GROWING AREA EP

Henry Point, Jonesport to Sea Wall Point, Roque Bluffs; including Mason Bay, Chandler River, Englishman Bay, Englishman River, and Roque Island.

Sanitary Survey Report

Report Date: January 11, 2021

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Sanitary Survey Officer signature: David W. Miller **Date:** 6/2/22

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Executive Summary

This is a Sanitary Survey report for Growing Area EP in Washington County written in compliance with the requirements of the 2019 Model Ordinance and the National Shellfish Sanitation Program. Two pollution areas in Growing Area EP will be reviewed for a possible upgrade in 2021; Sanborn Cove EP R1 (Rogue Bluffs), and Cow Point EP R2 (Rogue Bluffs). There were no new actual or potential pollution sources found during the 2020 survey. Due to COVID 19 concerns and restrictions, the shoreline survey was conducted by boat, so no access issues were encountered. No new investigatory stations were created during the review year and no water quality stations were deactivated during the review year. Water quality has remained consistent overall with some improvement in water quality shown in the eastern part of the growing area. The next sanitary survey is due in 2032 and the next triennial in 2023.

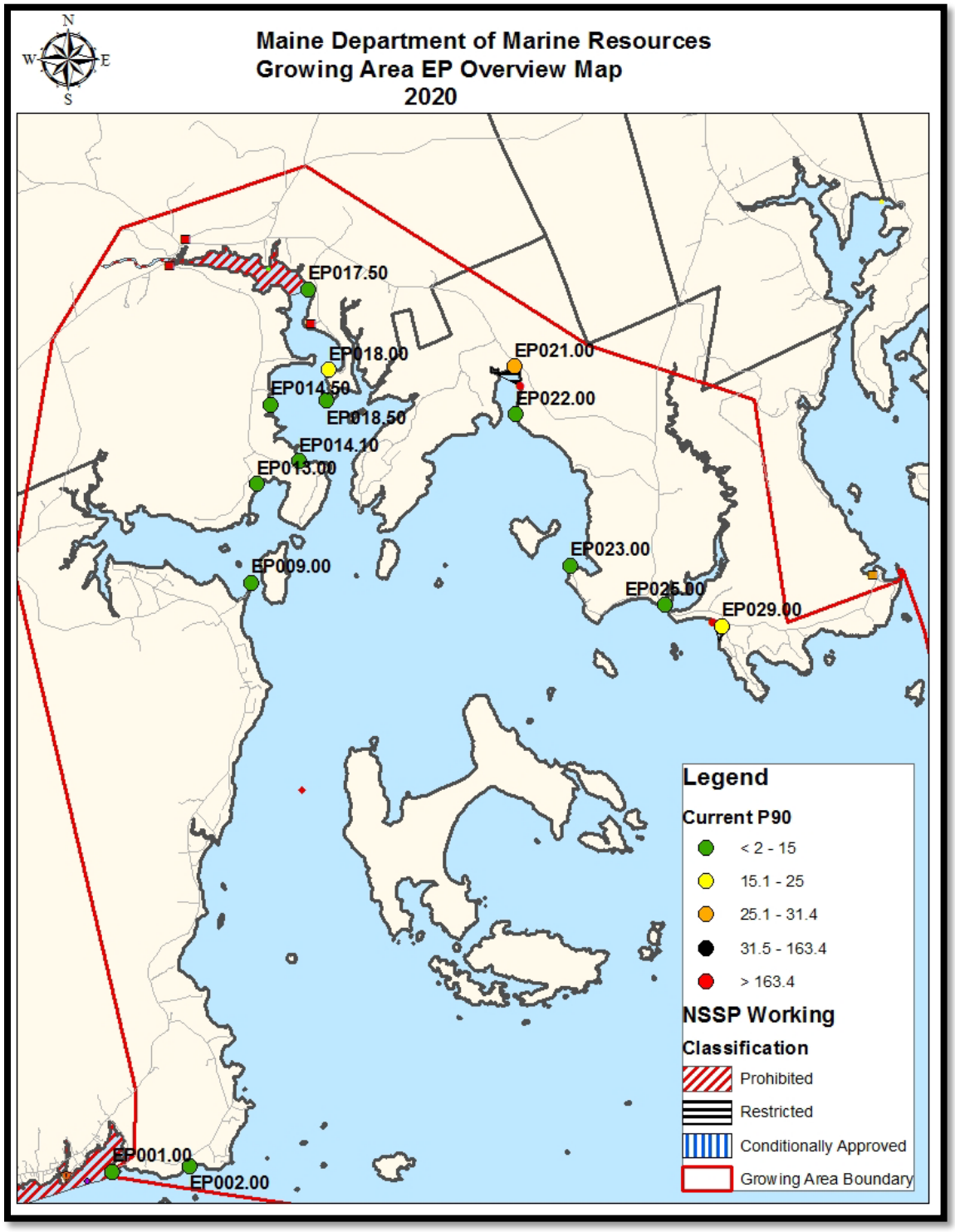
Description of Growing Area

Growing area EP encompasses approximately 78 square miles and extends from the eastern end of Moosabec Reach at Henry Point, Jonesport to Sea Wall Point on the southwest side of Little Kennebec Bay in Roque Bluffs. This area includes all of Englishman Bay, Roque Island, and numerous small harbors and small streams in the towns of Jonesport (pop- 1370), Jonesboro (pop-583), and Roque Bluffs (pop-303). (2010 Census report) Development along these shores is spotty with clusters of homes separated by undeveloped land. Heavier development is found at the head of the harbors and rivers. The shoreline is typical of the convoluted shoreline of this section of Maine, with a series of shallow harbors with muddy and gravel bottoms separated by rock-bound points of land and bold shoreline. There are no licensed overboard discharges (OBD') s or WWTP's in this area.

Shellfish Growing Area EP includes all the shores, flats, and coves stretching from Henry Point, Jonesport to Seawall Point, Rogue Bluffs. The upland cover is primarily deciduous, with some evergreens and wetland forest with minimal development This is a rural area with a sparse population. Freshwater influence along these shores is predominately from the Narraguagus and Harrington Rivers along with numerous brooks and small streams throughout the growing area.

There are no shellfish aquaculture leases or shellfish Limited Purpose Aquaculture permits (LPAs) in this growing area. There are 8 LPAs for sugar kelp. There are no wet storage permits issued to certified shellfish dealers in this area. Below is the map with Pollution Area boundaries and growing area boundaries. Closures within the growing area can be found in legal notices in DMR central files on the DMR website.

Figure 1. Growing Area EP Overview Map with Active Water 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 2-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 for 2020 was by boat. The process involved slowly paralleling the shore as close as safety allowed at high tide and using binoculars to try and identify any pipes, discharges, septic fields, and any other 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. All properties surveyed by boat are identified by a special designator in the DMR central files.

Figure 2. Growing Area EP, Pollution Map A

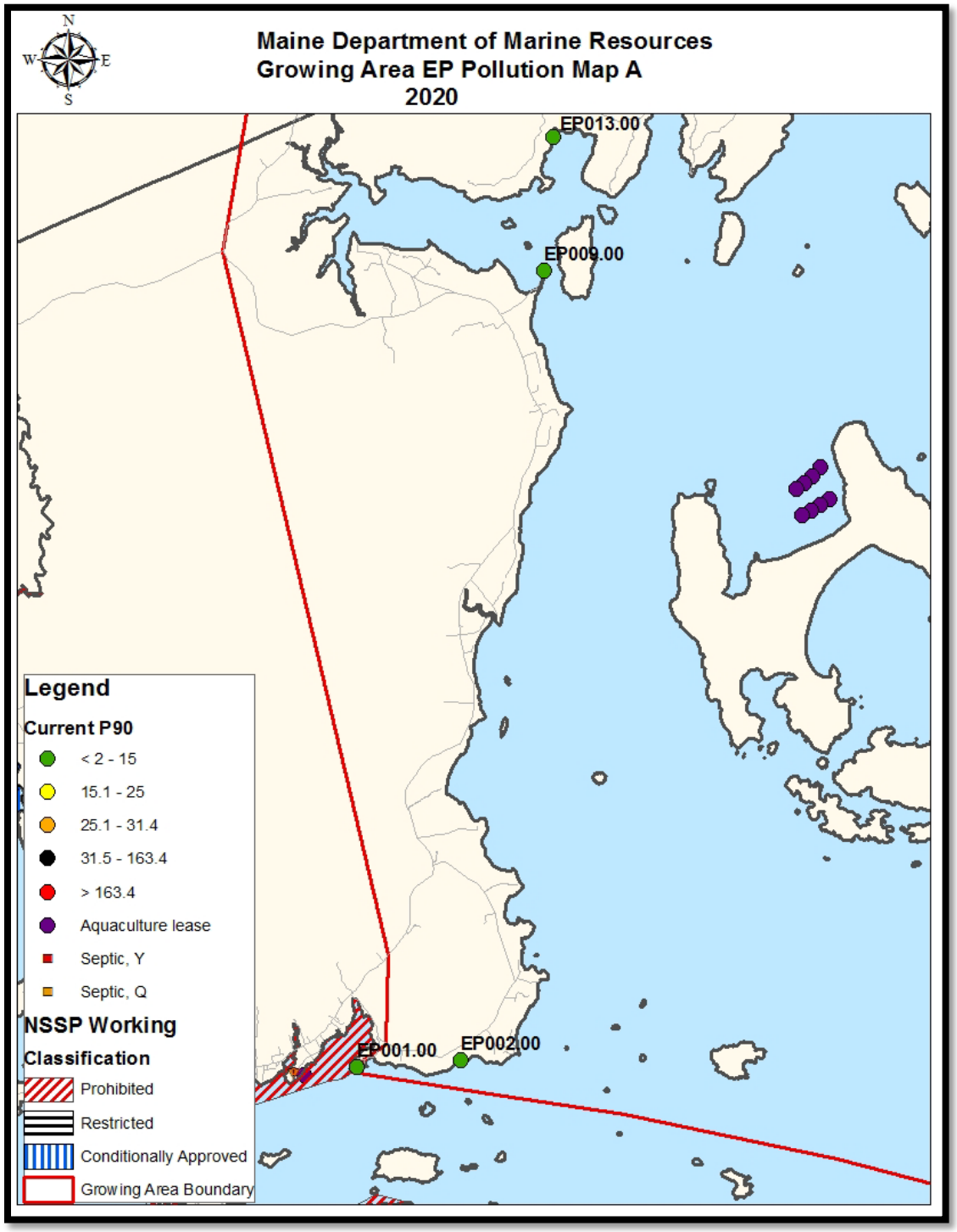


Figure 3. Growing Area EP Pollution Map B

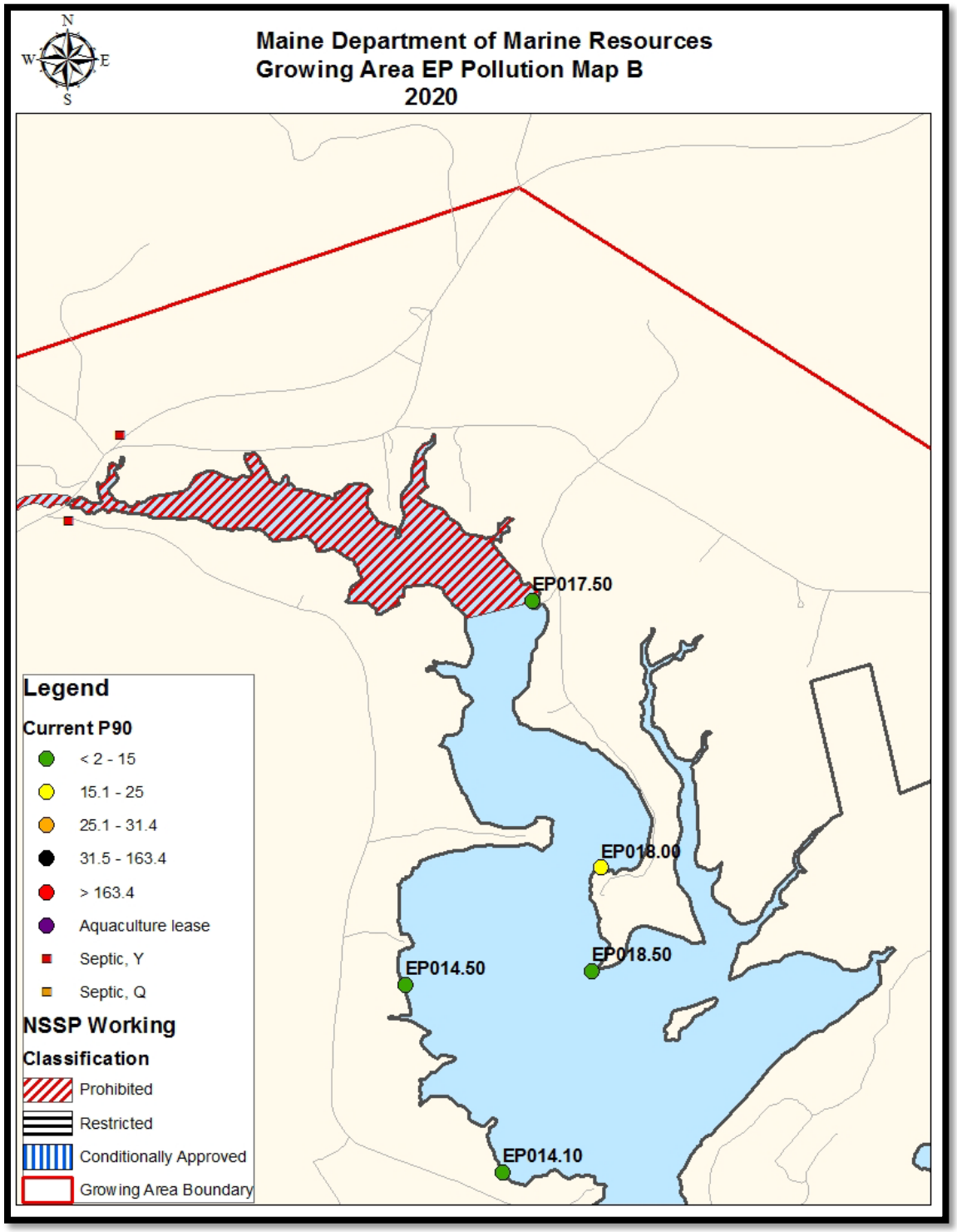
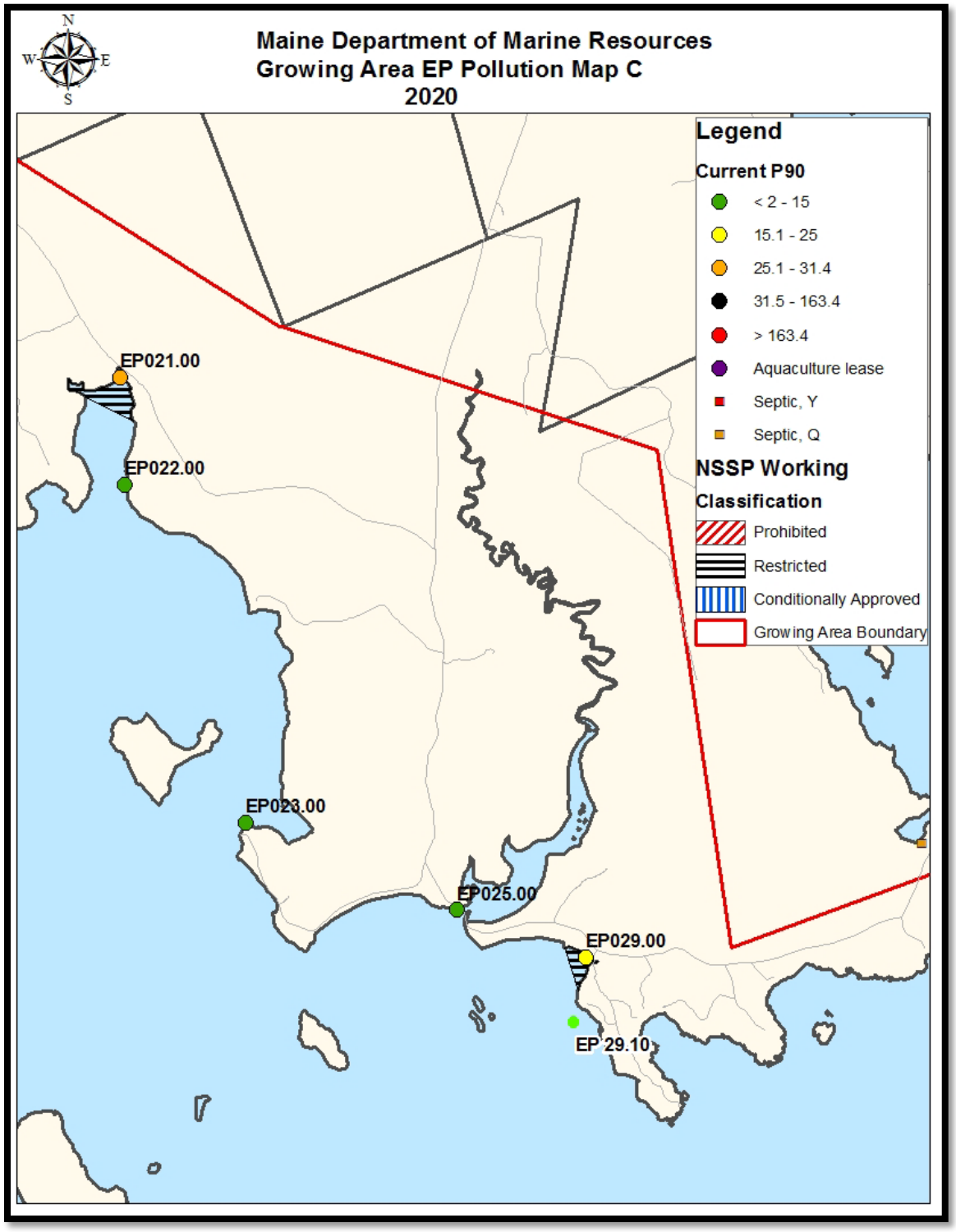


Figure 4. Growing Area EP, Pollution Map C



State and Federal Licensed Waste Discharge Permits

Overboard Discharges (OBDs)

There are no overboard discharges (OBDs) that discharge their treated effluent into the waters of Growing Area EP.

National Pollutant Discharge Elimination System (NPDES)

There are no NPDES discharge permits in this area to include finfish aquaculture, process water, or any other licensed permit.

There are no wastewater treatment plants/facilities (WWTP/WWTF) in the growing area EP.

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 shoreline survey information to determine if the area is safe for shellfish harvest. Table 1 shows all new and pre-existing pollution sources in area EP that are considered discharges into the Growing Area and affect water quality.

Table 1. Growing Area EP Residential Pollution Sources.

Pollution Area	Location ID	Date Surveyed	Direct or Indirect	Problem	Description	Town
EP P.1	EP 15-7	2020	Indirect	Y	Septic overflow pipe	Jonesboro
EP P.1	EP 16-357	2020	Indirect	Y	Overflow pipe far corner of LF	Jonesboro

Industrial Pollution

There are no major industrial pollution sites in growing area EP such as chemical plants, steel mills, shipyards, or refineries.

Small individual storage tanks for gasoline and diesel were noted at two locations in the growing area. These tanks are near the shore. 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 Rogue Bluffs (Schoppe Point), and the Chandler River (Jonesboro) at Evergreen Point

Mooring fields in Rogue Bluffs and Jonesboro are exclusively workboats (lobster boats, trawling vessels) without heads. These are not common overnight stopping areas for recreational boaters and are not identified as pollution risks due to the number of boats and types of usage. Water quality samples sites in the mooring area meet Approved classification.

Stormwater

Stormwater 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, stormwater pollution is caused by the daily activities of people within the watershed. Currently, polluted stormwater is the largest source of water quality problems in the United States.

The primary method to control stormwater discharges is the use of best management practices (BMPs). Also, most major stormwater discharges are considered point sources and require coverage under an NPDES permit. In 1990, under the authority of the Clean Water Act, the U.S. EPA promulgated Phase I of its stormwater 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 5 acres of land or greater, and (3) ten categories of industrial activity. In 1999, US EPA issued Phase II of the stormwater 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 stormwater runoff control, (5) Post-construction stormwater 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 stormwater from 30 Maine municipalities is regulated under the Phase II Small MS4 General Permit however, no municipalities located within the boundaries of growing area EP fall under these regulations. Additionally, the Maine Storm Water Management Law provides stormwater standards for projects located in organized areas that include one acre or more of a disturbed area (Maine DEP 2009).

There are no wastewater treatment plants or combined sewer overflow points within Growing Area EP. This area is primarily rural with no stormwater management other than a few small culverts at key points under low lying roads.

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 sole location, such as discharges from a chemical factory, urban runoff from a roadway storm drain, or 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 Area EP. A total of 80 samples were taken from freshwater streams during the review period (Table 2, Figures 5 and 6).

Table 2. Stream Samples in Growing Area EP 2014-2020; Scores > 163 CFU/100ml are highlighted in red.

Pollution Area	Location ID	Sample date	Pollution Type	Score
EP Approved	EP001-323	5/6/14	Stream	20
EP Approved		6/26/14	Stream	760
EP Approved		9/9/14	Stream	120
EP Approved		12/16/14	Stream	1.9
EP Approved		6/1/17	Stream	1.9
EP Approved		6/15/17	Stream	1.9
EP Approved		7/25/17	Stream	1480
EP Approved	EP004-325	5/6/14	Stream	1.9
EP Approved		6/26/14	Stream	460
EP Approved		9/18/14	Stream	1.9
EP Approved		12/16/14	Stream	1.9
EP Approved		8/20/15	Stream	9.1
EP Approved		6/1/17	Stream	1.9
EP Approved		6/15/17	Stream	84
EP Approved		7/25/17	Stream	148

Pollution Area	Location ID	Sample date	Pollution Type	Score
EP Approved		8/14/17	Stream	36
EP Approved		5/19/20	Stream	1.9
EP Approved		6/1/20	Stream	1.9
EP Approved		6/18/20	Stream	9.1
EP Approved		9/30/20	Stream	200
EP Approved	EP007-327	5/6/14	Stream	15
EP Approved		6/26/14	Stream	920
EP Approved		9/18/14	Stream	10
EP Approved		10/1/14	Stream	>1600
EP Approved		12/16/14	Stream	1.9
EP Approved		6/15/15	Stream	38
EP Approved		6/1/17	Stream	22
EP Approved		7/25/17	Stream	27
EP Approved		8/14/17	Stream	38
EP Approved		5/19/20	Stream	>1600
EP Approved		6/1/20	Stream	32
EP Approved		6/17/20	Stream	31
EP Approved	EP009-328	5/6/14	Stream	2
EP Approved		6/26/14	Stream	1400
EP Approved		9/18/14	Stream	1.9
EP Approved		9/30/14	Stream	2
EP Approved		8/20/15	Stream	25
EP Approved		6/1/17	Stream	8
EP Approved		6/15/17	Stream	24
EP Approved		7/25/17	Stream	35
EP Approved		7/25/17	Stream	1.9
EP Approved		8/14/17	Stream	16
EP Approved	EP009-328	5/19/20	Stream	2
EP Approved		6/1/20	Stream	6
EP Approved		6/17/20	Stream	62
EP R.1	EP023-340	5/6/14	Stream	1.9
EP R.1		6/26/14	Stream	>1600
EP R.1		9/18/14	Stream	300
EP R.1		9/30/14	Stream	33
EP R.1		12/16/14	Stream	52

Pollution Area	Location ID	Sample date	Pollution Type	Score
EP R.1		8/20/15	Stream	16
EP R.1		5/25/16	Stream	48
EP R.1		6/7/16	Stream	400
EP R.1		6/1/17	Stream	1140
EP R.1		6/15/17	Stream	70
EP R.1		7/25/17	Stream	84
EP R.1		8/9/17	Stream	240
EP R.1		9/5/17	Stream	48
EP R.1		9/12/17	Stream	56
EP R.1		5/19/20	Stream	10
EP R.1		6/1/20	Stream	360
EP R.1		6/17/20	Stream	180
EP R.1		9/30/20	Stream	340
EP R.1		5/6/14	Stream	1.9
EP R.1		6/26/14	Stream	>1600
EP R.1		12/16/14	Stream	1.9
EP R.2	EP028-343	5/6/14	Stream	1.9
EP R.2		8/20/15	Stream	116
EP R.2		5/25/16	Stream	46
EP R.2		6/29/16	Stream	460
EP R.2		10/25/16	Stream	24
EP R.2		6/1/17	Stream	4
EP R.2		7/25/17	Stream	150
EP R.2		8/9/17	Stream	6
EP R.2		9/5/17	Stream	1.9
EP R.2		9/12/17	Stream	92
EP R.2		5/19/20	Stream	1.9
EP R.2		6/1/20	Stream	4
EP R.2		6/17/20	Stream	2
EP R.2		9/30/20	Stream	180

Figure 5. Stream Map 1 area EP

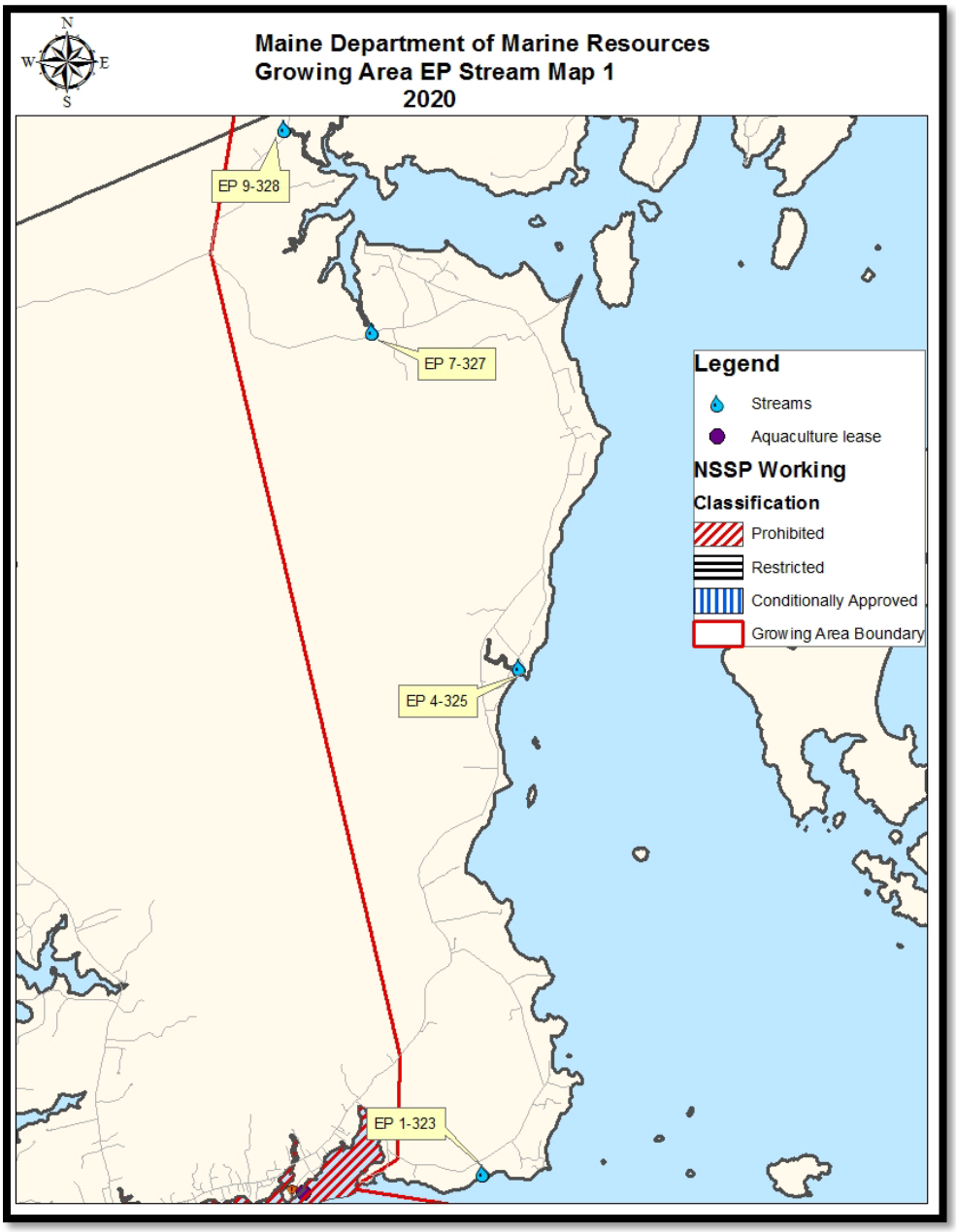
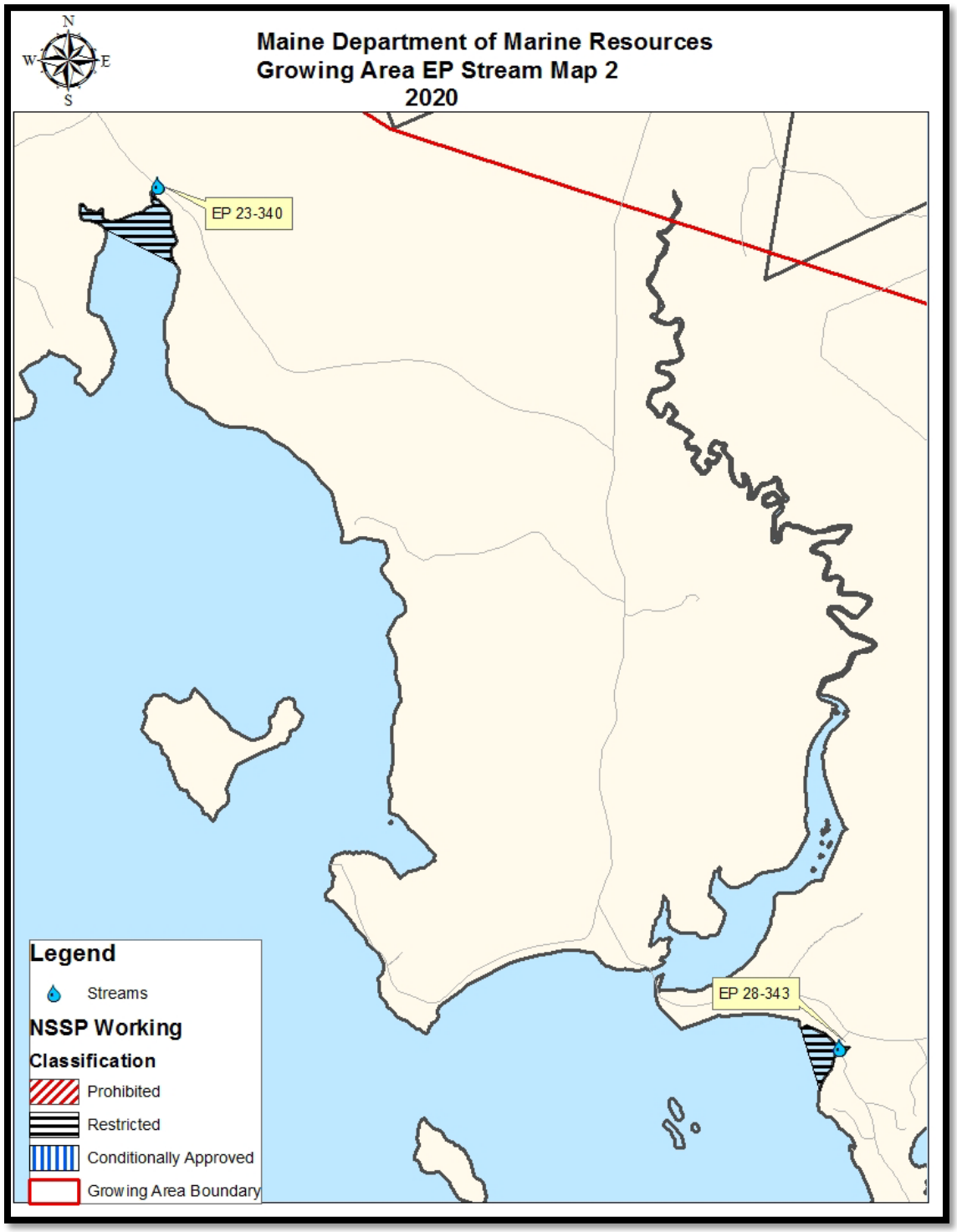


Figure 6. Stream Map 2 area EP



Agricultural Activities

There are no large-scale agriculture activities in Growing Area EP. Smaller farms are encouraged to follow best management practices to help avoid the effects animal waste and agricultural pollutants can have on water quality. Only one small farm on Rogue Island was noted during the survey. This farm is located more than 500' from the shore. And no impact was noted during the survey.

Domestic Animals and Wildlife Activity

The salt marshes and mudflats of the growing area provide valuable habitat to a variety of wildlife. Commonly observed bird species include a variety of gulls, sea and inland ducks, cormorants, geese, great blue herons, egrets, swans, and others. Mammals living within the growing area include dogs, cats, whitetail deer, muskrat, squirrels, chipmunks, rabbits, moles, mice, bats, shrews, weasels, skunks, raccoons, and others. Maine Inland Fish and Wildlife surveys indicate that migratory waterfowl numbers begin to increase in the early autumn months, and typically peak in late fall or early winter. Although large numbers of birds can, in theory, pose a threat to the growing area's water quality, such occurrences are very difficult to document.

Recreation Areas (beaches, trails, campgrounds, etc.

The concern for actual or potential pollution from recreational areas is because many of them allow dogs and some have bathroom facilities. Activities at the recreational areas may contribute to water quality problems by placing added pressure on the watershed. For instance, they may contribute to erosion (trails, building footbridges, etc., dog waste not picked up may accumulate and wash off after rainfall, new trails may be put into areas that didn't have a human activity before and they may put added pressure on wildlife to congregate in other places where we may see water quality decline.

Growing area EP is primarily a rural area with recreation areas limited to small-town parks with no septic facilities. The town of Jonesboro maintains a small picnic area on the Upper Chandler River, there are no septic facilities and it is in a prohibited area EP P.1. There is also some conservation land with hiking trails located east of Evergreen Point. This is strictly a day-use hiking trail area that has no impact on the waters of the growing area. Although there are a few gravel beaches in the area, swimming in the ocean in this area is relatively rare, as the water temperatures rarely exceed 65°F. Recreation areas in EP are not considered to be impacting shellfish harvest areas.

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 National Oceanic and Atmospheric Administration data for a station at Eastport indicate a mean tidal range of 18.35 ft. The mean tidal range for most of Maine is 9 feet to 13 feet. Unlike areas with small diurnal tides, this extreme volume exchange results in significant bacterial dilutions. Currents in the area are predominantly driven by the tides.

Rainfall

The mean annual precipitation in growing area EP is approximately 44 inches and the precipitation is not evenly distributed throughout the year. The wettest months are generally April 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 the 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. No rainfall areas have been identified in growing is EP.

Maine DMR is working collaboratively with the University of Maine on a statewide coastal project determining how various watershed characteristics influence fecal contamination of marine waters during rainfall events. This research clusters watersheds based on similar characteristics then models how rainfall and associated pollution is distributed. The model is being refined to incorporate margin watershed influences.

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. The 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, the 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). The Chandler River is the major river system in growing area EP and drains 51.3 square miles. Many small streams discharge into the growing area and these streams are discussed in the section about nonpoint source pollution.

Hydrographic Influence

Water circulation in Englishmen's Bay is dominated by tides. The tidal range in Englishmen's Bay is 16 feet. Tides are caused by the gravitational effects of the moon and sun on the ocean; other influences are heavy rainfall, low barometric pressure, and strong onshore winds which will increase tides. Tide levels fluctuate during the month based on the positions of the sun, moon, and earth. 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. Growing area EP is subject to a semidiurnal tidal cycle with two high tides and two low tides per day. The tidal cycle is 12 hours and 25 minutes long so that high and low tides are 50 minutes later each day.

Water Quality Studies

Map of Sampling Stations

Most marine fecal pollution of Maine waters comes from non-point sources. DMR uses Systematic Random Sampling (SRS) to monitor this influence and uses a pre-established schedule at an adequate frequency to capture all meteorological, hydrographic, and/or other pollution events that trigger non-point pollution 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 the variance of a data set.

There are presently 14 active water sampling sites in Growing Area EP and 2 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 Area EP meet their current NSSP classification standard. Two water quality stations (EP 21 and29) now have water quality that meets the standards for Approved harvest and will be evaluated for an upgrade in 2021. No stations failed to meet their standards at end of the year 2020.

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. The percent change in P90 from 2019 to 2020 was calculated and only three stations showed a substantial increase in P90 score (Table 4). None of the stations that showed a

substantial percentage of increase in P90 score are in danger of failing to meet their classification standards. Two water quality stations that have shown a substantial percentage decline in P90 (EP21 and EP29) now meet the standard for approved harvest. Overall the water quality in growing area EP appears to be improving or remaining constant.

Table 3. Year-end 2020 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
EP001.00	A	30	2.4	0.32	70	6.3	4/20/2016
EP002.00	A	30	2.1	0.15	8	3.5	4/20/2016
EP009.00	A	30	3.5	0.46	148	14	3/31/2016
EP013.00	A	30	3	0.43	200	11.1	3/31/2016
EP014.10	A	30	2.4	0.2	10	4.5	11/16/2017
EP014.50	A	30	2	0.09	4	2.7	4/20/2016
EP017.50	A	30	3.2	0.41	44	11.2	1/30/2018
EP018.00	A	30	3.8	0.62	740	24.6	1/30/2018
EP018.50	A	30	2.8	0.4	78	9.2	4/20/2016
EP022.00	A	30	2.9	0.42	86	10.3	3/28/2016
EP023.00	A	30	2.4	0.3	33	6.1	2/23/2016
EP025.00	A	30	3.3	0.41	90	11.3	10/18/2016
EP021.00	R	30	5.2	0.54	148	26.2	3/31/2016
EP029.00	R	30	4	0.62	440	24.9	3/28/2016

Table 4. Percent change in P90 2019-2020; Positive numbers show improvement negative numbers indicate a decline

Station	2020P90	2019	%change
EP001.00	6.3	2.9	117.24%
EP002.00	3.5	2.9	20.69%
EP009.00	14	20.4	-31.37%
EP013.00	11.1	13.1	-15.27%
EP014.10	4.5	5.1	-11.76%
EP014.50	2.7	2.5	8.00%
EP017.50	11.2	11	1.82%
EP018.00	24.6	20.7	18.84%
EP018.50	9.2	5.2	76.92%
EP022.00	10.3	6.7	53.73%
EP023.00	6.1	4.5	35.56%
EP025.00	11.3	12.6	-10.32%

Station	2020P90	2019	%change
EP021.00	26.2	36.6	-28.42%
EP029.00	24.9	41.5	-40.00%

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

Three are no CA's in this growing area.

Recommendation for Future Work

Water quality stations EP 21 (Sanborn Cove), and EP 29 (Cow Point) meet the standard for Approved harvest at end of the year 2020 and will be evaluated for a possible upgrade in 2021. No stations in growing area EP required a downgrade due to the end of the year 2020 P90 scores.

Table 5. **Count table of samples collected in growing area EP during the 2020 season.**

Station	Class	Closed	Open	Total	Samples Needed	Comments
EP001.00	A		6	6	6	
EP002.00	A		6	6	6	
EP009.00	A	2	6	8	6	flood
EP013.00	A		6	6	6	
EP014.10	A		6	6	6	
EP014.50	A		6	6	6	
EP017.50	A		7	7	6	
EP018.00	A		6	6	6	
EP018.50	A		6	6	6	
EP021.00	R		7	7	6	
EP022.00	A		6	6	6	
EP023.00	A	2	6	8	6	flood
EP025.00	A		6	6	6	
EP029.00	R		6	6	6	

References

National Shellfish Sanitation Program: Guide for the Control of Molluscan Shellfish, 2015 Revision;

Tide and Wind data, GOMOSS Internet site, West Penobscot Bay Buoy, 2001-2003.

Climatic and hydrographic information, US Coast Guard Coastal Pilot, 2005 edition

U.S. Food and Drug Administration (2001). Applied Concepts in Sanitation Surveys of Shellfish Growing Areas: Course #FD2042 (Training Manual), Volumes I and II.

Town information, 2007-2008 Maine Municipal Directory, Maine Municipal Association, Augusta, Maine 04330

Licensed discharge information, Maine Department of Environmental Protection, Augusta, Maine

Data Layers, Maine Office of GIS, Augusta, Maine

Rainfall data, National Weather Service, Caribou, Maine

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), Investigative (X) 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, the Approved standard is 31, Restricted standard is 163
Min_Date = oldest date sampled included in the calculations.