

**Report to the Joint Standing Committee on Environment  
and Natural Resources  
130<sup>th</sup> Legislature, Second Session**

**2018 / 2020 / 2022  
Integrated Water Quality  
Monitoring and Assessment Report**

***June 2022***

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## EXECUTIVE SUMMARY<sup>1</sup>

### Surface Waters

Updates to water quality assessments for the 2018/2020/2022 Integrated Report were primarily based on monitoring data collected in calendar years 2013 through 2020 for rivers/streams and estuarine/marine waters, 2015 through 2020 for wetlands, and 2015 through 2018 for lakes/ponds; more recent data was consulted where appropriate. For coastal designated beaches, which are included for the first time in the current report, assessments were based on monitoring data collected during beach seasons 2016 through 2020, i.e. once EPA had approved the Beach Action Value. For more information, see the section 'Coastal, Marine Beach Recreational Water Quality Monitoring' on page 106. The report continues to base assessments for all waterbodies on the five main listing categories that were initially established in the 2002 report. These five main assessment categories are as follows:

**Category 1:** Attaining all designated uses and water quality standards, and no use is threatened.

**Category 2:** Attains some of the designated uses; no use is threatened; and insufficient data or no data and information is available to determine if the remaining uses are attained or threatened (with presumption that all uses are attained).

**Category 3:** Insufficient data and information to determine if designated uses are attained (with presumption that one or more uses may be impaired).

**Category 4:** Impaired or threatened for one or more designated uses, but does not require development of a TMDL (Total Maximum Daily Load).

**Category 5:** Waters impaired or threatened for one or more designated uses by a pollutant(s), and a TMDL report is required.

Chapter 4, section Assessment Methodology contains more detailed information on the listing categories and sub-categories.

### SUMMARY OF CHANGES

The size and percentage results from the 2016 and 2018/2020/2022 Integrated Reports (Table 2- 1) are not exactly comparable due to changes in assessment methodology and mapping technology over the years and correction of errors, but they provide an approximation of changes in the total amount of waters in each category. For rivers and streams, the mapping technique that is used includes in listed segments any non-riverine portions of a river or stream, such as where it flows through a lake. This leads to an overestimate of the total river/stream length in any category.

For rivers and streams, there were increases in terms of mileage in Categories 2 and 4, and decreases in Categories 1, 3 and 5. A move of five AUs from Category 1 to Category 2 explain the decrease in the former category and most of the increase in the latter. Category 3 decreased by 11 miles as two waters were removed and two added. Category 4 increased by 66 miles as fourteen waters were added. Category 5 decreased by 13 miles as fifteen waters were removed and fifteen were added.

Table 2- 1 reveals that the lakes and ponds of Maine were relatively stable (as a percentage of total assessed waters) with respect to their listing categories over the period from 2016 to 2022 as only two new listings occurred: Alamoosook Lake (1,133

<sup>1</sup> The Executive Summary is part of Chapter 2 of the full report which is available here: <https://www.maine.gov/dep/water/monitoring/305b/>

acres) was moved from Category 2 to Category 5-A, and Otter Pond (25 acres) was moved from Category 1 to 4-C.

For wetlands, there were increased acres listed in Categories 2, 3 and 5 and no changes in Categories 1 and 4. The increases in Categories 2, 3 and 5 were due to new waters being added; two segments in Category 2 totaling 68.64 acres, eight segments in Category 3 totaling 1,560.25 acres, and two segments in Category 5 totaling 172 acres. The remaining increase in Category 2 acreage is the result of previously included waters being entered into ATTAINS and thus newly included in the summations presented in Table 2- 1. Three of the Category 3 waters were listed as a Category 2 in previous assessments, and two of the Category 5 waters were listed as Category 3 in previous assessments.

For estuarine and marine waters, the creation of new Assessment Units in the 2018/2020/2022 report (see pages 96-97) resulted in the separation of shellfish harvesting designated use segments from non-shellfish harvesting designated use ('all other') segments in Categories 2-5. A quantitative comparison of changes in square miles for AUs in these categories from the 2016 cycle to the 2018/2020/2022 cycle will only be possible once a crosswalk table has been completed. Therefore, 2016 areas are not included in Table 2- 1 (except for Category 1). However, the following information is available. For Category 1, there were no changes. For both types of Category 2 waters (for shellfish and non-shellfish harvesting designated uses), Table 2- 1 now comprehensively includes all assessed areas not included in Categories 3-5. In 2016, Category 2 was the sum of only 2 (out of 21) total AUs that had been quantified at that time. For shellfish harvesting designated use segments, waters in Categories 3 and 5<sup>1</sup> have been newly delineated and encompass all areas assessed by DMR for this use. In 2016, Category 3 waters were correctly presented as two AUs according to the listing methodology in use at the time, and Category 5 was an overestimate due to the possible overlap in segment areas between Category 5-B-1 (a), (b) and (c). For non-shellfish harvesting designated use segments, no changes were made to Categories 4 or 5.

Coastal Designated Beaches were assessed for the first time in the current cycle and thus no 2016 numbers are provided below. The table format has been retained for consistency with other waterbody types.

Table 2-1 Summary of Changes to Surface Water Assessment Categories – 2016 to 2022

Note: '2022' is used as a shorthand for the 2018/2020/2022 cycle. For Rivers and Streams, the Total Miles Assessed do not include waters listed under Category 4-A for atmospheric deposition of mercury; also, this number differs from the total miles of rivers and streams per NHD, see Table 3-1 (~45,000 miles) because the mapping of many AUs is still based on older, lower resolution GIS information, leading to a substantial underestimate of miles assessed.

<b>Rivers and Streams</b>						
35,029 = Total Miles Assessed in 2016						
35,218 = Total Miles Assessed in 2022						
	<b>2016 Miles in Category <sup>1</sup></b>	<b>% of Total 2016 Assessed Miles</b>	<b>2022 Miles in Category <sup>2</sup></b>	<b>% of Total 2022 Assessed Miles</b>	<b>% Change '16 - '22</b>	<b>Change in Miles '16 - '22</b>
Category 1	5,958	17.0	5,277	15.0	-2.0	-681
Category 2	27,343	78.1	28,171	80.0	1.9	828
Category 3	361	1.1	350	1.0	-0.1	-11
Category 4	417	1.3	483	1.4	0.1	66

<sup>1</sup> For this use, Category 4 waters consist entirely of CSO-impacted waters in Category 4-A; these waters are of undetermined size.

Category 5	951	2.9	938	2.7	-0.2	-13
<b>Lakes</b>						
986,952 = Total Acres Assessed in 2016						
986,952 = Total Acres Assessed in 2022						
	<b>2016 Acres in Category</b>	<b>% of Total 2016 Assessed Acres</b>	<b>2022 Acres in Category</b>	<b>% of Total 2022 Assessed Acres</b>	<b>% Change '16 - '22</b>	<b>Change in Acres '16 - '22</b>
Category 1	295,443	29.9	295,418	29.9	<0.01	-25
Category 2	606,945	61.5	605,812	61.4	0.1	-1,133
Category 3	0	0	0	0	0	0
Category 4	75,915	7.7	75,940	7.7	<0.01	25
Category 5	8,649	0.9	9,782	1.0	0.1	1,133
<b>Wetlands</b>						
6,445 = Total Acres Assessed in 2016						
14,194.5 = Total Acres Assessed in 2022						
	<b>2016 Acres in Category <sup>1</sup></b>	<b>% of Total 2016 Assessed Acres</b>	<b>2022 Acres in Category</b>	<b>% of Total 2022 Assessed Acres</b>	<b>% Change '16 - '22</b>	<b>Change in Acres '16 - '22</b>
Category 1	15	0.2	15	0.1	-0.1	0
Category 2	3,870	54.8	6,344.77 <sup>4</sup>	44.7	-10.1	2,474.77
Category 3	1,782	35.5	6,933.97	48.8	13.3	5,151.97
Category 4	416 <sup>3</sup>	4.9	388	2.7	-2.2	0
Category 5	362	4.6	512.76	3.6	-1.0	150.76
<b>Estuarine and Marine Waters – Shellfish Harvest Designated Use <sup>5</sup></b>						
2,875 <sup>6</sup> = Total Square Miles Assessed in 2016						
2,884 <sup>7</sup> = Total Square Miles Assessed in 2022						
	<b>2016 Square Miles in Category</b>	<b>% of Total 2016 Assessed Square Miles</b>	<b>2022 Square Miles in Category</b>	<b>% of Total 2022 Assessed Square Miles</b>	<b>% Change '16 - '22</b>	<b>Change in Square Miles '16 - '22</b>
Category 1	0.00	0.00	0.00	0.00	0.00	0.00
Category 2			2,490	86.4		
Category 3			356	12.3		
Category 4			0.00	0.00		
Category 5			37	1.3		
<b>Estuarine and Marine Waters – All Other Designated Uses <sup>5</sup></b>						
2,875 <sup>6</sup> = Total Square Miles Assessed in 2016						
2,889 <sup>8</sup> = Total Square Miles Assessed in 2022						
	<b>2016 Square Miles in Category</b>	<b>% of Total 2016 Assessed Square Miles</b>	<b>2022 Square Miles in Category</b>	<b>% of Total 2022 Assessed Square Miles</b>	<b>% Change '16 - '22</b>	<b>Change in Square Miles '16 - '22</b>
Category 1	0.00	0.00	0.00	0.00	0.00	0.00
Category 2			2,876	99.5		
Category 3			0.00	0.00		
Category 4 <sup>9</sup>			5	0.2		
Category 5 <sup>10</sup>			8	0.3		
<b>Estuarine and Marine Waters – Coastal Designated Beaches</b>						
0 = Total Miles Assessed in 2016						
39.02 = Total Miles Assessed in 2022						
			<b>2022 Miles in Category</b>	<b>% of Total 2022 Assessed Miles</b>		
Category 1			0.00	0.00		
Category 2			36.99	95		
Category 3			1.21	3		
Category 4			0.00	0.00		
Category 5			0.82	2		

<sup>1</sup> Single-Category Reporting miles as generated by 2016 cycle ADB.

<sup>2</sup> Single-Category Reporting miles as generated by 2022 cycle ATTAINS.

<sup>3</sup> There was an error in calculating the 2016 Category 4 Acres, should have been listed as 388 acres.

<sup>4</sup> Excludes AUs in Cat 2 where default value of 0.1 acres is entered in ATTAINS

<sup>5</sup> For the first time in the 2022 cycle, estuarine and marine waters (not including Coastal Designated Beaches) are assessed separately for attainment of the Shellfish Harvest designated use and “All Other” designated uses. As such, total area and area assessed per category are presented separately.

<sup>6</sup> This value was carried forward from 2014 instead of updating it to a summation of 2016 Categories 2-5. Such a summation would have resulted in a significant underestimate of total acres assessed due to the significant underestimate of Category 2 waters.

<sup>7</sup> This value represents the area regulated by the Maine Department of Marine Resources for shellfish harvest.

<sup>8</sup> This value includes a more accurate area of state jurisdictional estuarine and marine waters generated during the creation of new assessment units for the 2022 cycle.

<sup>9</sup> Variable additional miles due to Combined Sewer Overflow waters.

<sup>10</sup> All estuarine and marine waters capable of naturally supporting lobster propagation are affected by a shellfish (lobster tomalley) consumption advisory due to the presence of PCBs and dioxins. A statewide marine consumption advisory for several saltwater finfish and shellfish species is also in effect based on elevated mercury, PCB and dioxins. Category 5 acreage does not include marine waters under these statewide consumption advisories.

All freshwaters in Maine are listed for an impaired Fish Consumption Use caused by mercury from sources beyond the region; river and stream miles and lake acres affected by this statewide listing are not recorded in Table 2- 1. These waters were listed in Sub-Category 5-C in the 2006 Integrated Report. On December 20, 2007, EPA approved a Regional Mercury TMDL, which allowed these waters to be moved to Category 4-A in the 2008 cycle. The New England States and New York developed the Regional Mercury TMDL to address mercury impairments caused by sources outside the Region. The State of Maine has already taken aggressive action to reduce sources of mercury within the State’s jurisdiction. Further action will be required from sources outside the State’s boundaries to provide the desired reduction of mercury in Maine’s waters. Category 5-D, Legacy Pollutants, includes many mainstem river segments that are listed for non-attainment of the Fish Consumption Use due to PCBs in fish tissue.

## GROUNDWATER

Groundwater Programs are described in Chapter 6. Responsibility for groundwater resource assessment and protection is shared amongst the DEP, the Department of Health and Human Services’ (DHHS) Division of Environmental Health, the Maine Geological Survey (MGS) in the Department of Agriculture, Conservation, and Forestry (DACF), and the U. S. Geological Survey (USGS). Other agencies, such as the Department of Transportation (DOT), DACF - Agricultural Compliance Program may investigate groundwater contamination problems in certain areas and undertakes management practices designed to reduce the risk of harm to groundwater quality.

Ambient monitoring refers to large-area, long term monitoring conducted to obtain trend information on groundwater quality or quantity. MGS and USGS carry out these types of monitoring projects under several cooperative agreements. MGS and USGS maintain a statewide network of groundwater observation wells to track changes in water quality and quantity.

Major impediments to effective groundwater protection in Maine include a lack of data to quantify the impact of some nonpoint pollution sources, and general public unfamiliarity with key groundwater concepts and issues. Public misconception about groundwater is probably the major factor contributing to degradation of this resource. The development of a comprehensive and accessible database for water data (Environmental and Geographic Analysis Database, EGAD) has increased the accessibility of the wide variety of data collected on water quality by various state

agencies. Continuing use of this database will improve operations at the agencies responsible for groundwater protection and assessment, and allow access to data on which to base educational efforts to increase the public's awareness of groundwater issues. Relative to groundwater protection, the principal uses of this database are to (1) help design clean-up strategies in areas of known contamination; (2) plan future development that provides for better protection of public health and safety; (3) assist in prioritizing protection of sensitive groundwater and surface water bodies, wetlands, and other resources; (4) enhance understanding of the spatial relationships between water resources and population as they relate to potential or known pollution sources; and (5) assess the flow and transport interrelationships between ground- and surface water, in order to evaluate groundwater impacts on surface water bodies and on groundwater-dependent habitat.