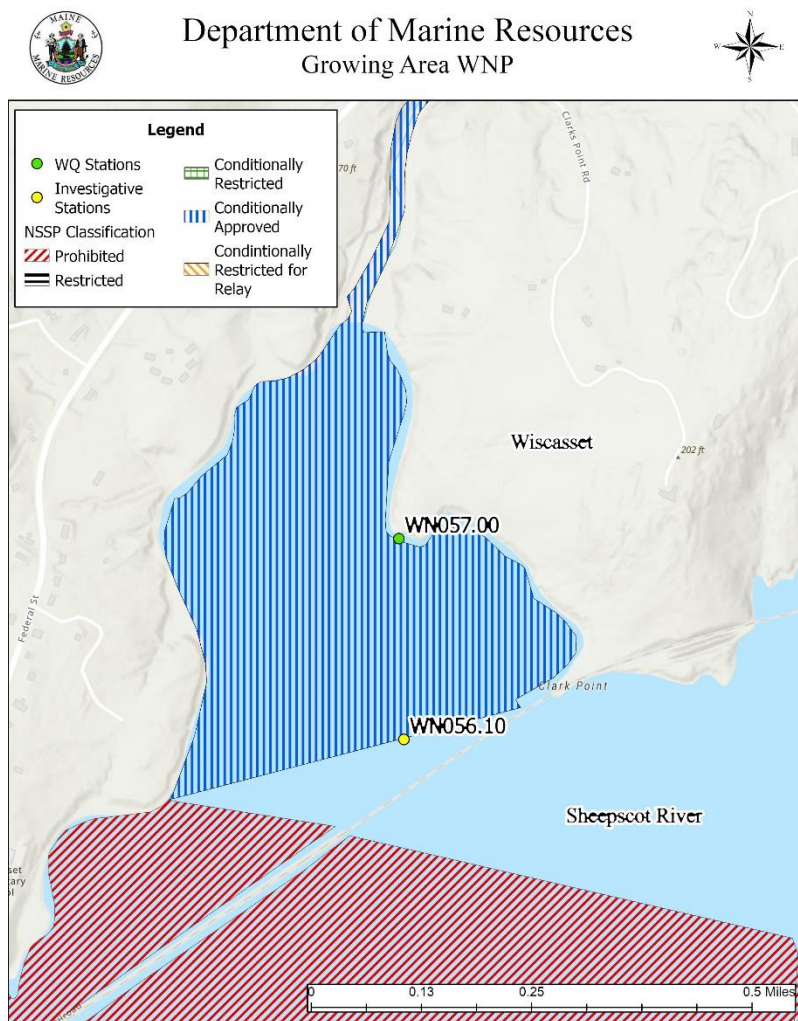


Polly Clark Cove is classified as Conditionally Approved with an open status of September 1st to May 31st based on the seasonal variation in water quality. This area is monitored by station WN57 and is of local interest due to available resources. Marine Patrol and/or local Shellfish Wardens monitor illegal harvesting activity for this area during the closed period. Polly Clark Cove conditional area continues to follow the management plan.

Table 10. Polly Clark Cove Seasonal Conditional Area; Geometric Mean, Count and P90 (OPEN status). Stations above the conditionally approved standard are in red.

Station	Class	Count	GM	SDV	MAX	P90	Min Date
WN057.00	CA	30	4.5	0.48	106	18.8	4/6/2016

Figure 12. Growing Area WN, Polly Clark Cove Conditional Area, Map Inset E





Recommendation for Future Work

Upper Parsons Creek (WN 80 and WN 80.5), Sasanoa River (WN 27.3), Back River (WN 83), and Sheepscot River (WN 68.5 and WN 71) will all be considered for upgrade. Station WN30.5 was re-classified from a Conditionally Approved status to a Prohibited status due to the station residing in a Prohibited area. Station WN88 reached its 30 count and was classified to Restricted to match the water body classification. All stations met or exceeded their required sample count.

Table 11. Count Table of samples collected in growing area WN during the 2020 season.

Station	Class	C	O	X	Grand Total	Comments
WN001.00	P	6			6	
WN002.00	A		6		6	
WN003.00	A		6		6	
WN004.00	A		6		6	
WN013.00	CA	5	3		8	Marina, 3 required in open status
WN014.50	CA	5	3		8	Marina, 3 required in open status
WN015.50	A		6		6	
WN016.00	A		6		6	
WN018.00	A		6		6	
WN020.00	A		6		6	
WN027.00	P	6			6	
WN027.20	A		6		6	
WN027.30	R		6		6	
WN027.40	X			7	7	
WN027.50	P	6			6	
WN030.50	P	7			7	
WN030.75	X			7	7	
WN031.00	P	6			6	
WN032.00	CA	1	6		7	
WN032.80	CA	1	6		7	
WN034.00	CA	1	6		7	
WN035.00	CA	1	6		7	
WN035.40	CA	1	6		7	
WN035.60	CA	1	6		7	
WN035.70	CA	1	6		7	



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Station	Class	C	O	X	Grand Total	Comments
WN038.00	A		6		6	
WN039.25	X			7	7	
WN040.00	A		6		6	
WN042.00	A		6		6	
WN043.30	A		6		6	
WN043.50	CA	1	6		7	
WN044.10	CA	1	6		7	
WN048.00	A		6		6	
WN050.00	P	7			7	
WN051.00	P	6			6	
WN052.00	P	6			6	
WN056.10	X			8	8	
WN057.00	CA	2	6		8	
WN060.00	CA	3	6		9	
WN063.00	A		7		7	
WN064.00	A		7		7	
WN065.00	R		7		7	
WN067.00	P	7			7	
WN068.00	A		7		7	
WN068.50	R		7		7	
WN069.00	R		7		7	
WN071.00	R		7		7	
WN073.00	P	6			6	
WN076.00	P	6			6	
WN077.20	A		6		6	
WN077.30	P	6			6	
WN078.00	P	6			6	
WN079.00	A		6		6	
WN080.00	R		6		6	
WN080.50	P	6			6	
WN082.00	R		6		6	
WN083.00	R		6		6	
WN084.00	CA	2	6		8	
WN084.10	CA	2	6		8	
WN084.30	CA	2	6		8	
WN085.00	A		6		6	
WN085.50	A		6		6	
WN087.00	P	6			6	



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Station	Class	C	O	X	Grand Total	Comments
WN088.00	R		6		6	
WN089.00	P	6			6	
WN091.00	R		6		6	
WN092.00	A		6		6	
WN093.00	P	6			6	
WN097.00	A		6		6	
WN098.00	P	6			6	
WN099.00	A		6		6	
WN100.00	P	6			6	
WN104.50	R		6		6	
WN105.00	R		6		6	

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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.

GM = 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, Approved standard is 31, Restricted standard is 163

Min_Date = oldest date sampled included in the calculations.

X = investigative station