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Maine Combined Sewer Overflow 2017 Status Report

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Introduction

The purpose of this report is to inform the Combined Sewer Overflow (CSO) communities and the general public on the status of the CSO program in the State of Maine.

The CSO program compiles information from various documents and reports submitted to the Maine Department of Environmental Protection by the CSO Communities (City/Town/District) or their consultants on their behalf. A majority of the information comes from the CSO Master Plans (a.k.a. Long Term Control Plans), Sewer System Evaluation Studies, Inflow/Infiltration Reports, Annual CSO Progress Reports, and general correspondence.

At the start of any CSO Community's abatement program, initial flow data was collected to estimate the existing discharge volumes and frequencies, define the problems, and establish a corrective course of action. This often occurred over a relatively short period of time (a year or two) and may not have captured as many representative wet weather events as desired. However, this data was the best available information at the time and established the overflow baselines that are used within this report. Since then, CSO flow monitoring plans have continued to improve and overall data reliability has increased, giving the program better data for specific yearly wet weather patterns.

What Are CSOs?

- Combined Sewer Systems (CSS) – are defined as collection systems which carry a combination of sanitary wastewater, stormwater, and sometimes industrial wastes within the same pipes. They are typically older collection systems designed and installed prior to advent of wastewater treatment facilities.
- Combined Sewer Overflows (CSOs) are discharges of untreated wastewater from municipal CSS's. CSO's typically consist of two components; a CSO Regulator where the untreated wastewater exits the sewer system, and a CSO outfall where the wastewater is discharged to a receiving water.
- CSO discharges occur mostly during and after rain events or snowmelt. Flows within the CSS during these wet weather events can be as high as fifty (50) times the normal dry weather flows.
- Large volumes of water entering the CSS through catch basins, old and leaky pipes, roof drains, cellar drains, sump pumps, and other sources can cause the capacity of the system to be exceeded, resulting in discharges.
- CSO's were originally added as hydraulic relief points within the CSS to allow the excess flows to be discharged. These relief points are generally at topographic low points, near pump stations and river crossings.

What Are The Impacts Of CSOs?

- Currently there are 31 Maine communities (Towns, Cities, Utility Districts) with CSO discharge points in their sewerage systems (reduced from an original 60). These communities collectively have 139 individual CSO discharge points (reduced from the original 340).
- The frequency of discharges varies greatly from community to community, ranging from seldom, to occurring in response to all but the smallest rain storms.
- In large communities hundreds of millions of gallons per year of untreated combined sanitary sewage and storm water may be discharged. In the past three years statewide, total annual CSO discharges have ranged from approximately 294 to 548 million gallons. For comparison, the estimated volume from 1989, when most CSO abatement programs were just starting, was 6.2 billion gallons.
- CSO's discharge untreated combined sewage to receiving waters that vary in size from the Atlantic Ocean and large rivers to small streams and drainage creeks.
- Water quality is impaired by the addition of floatable solids, bacteria, and sometimes industrial pollutants that may be present in CSO discharges.
- Potential public health impacts from CSO discharges include the closure of beaches and shellfishing areas due to bacterial contamination, and the potential for drinking water supplies to be threatened.
- During wet weather, flows in a CSS can hydraulically overload the capacity of the collection system leading to treatment facility upsets, sanitary sewer overflows (SSO's), street flooding, and back-ups into basements.

What Is A CSO Community?

- CSO communities are permitted dischargers of untreated combined sanitary and storm waters. The Department of Environmental Protection issues CSO communities a wastewater discharge license that requires them to implement the Environmental Protection Agency's (EPA) Nine Minimum Control Best Management Practices (BMPs) for CSO's and develop, maintain and implement a CSO Master Plan (aka the Long Term Control Plan (LTCP)) to eliminate or abate their overflows, bringing them into compliance with EPA's April 19, 1994 Combined Sewer Overflow (CSO) Control Policy, the Clean Water Act, and State law.
- Special Conditions in a CSO community's Maine Pollutant Discharge Elimination System (MEPDES) permit/Waste Discharge License require all CSO communities to submit an Annual CSO Progress Report to the Department for the previous year, by March 1st of the following year.
- The Annual CSO Progress Report documents the community's efforts to comply with the Nine Minimum Controls for CSO abatement, and collects pertinent fiscal and logistical information about their CSO abatement program. This information is used to track their CSO abatement progress and gather state-wide information on the CSO program and fiscal needs.

Where Did We Start?

- The CSO movement began in 1989 with the publication of the National CSO Control Strategy by the EPA.
- At that time, the State of Maine had about 60 CSO Communities that discharged an estimated 6.2 billion gallons of untreated wastewater and storm water into the surface waters of the State, primarily during wet weather events.
- At the start of the program in the late 1980's, CSO communities reported that over 1,700 individual CSO discharge events were occurring each year, through approximately 340 CSO outfall locations (an average of 5 discharge events per CSO location per year).
- On April 19, 1994 EPA issued a national policy statement entitled "Combined Sewer Overflow (CSO) Control Policy." This policy provided guidance to State permitting authorities and CSO communities on coordinating the planning, selection, and implementation of CSO controls, that once implemented, would allow CSO communities to achieve compliance with the requirements of the Clean Water Act (CWA).
- In February 2000, the Maine Department of Environmental Protection Chapter 570 Rules, entitled "Combined Sewer Overflow Abatement," took effect. This chapter established procedures for CSO evaluation, preparation of an abatement plan, and set forth minimum controls to reduce CSOs while long-term plans are completed.
- In December 2000, as part of the Consolidated Appropriations Act for Fiscal Year 2001 (P.L. 106-554), Congress amended the Clean Water Act (CWA) by adding Section 402(q), commonly referred to as the Wet Weather Water Quality Act of 2000. Section 402(q) requires that each permit, order, or decree issued pursuant to the CWA for a discharge from a municipal combined sewer system shall conform to the 1994 EPA CSO Control Policy.

What Is Being Done To Eliminate / Abate CSO Discharges?

- All of Maine's CSO Communities have completed or are currently working on implementing the CSO controls recommended in their CSO Master Plan, often referred to as a Long Term Control Plan. These documents define the magnitude of the CSO discharges, their impacts on the environment, evaluate a range of abatement control alternatives and their financial impacts, and recommend a set of CSO controls that will eliminate / abate CSO discharges.
- CSO abatement projects have reduced the discharge of untreated, combined sewage to receiving waters in all of the CSO Communities. Fourteen communities have eliminated their CSO discharges entirely and are no longer licensed to discharge untreated combined sewage during wet weather.
- Statewide, **currently licensed** CSO Communities have reported investing approximately \$579 million in CSO abatement since the program started (\$34 million in 2017 alone). Of the total invested to date, the Maine Clean Water State Revolving Fund (CWSRF) has contributed \$340.7 million (63% of total expenditure on CSO abatement

by current CSO communities).

- Statewide, **previously licensed** CSO Communities, that since have left the program, reported investing a total of approximately \$462 million on CSO abatement, with the CWSRF providing \$114.7 million of that total (25% of total expenditure on CSO abatement by prior CSO communities).
- Anticipated infrastructure needs of current CSO communities over the next five years are estimated to be approximately \$201 million.

Where Are We Now?

2017 Status

- 1) In 2017, the 31 currently licensed CSO Communities reduced the total number of CSO discharge locations by three (3), from 142 to 139, (a complete listing of Maine's CSO Communities, the number of CSO locations, and the corresponding receiving waters are listed on page 8). CSO's were closed in the communities of Biddeford (1), Bucksport (1), and Saco (1). With the addition of 2017 data, the chart on page 14, **Maine Statewide Number of Combined Sewer Overflow Outfalls**, shows a 59% reduction in the overall number of CSO locations in Maine since 1988.
- 2) In 2017, the CSO Communities reported a total of 269 overflow event days which is the number of days that each CSO Community experienced an overflow. An overflow event is any calendar day that one or more CSO locations within a community experiences a discharge. The table on page 10, **Maine CSO Community Annual Number of CSO Discharge Events**, contains a historic listing of the annual number of CSO discharge events for each CSO Community.
- 3) The maximum number of overflow event days reported in 2016 from a single CSO community was fifty-five (55). The average (mean) number of discharge event days for all communities was nine (9) event days and the median was two (2) event days. Additional information can be found in the table on page 10, **Maine CSO Community Annual Number of CSO Discharge Events**.
- 4) Since 1989, the statewide average annual precipitation in Maine has been approximately 47 inches. In 2017, the annual precipitation measured by CSO Communities varied significantly from 31.92 to 47.84 inches with an average of 40.52 inches. The **Maine Yearly CSO Volumes and Precipitation** chart on page 16 compares annual CSO discharge volumes to annual precipitation. The chart illustrates that CSO discharge volumes tend to mirror the annual upward and downward trends in precipitation totals. The chart also shows a progressive widening of the gap between the annual precipitation trend line and the annual CSO discharge volume trend line. This widening gap appears to indicate that as CSO abatement projects continue to be completed, overflow volumes are becoming less influenced by precipitation events.
- 5) The CSO volume discharged statewide in 2017 was reported to be approximately 294 million gallons. The table on page 9, **Maine CSO Community Flow Data**, contains a historic listing of the annual overflows from each CSO Community. The **Maine 2017**

CSO Flow Comparison pie chart on page 17 and the **Maine 2017 CSO Flow Comparison by Community** bar chart on page 18 show graphical comparisons of these overflow volumes between the CSO Communities.

- 6) The precipitation in 2017 had a weighted average of 40.35”, which was 4% lower than 2016’s precipitation. This 1.6” drop in annual precipitation in 2017 contributed to a 46% decrease in overall CSO discharge volume compared to the previous year, from 548.6 MG to 294.5 MG.
- 7) A comparison of statewide annual precipitation totals over a longer time frame, indicates the 2017 total of 40.35” falls below the weighted average precipitation for the previous five years (44.4”), and below the weighted average precipitation since 1989 (47.07”). If one compares the 2017 overflow volume (294.5 MG) with the average overflow volume from the previous five years (740.2 MG), it shows a reduction of approximately 60%, while the rainfall in 2017 was only 9% less than the average rainfall for the same five-year period.
- 8) In 2017, the top five (5) CSO communities, ranked by discharge volume, accounted for approximately 92.7% of the total CSO volume discharged in the State. The top ten (10) CSO communities accounted for approximately 98% of the total CSO discharge volume. The remaining twenty-one (21) CSO communities accounted for less than 2% of the total CSO discharge volume. See the **Maine 2017 CSO Flow Comparison** pie chart on page 17 for a graphical comparison of CSO dischargers.
- 9) CSO discharges by the City of Portland and the Portland Water District accounted for approximately 60% of Maine’s total CSO discharge volume in 2017; see the **Maine 2017 CSO Flow Comparison** pie chart on page 17. Given the outsized impact that Portland’s CSO discharge contribution has on the State’s total discharge volume, it may be informative to exclude Portland’s data when examining Maine’s overall CSO abatement progress. After removing Portland’s CSO discharge volume from the state total, the overflow volume from the remaining thirty CSO Communities decreased from approximately 155.2 million gallons in 2016, to 118 million gallons in 2017, a reduction of over 23%.
- 10) The chart on page 19 – **Maine 2017 CSO Volume Discharged by Watershed**, is a graphical representation of the CSO volumes discharged by major watershed. In 2017, Casco Bay received approximately 60.9% of the statewide CSO volume discharged, followed by the Saco River at 16.9%, the Androscoggin River at 12.4%, the Penobscot River at 4.5%, the Kennebec River at 3.1%, and the St. Croix River at 1.5%. Discharges to Frenchman Bay, the St. John River, and the Machias River accounted for the remaining ~0.7% of combined sewer overflow volumes. The 2017 data shows a significant reduction in CSO discharge volume compared to 2016 for the Androscoggin River (a 20.7% decrease), the Kennebec River (34.8%), the Penobscot River (73.5%), the Saco River (50%), the Machias River (77.6%), Frenchman Bay (18.7), and Casco Bay (46.1%). A smaller reduction was achieved for the St. Croix River (2.5%). The St. John River was the only watershed in Maine where CSO discharges increased in 2017, compared to 2016 volumes (from zero to 1.56 MG). The Table on page 20 - **Maine Annual CSO Volume Discharged by Watershed**, shows the reported CSO discharge

volumes for each CSO community grouped by the receiving watersheds, both for 2017 and the previous five years.

- 11) CSO discharges are well documented contributors to beach and shellfish closures. Stating with certainty that specific CSO events are solely responsible for specific closures is more difficult and is beyond the scope of this report. In some areas of the State there may be other factors that contribute to a beach or shellfishing area being closed. These may include, but are not necessarily limited to: urban storm water runoff, malfunctioning septic systems, domestic and non-domestic animal waste, agricultural runoff, and bathers. What is being assessed in this Annual Report is which beaches and shellfishing areas may have been impacted by CSO discharges.
- 12) In 2017, seven (7) CSO Communities reported possible impacts on thirteen (13) beach areas from CSO discharges. They were: Bar Harbor (Town Beach off Town Pier & Hulls Cove); Biddeford/Saco (Hills Beach, Biddeford Pool, Middle Beach, Fortunes Rock Beach & Camp Ellis); Cape Elizabeth (Cliff House Beach, Casino Beach & Fort Williams Park); Portland (East End Beach); South Portland (Willard Beach); and Calais (Red Beach – though not considered a swimming beach). The following beach advisories were reported to the Maine Healthy Beaches web-site (www.maineoastdata.org/public/CurrentBeachStatus.aspx) in 2017 due to rainfall or contamination, though not specifically identified as being caused by CSO activity: Portland, East End: 1 advisory and South Portland, Willard Beach: 4 advisories).
- 13) In 2017, five (5) CSO Communities reported that shellfishing areas could have been impacted by their CSO discharges (Bar Harbor, Biddeford, Calais, Machias, and Portland). All five (5) communities reported shellfishing area closures, which may or may not have been attributed to CSO activity.

Overall Trends and Considerations

- 1) The volume and frequency of CSO discharges vary from one wet weather event to the next based on existing groundwater conditions, frozen or thawed ground, snowmelt, and rainfall volume, duration, and intensity. To evaluate CSO abatement progress it is best to look for an historical trend in reductions, rather than totals from year to year. The chart on page 12, **Maine Statewide Combined Sewer Overflow Volume Discharged**, illustrates the continuing overall downward trend in the CSO volume discharged annually. Since 1989, the overall CSO volume discharged annually has decreased by approximately 95% statewide.
- 2) Similarly, the chart on page 13, **Maine Statewide Combined Sewer Overflow Annual Number of Discharge Events**, shows an overall downward trend in the number of overflow event days per year. Since 1989, the number of overflow event days experienced per year has decreased by approximately 85% statewide.
- 3) CSO abatement progress should not be measured solely by comparing the volumes discharged from one year to the next, because the volume discharged is influenced by variations in precipitation amounts, intensity and timing, the total area drained by the collection system, the rate of snow melt, frozen or thawed ground, and existing

groundwater levels. Even given the same annual precipitation, it is highly unlikely that any two years would result in the same volume of CSO discharges because of the complex relationship between these variables.

- 4) Trying to compare CSO abatement progress from year to year is difficult due to the varying conditions that influence the volume and frequency of overflows, not the least of which is annual precipitation patterns. To partially compensate for the fluctuation in annual precipitation patterns, the total volume of untreated combined sewage discharged can be unitized by taking into consideration the average annual precipitation received by each CSO Community. Just divide CSO volume by annual precipitation reported in inches to obtain a volume discharged per inch of precipitation. The chart on page 15, **Maine Combined Sewer Overflows Annual Volume Discharged per Inch of Precipitation**, illustrates unitized CSO discharge volume per year. This chart shows a continuing downward trend in the volume of combined sewage discharged per inch of annual precipitation. Since 1989, overflow volumes have decreased from approximately **128** million gallons per inch of precipitation to **7** million gallons per inch of precipitation, a reduction of 94.5%. The reduction in CSO discharge volume per inch of rain, mirrors the overall reduction in annual CSO discharge volume achieved statewide thus far (95.2%). This analysis is useful as a general indicator of the CSO abatement progress that is being accomplished.
- 5) Precipitation and the CSO volume discharged does not have a simple linear relationship. Still, generally, as precipitation levels increase, the volume of combined sewage being discharged per inch of precipitation would increase, because of the sewers finite capacity to capture more storm water. Once the capacity of the combined sewer system is reached, any additional rainfall or snowmelt would overflow the already inundated system.
- 6) The susceptibility of a CSO community's sewer collection system to excessive inflow and infiltration (I&I) is dependent on many factors including age and condition of pipe, degree of separation, quality of the original installation, how well the system has been maintained, etc. Therefore, wet weather conditions and precipitation patterns affect individual CSO Communities differently. Systems with a large number of catch basins or roof drains still connected, or with a high percentage of impermeable surfaces, may be influenced to a greater degree by the inflow generated by intense summer storms. In communities where the sanitary and storm systems are largely separated and inflow is not the main challenge, the cause of wet weather discharges might be more infiltration based. In these systems, a high ground water table, often occurring in the spring can promote infiltration into the collection system via leaky pipes and manholes. Therefore, direct comparisons between communities regarding their CSO abatement progress could be misleading.
- 7) From 2005 through 2016, the City of Biddeford under-estimated their CSO discharges because of flow meter issues. For this report, CSO volumes for Biddeford have been revised using a hydraulic model of the system, to more accurately reflect the level of discharge.



MAINE COMBINED SEWER OVERFLOW (CSO) COMMUNITY LIST (As of December 31, 2017)

COMMUNITY/PERMITTEE	Outfalls	Regulators	No. of CSO Outfalls & Receiving Water
1. AUBURN SEWERAGE DISTRICT	2	2	2-Androscoggin R.
2. BANGOR	9	9	6-Kenduskeag Str., 3-Penobscot R.
3. BAR HARBOR (Hulls Cove)	1	1	1-Frenchman Bay
4. BAR HARBOR (Main Plant)	3	3	2-Frenchman Bay, 1-Eddie Brook
5. BATH	4	4	4-Kennebec R.
6. BELFAST	2	2	2-Passagassawakeag R./Belfast Hbr.
7. BIDDEFORD	7	14	8-Saco R.
8. BREWER	4	4	3-Penobscot R., 1-Sedgeunkendunk Str.
9. BUCKSPORT	0	0	SWIRL to Penobscot R.
10. CALAIS	5	5	4-St. Croix R., 1-Landing Bk.
11. CAPE ELIZABETH – Ottawa Road PS (Co-Permittees: So. Portland, PWD, & Cape Elizabeth)	1	1	1-Atlantic O.
12. GARDINER	1	1	1-Kennebec R.
13. GREATER AUGUSTA UTILITY DISTRICT (GAUD) & Hallowell Sanitary Sewers & CSO	18	25	1-Kennedy Bk., 17-Kennebec R.
14. HAMPDEN	1	1	1-Soudabscook Str.
15. KENNEBEC SANITARY TREATMENT District (KSTD)	3	3	3-Kennebec R.
16. LEWISTON	8	9	3-Androscoggin R., 1-Goff Bk./Hart Bk., 4-Jepson Bk.
17. LEWISTON-AUBURN Water Pollution Control Authority (LAWPCA)	1	1	1-Androscoggin R.
18. MACHIAS	2	2	2-Machias R.
19. MADAWASKA	2	2	2-St. John R.
20. MECHANIC FALLS SANITARY DISTRICT	2	2	2-Little Androscoggin R.
21. MILFORD	1	1	1-Penobscot R.
22. OLD TOWN	3	3	2-Penobscot R., 1-Stillwater R.
23. ORONO	1	1	1-Penobscot R.
24. PARIS UD	1	1	1-Little Androscoggin R.
25. PORTLAND – CITY	10	15	6-Back C., 1-Capisc Bk., 4-Portland Hbr., 1-Nason Bk. to Fore Rv. (marsh)
26. PORTLAND – PORTLAND WATER DISTRICT (PWD)	20	20	9-Back C., 3-Casco B., 4-Fore R., 2- Portland Hbr.
27. RANDOLPH	1	1	1-Kennebec R.
28. ROCKLAND	1	1	1-Rockland Hbr.
29. SACO	3	3	3-Saco R.
30. SKOWHEGAN	7	7	7-Kennebec R.
31. SOUTH PORTLAND	6	6	1-Barberry Ck., 1-Fore R., 1-Calvery P., 2-Portland Hbr., 1-Long Ck.
32. WESTBROOK	5	5	5-Presumpscot R.
33. WINSLOW	3	3	2-Sebasticook R., 1-Kennebec R.
34. WINTERPORT SEWERAGE DISTRICT	1	1	1-Penobscot R.
TOTAL CSOs	139	159	

34 CSO Permits, permitting 31 CSO Towns/Cities

Two or more permits in one CSO Town/City

Two CSO Towns/Cities covered in one permit

Community has former CSO outfall that now receives primary treatment and disinfection.

CSO Regulator – where waste water exits the sanitary sewer system CSO Outfall – where waste water is discharged to the receiving water

Bold = 9 communities with sewer system only. Sewers discharge to a POTW controlled by another entity.

MAINE CSO COMMUNITY ANNUAL NUMBER OF CSO DISCHARGE EVENTS

Community	NPDES Permit No.	1987	1988	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Auburn S.D.	ME0100005	80	80	62	24	58	37	42	59	61	37	11	8	5	5	2	8	2
Bangor	ME0100781	53	53	49	42	46	58	25	65	78	73	54	29	27	34	20	28	21
Bar Harbor	ME0101214 & ME0102466	155	155	16	5	22	18	10	27	28	19	6	13	6	17	5	2	3
Bath	ME0100021	64	64	23	20	33	32	25	29	21	20	12	23	18	18	8	14	10
Belfast	ME0101532	7	7	0	0	5	3	5	4	3	6	3	0	0	0	1	0	0
Biddeford	ME0100048	180	180	93	61	104	82	70	53	46	28	100	146	77	88	48	57	55
Brewer	ME0100072	95	95	66	72	78	45	38	59	56	50	45	5	3	3	1	2	0
Bucksport	ME0100111	53	53	25	8	24	18	2	0	0	0	0	0	0	0	0	0	0
Calais	ME0100129	15	15	15	9	15	5	8	10	14	8	6	14	8	14	6	7	9
Cape Elizabeth	ME0102806	5	5	2	5	20	20	5	11	17	12	6	11	2	12	2	6	2
Corinna S.D.	ME0100153	30	30	1	0													
Dover-Foxcroft	ME0100501	8	8	0	0	2	0											
East Millinocket	ME0100196	11	11	0	0	0	0											
Fairfield	ME0102393	15	15	0	0	0	0	0	0	0	0	0	0	0				
Fort Kent U.D.	ME0102369	10	10	2	1	4												
Gardiner	ME0101702	40	40	24	11	41	14	2	8	2	12	6	6	3	3	2	2	5
Greater Augusta U.D.	ME0100013	80	80	70	58	73	50	29	34	35	32	37	29	22	29	17	17	29
Hallowell W.D. - 2008 GAUD	ME0101010	14	14	2	0	14	3	3	-	-	-	-	-	-	-	-	-	-
Hampden	ME0102512	1	3	2	0	13	0	1	0	1	1	1	0	0	0	1	1	0
Kennebec S.T.D.	ME0100854	15	15	5	7	9	3	1	4	0	0	0	1	0	0	1	0	0
Kittery	ME0100285	7	7	0	1	0												
Lewiston	ME0100994	80	80	55	65	69	70	38	71	58	68	45	38	27	23	37	35	28
Lewiston-Auburn W.P.C.A.	ME0101478	80	80	23	35	49	44	29	38	36	44	37	22	32	26	17	17	10
Lincoln S.D.	ME0101796	10	10															
Lisbon	ME0100307	5	5	0	0													
Livermore Falls	ME0100315																	
Machias	ME0100323	15	15	16	8	15	10	5	12	13	9	7	9	6	13	7	8	7
Madawaska	ME 0101681	16	16	7	4	65	14	17	18	32	17	10	8	3	7	0	0	3
Mechanic Falls S.D.	ME0100391	42	42	20	12	29	23	9	42	42	18	39	28	17	30	17	25	12
Milford	ME0102695	8	8	8	8	0	8	0	4	1	3	2	1	0	1	1	1	0
Milo W.D.	ME0100439	3	3	1	0	1	0	2	1									
Old Town	ME0100471	25	25	7	1	13	1	4	4	0	1	0	0	0	0	1	1	0
Orono	ME0100498	30	30	2	0	12	3	6	7	3	3	2	0	0	0	2	4	0
Paris U.D.	ME 0100951	5	5	1	0	2	2	2	2	0	4	0	4	0	0	0	0	0
Portland & PWD	City-ME0101435 / PWD-ME0102075	100	100	71	86	88	93	58	87	104	79	88	70	63	75	58	56	38
Presque Isle	ME0100561	26	26															
Randolph	ME0102423	23	23	2	0	8	3	1	9	7	3	2	2	1	2	0	2	0
Rockland	ME0100595	23	23	6	2	0	0	0	0	0							0	0
Saco	ME 0101117	44	44	22	32	41	24	12	12	9	10	4	21	15	19	13	12	7
Sanford S.D.	ME0100617	10	10	0	0	0	1	0	0	0	0	0	0	0				
Skowhegan	ME0100625	160	160	77	53	81	81	55	58	17	23	21	25	36	28	20	23	23
South Portland	ME0100633	23	23	10	10	20	20	5	10	10	12	13	12	7	9	2	3	2
Westbrook (PWD)	ME0100846	50	50	7	13	17	31	55	50	11	12	16	13	60	70	49	38	2
Winslow	ME0102628	20	20	0	0	1	0	3	3	3	2	3	9	1	0	1	3	1
Winterport S.D.	ME0100749	8	8	8	1	2	0	1	1	1	0	0	0	0	1	2	0	0
Yarmouth	ME0100765	4	4															
Total Number of CSO Discharge Events		1748	1750	800	654	1074	816	568	792	709	606	576	547	439	527	341	372	269

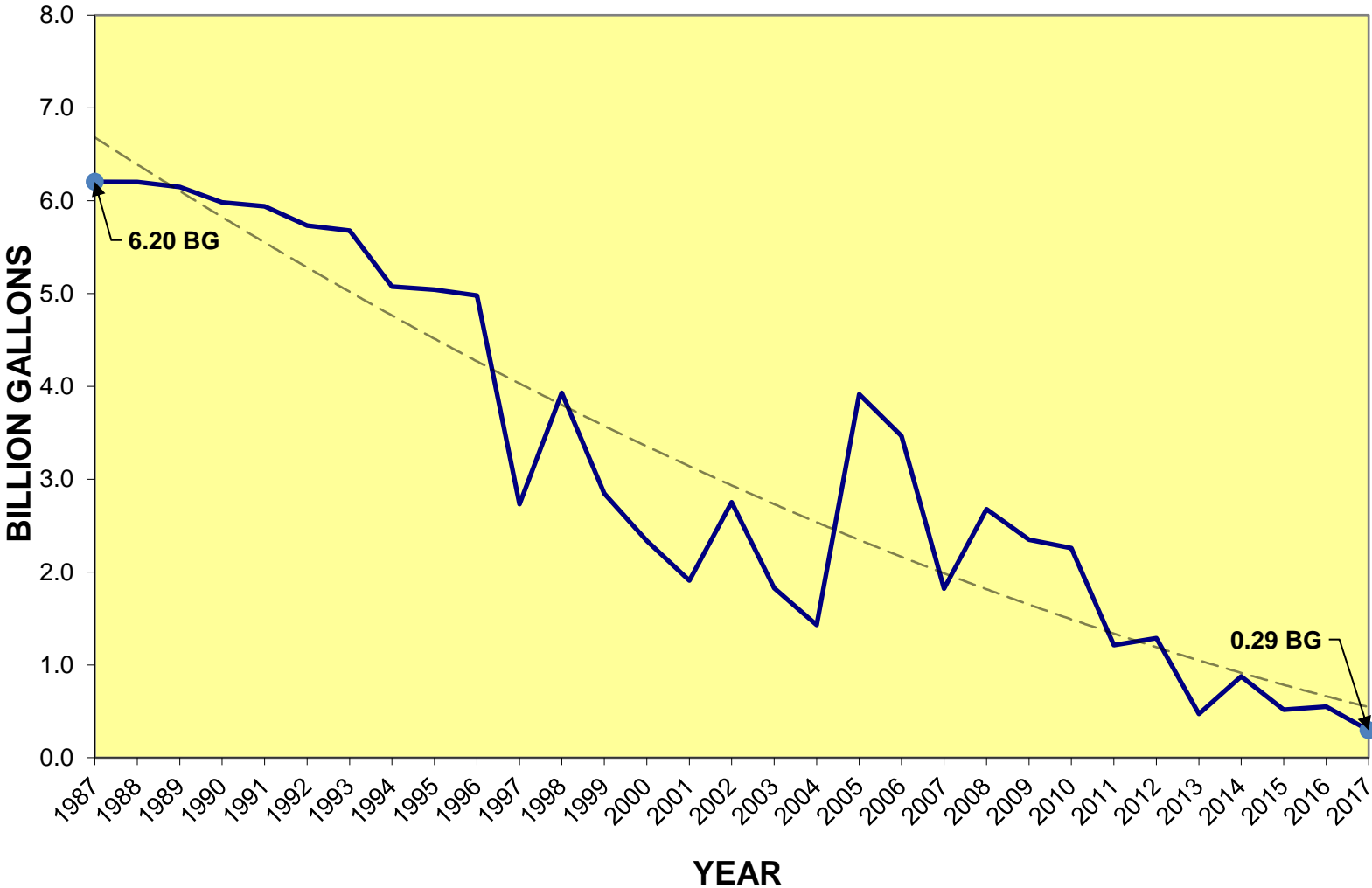
Note: For legibility, discharge event data for years 1989-2002 are not shown. Communities highlighted in gray are no longer a CSO Community.

MAINE CSO COMMUNITY ANNUAL NUMBER OF CSO OUTFALLS

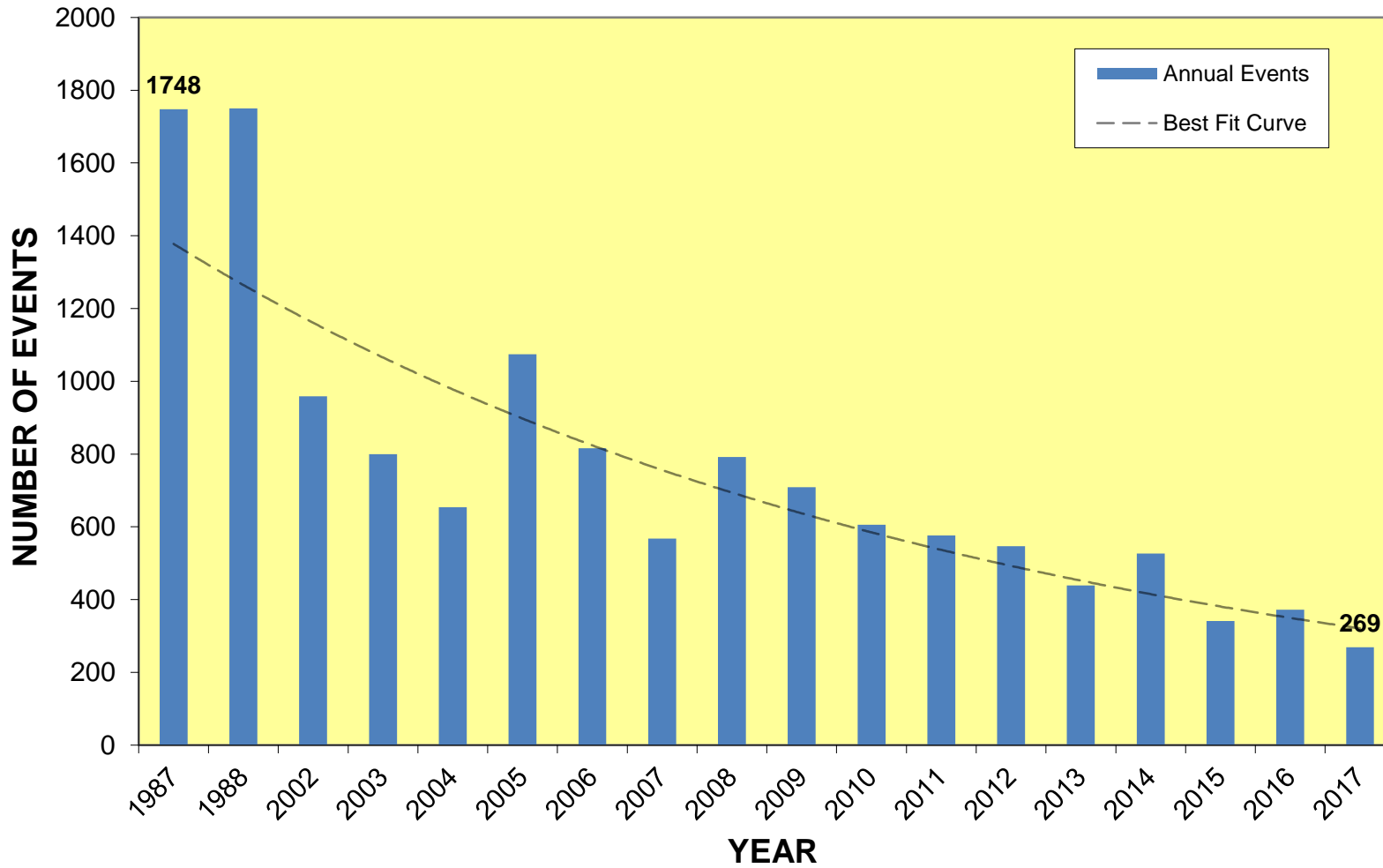
Community	NPDES Permit No.	Year Unknown	1987	1988	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Auburn S.D.	ME0100005	11	11	11	6	6	6	5	4	3	3	3	2	3	2	2	1	2	2
Bangor	ME0100781	22	22	22	12	12	12	11	11	7	7	7	9	9	9	9	9	9	9
Bar Harbor	ME0101214 & ME0102466	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Bath	ME0100021	9	9	9	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Belfast	ME0101532	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Biddeford	ME0100048	16	16	16	11	11	11	11	11	10	10	10	10	10	8	8	8	8	7
Brewer	ME0100072	10	10	10	7	7	7	7	6	6	6	5	5	4	4	4	4	4	4
Bucksport	ME0100111	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	
Calais	ME0100129	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Cape Elizabeth		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
Corinna S.D.	ME0100153	5	5	5	1	0													
Dover-Foxcroft	ME0100501	15	15	15	4	4	4	4											
East Millinocket	ME0100196	5	5	5	1	1	1	1											
Fairfield	ME0102393	3	3	3	2	2	2	2	2	2	2	2	2	2	0				
Fort Kent U.D.	ME0102369	6	6	6	1	1	1												
Gardiner	ME0101702	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1
Greater Augusta U.D.	ME0100013	31	31	31	24	24	24	23	23	24	23	22	22	19	18	18	18	18	18
Hallowell W.D. - 2008 GAUD	ME0101010	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	
Hampden	ME0102512	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Kennebec S.T.D.	ME0100854	5	5	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Kittery	ME0100285	3	3	3	3	3	3												
Lewiston	ME0100994	32	32	32	30	30	26	24	23	22	22	20	18	18	16	11	10	8	8
Lewiston-Auburn W.P.C.A.	ME0101478	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Lincoln S.D.	ME0101796	1	1	1	0														
Lisbon	ME0100307	6	6	6	2	2													
Livermore Falls	ME0100315	5	5	5	0														
Machias	ME0100323	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Madawaska	ME 0101681	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mechanic Falls S.D.	ME0100391	4	4	4	1	1	1	1	1	3	3	3	3	3	2	2	2	2	2
Milford	ME0102695	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Milo W.D.	ME0100439	3	3	3	3	3	3	3	3	3									
Old Town	ME0100471	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Orono	ME0100498	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Paris U.D.	ME 0100951	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Portland & PWD	City-ME0101435 / PWD-ME0102075	42	42	42	34	34	34	33	33	33	33	32	32	31	31	31	31	30	30
Presque Isle	ME0100561	1	1	1	0														
Randolph	ME0102423	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Rockland	ME0100595	8	8	8	4	4	4	3	2	2						1	1	1	1
Saco	ME 0101117	9	9	9	5	5	5	5	5	6	5	4	4	4	4	4	4	4	4
Sanford S.D.	ME0100617	3	3	3	2	2	2	2	2	1	1	1	1	1	0				
Skowhegan	ME0100625	10	10	10	9	9	9	9	9	8	7	7	7	7	7	7	7	7	7
South Portland	ME0100633	35	28	28	8	7	6	5	5	6	6	6	6	6	6	6	6	6	6
Westbrook (PWD)	ME0100846	7	7	7	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Winslow	ME0102628	2	2	2	2	1	1	1	1	1	1	2	2	2	2	2	2	3	3
Winterport S.D.	ME0100749	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Yarmouth	ME0100765	2	2	2	0														
Total Annual CSO Discharge Outfalls		350	338	338	215	212	205	193	183	177	171	164	163	159	149	145	143	142	139

Note: For legibility, outfall data for years 1989-2002 are not shown. Communities highlighted in gray are no longer a CSO Community.

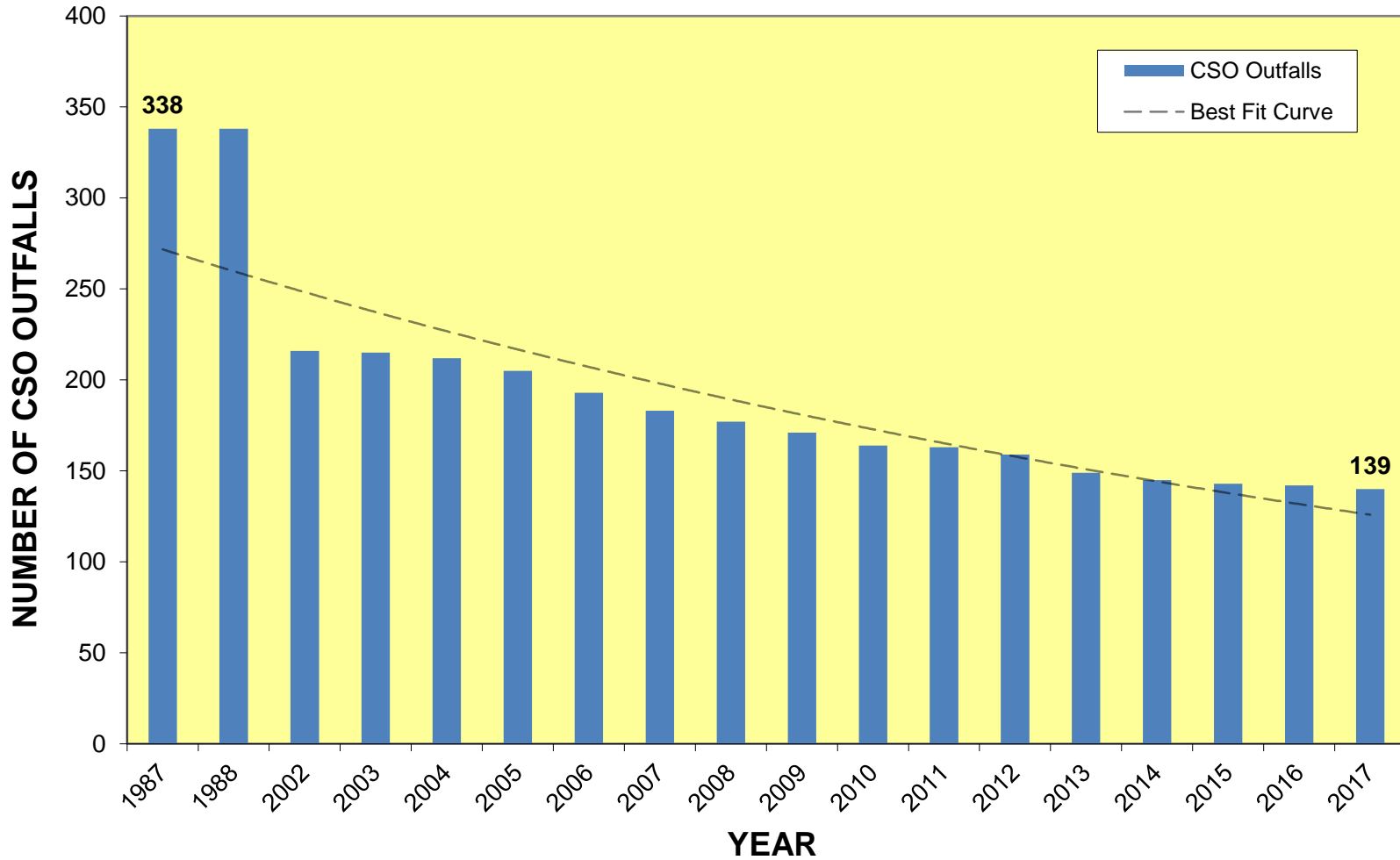
MAINE - STATEWIDE COMBINED SEWER OVERFLOW (CSO) VOLUME DISCHARGED



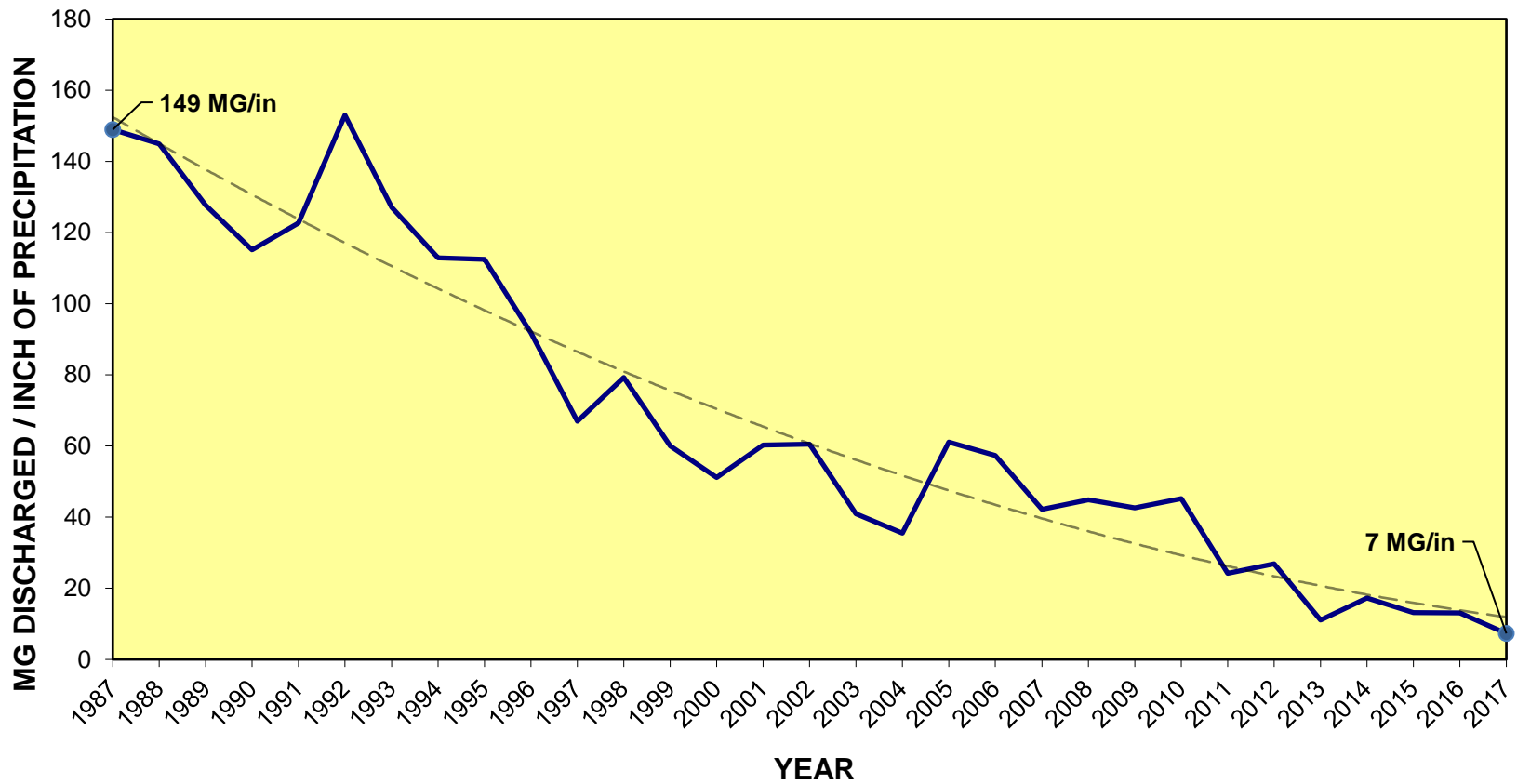
MAINE - STATEWIDE COMBINED SEWER OVERFLOW (CSO) ANNUAL NUMBER OF DISCHARGE EVENTS



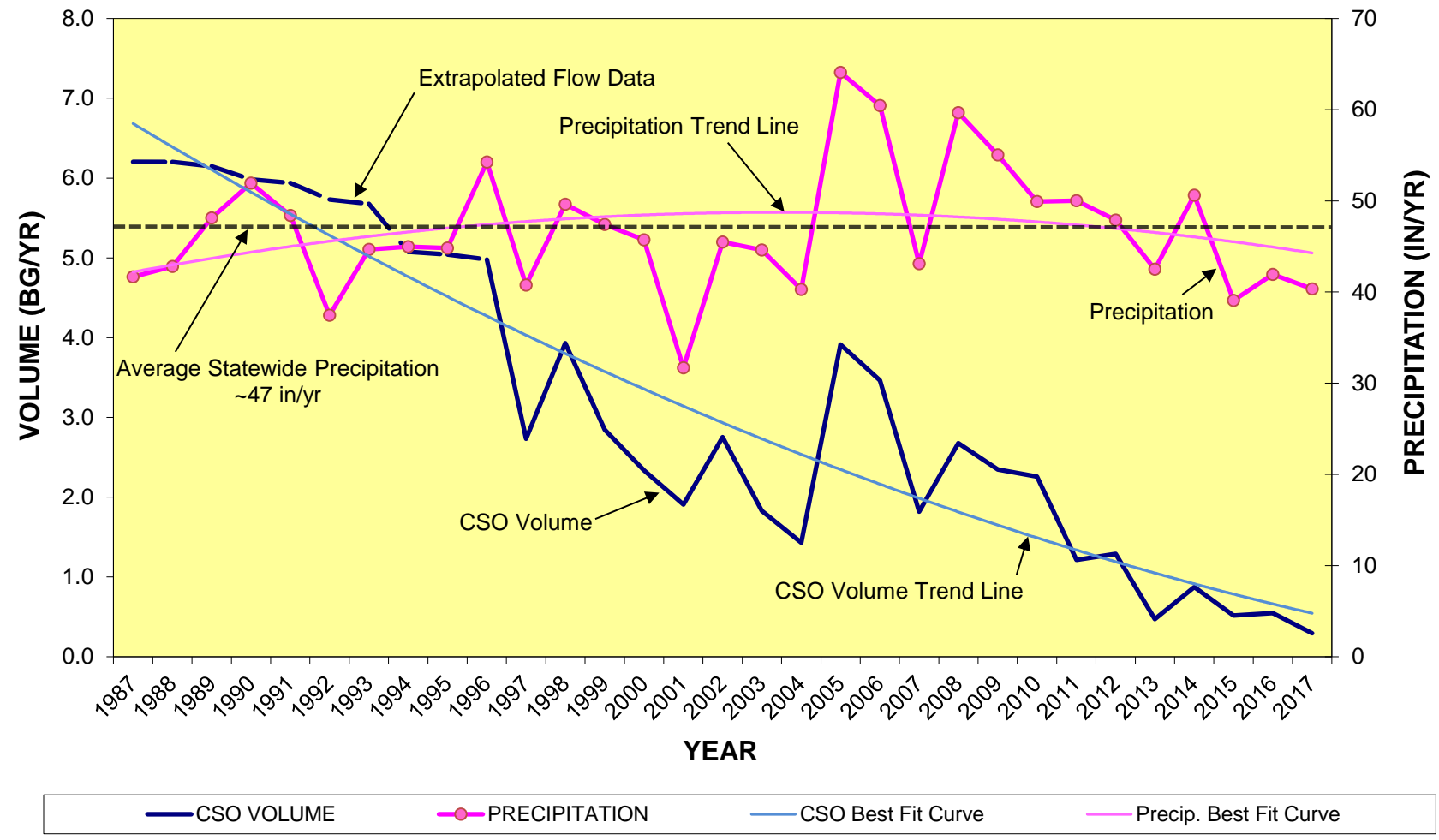
MAINE - STATEWIDE COMBINED SEWER OVERFLOW (CSO) OUTFALLS



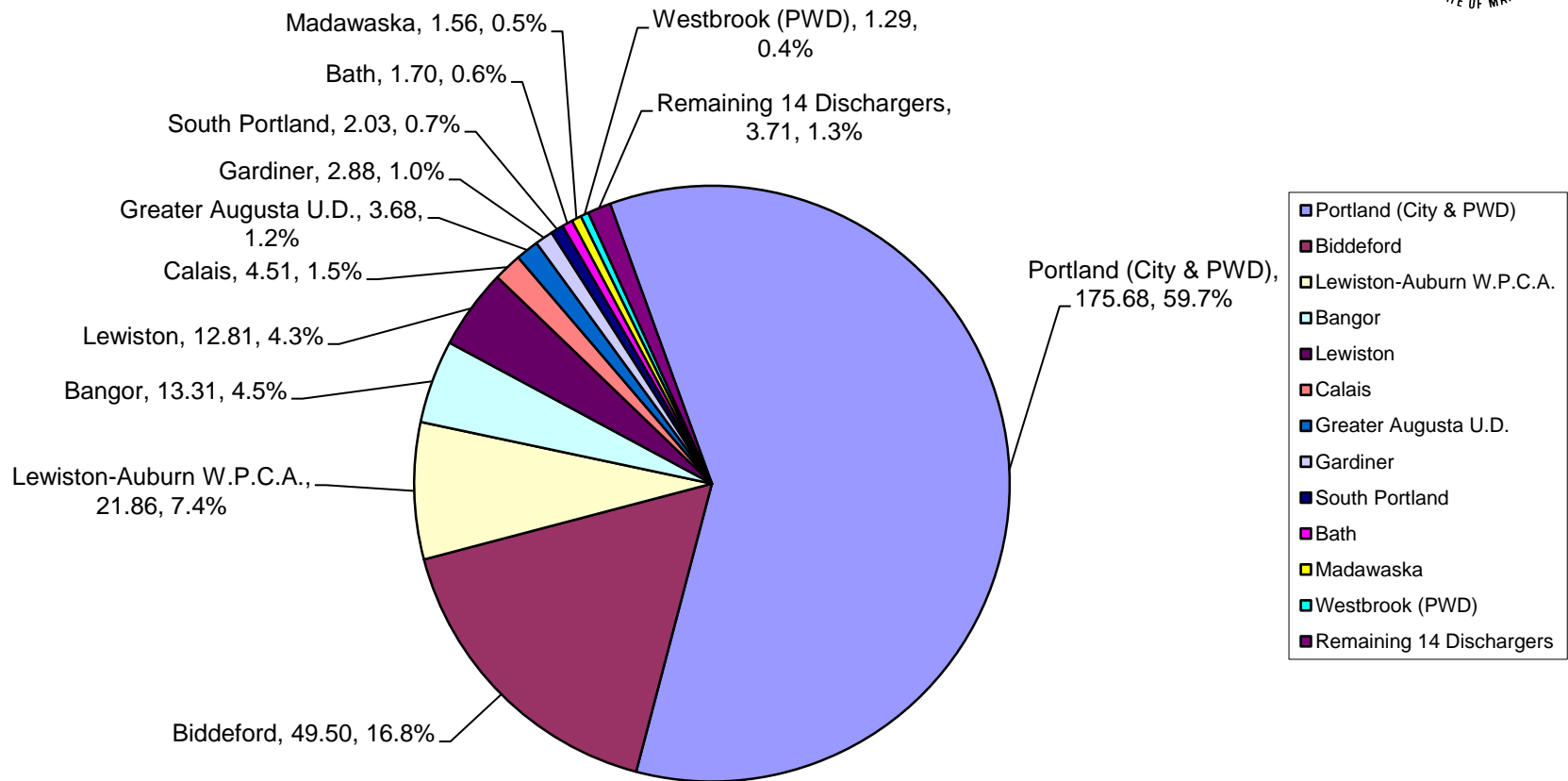
MAINE - COMBINED SEWER OVERFLOWS ANNUAL VOLUME DISCHARGED PER INCH PRECIPITATION



MAINE - YEARLY CSO VOLUMES AND PRECIPITATION

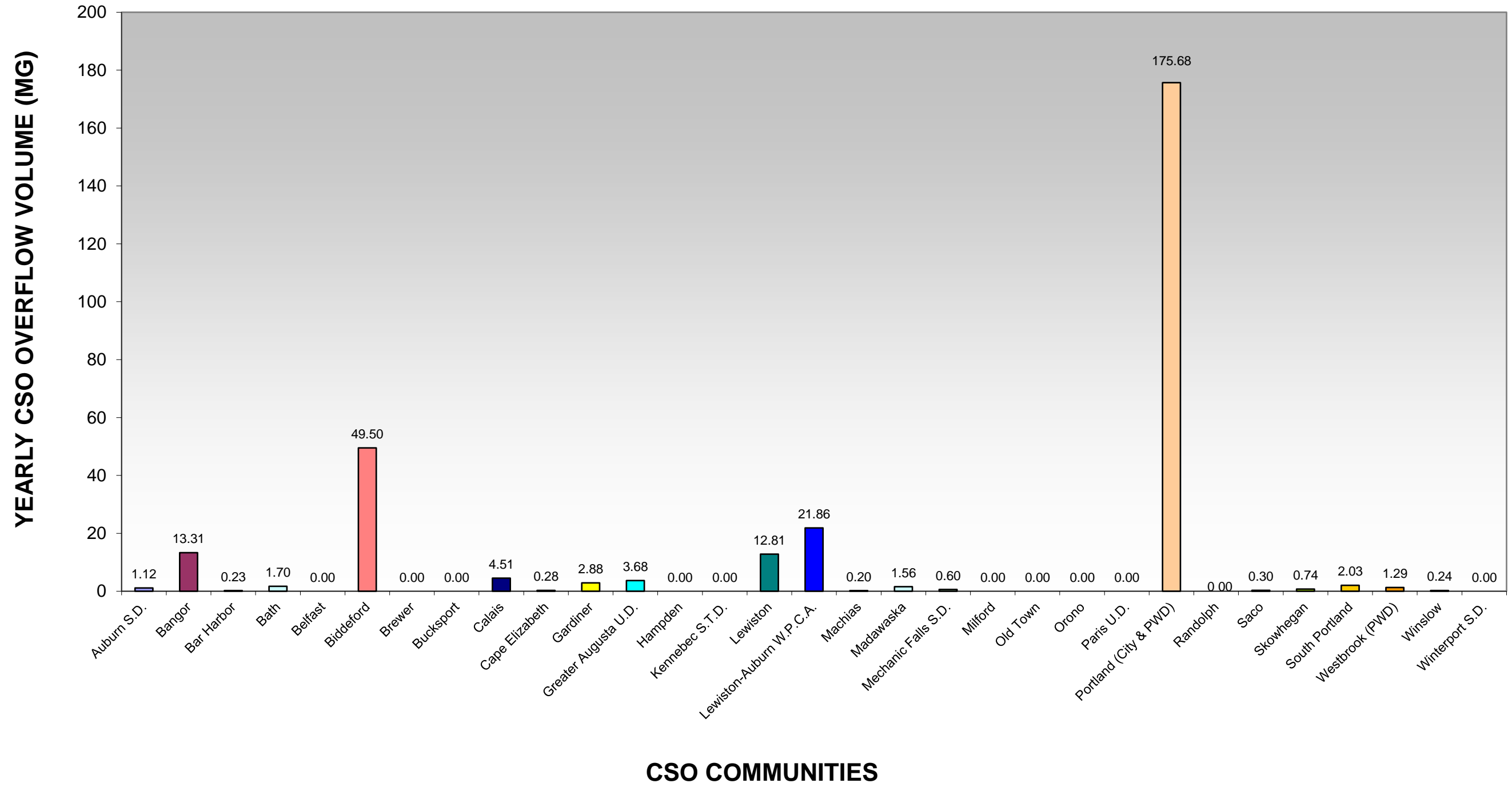


Maine 2017 CSO FLOW COMPARISON 31 CSO COMMUNITIES 20 DISCHARGERS - 0.29 BILLION GALLONS

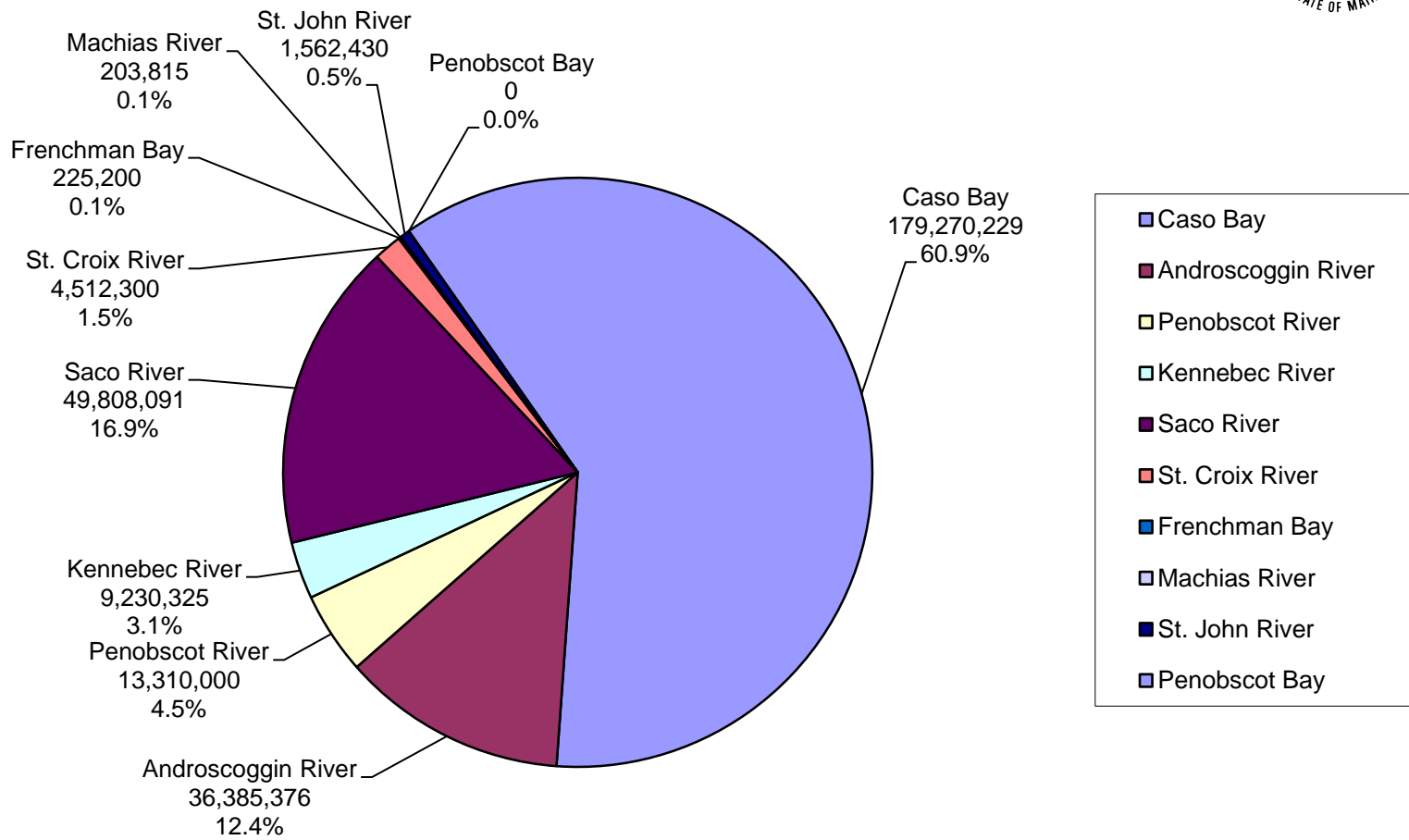


Discharger, Overflow in Million Gallons (MG), Percent of Total

Maine 2017 CSO FLOW COMPARISON BY COMMUNITY (0.29 Billion Gallons)



Maine 2017 CSO Volume Discharged by Watershed (0.29 Billion Gallons)



Receiving Waterbody, Overflow in Gallons, Percent of Total

MAINE ANNUAL CSO VOLUME DISCHARGED BY WATERSHED

		Annual Discharge Volume (Gallons)						
Community		2012	2013	2014	2015	2016	2017	
Androscoggin River	Auburn SD	12,404,500	3,717,000	1,286,000	2,928,519	814,738	1,117,809	
	Lewiston-Auburn WPCA	113,380,000	63,567,000	68,569,000	27,838,000	18,694,000	21,856,000	
	Lewiston	90,103,658	32,772,894	21,355,331	30,574,217	25,477,213	12,808,039	
	Mechanic Falls SD	9,638,035	3,663,997	1,385,675	1,013,807	927,473	603,528	
	Paris UD	1,020,000	0	0	0	0	0	
	Sub Total	226,546,193	103,720,891	92,596,006	62,354,543	45,913,424	36,385,376	
Casco Bay	Cape Elizabeth	2,735,000	41,000	1,440,000	277,000	251,000	277,000	
	Portland-City & PWD	704,319,257	179,403,901	414,421,500	254,663,330	318,359,691	175,675,000	
	South Portland	37,134,882	1,858,579	15,531,600	11,161,602	6,240,350	2,033,229	
	Westbrook	18,903,485	6,222,000	11,932,000	4,423,000	7,447,100	1,285,000	
		Sub Total	763,092,624	187,525,480	443,325,100	270,524,932	332,298,141	179,270,229
Frenchman Bay	Bar Harbor	3,776,092	407,010	1,561,139	2,335,692	277,000	225,200	
		Sub Total	3,776,092	407,010	1,561,139	2,335,692	277,000	225,200
Kennebec River	Bath	12,199,904	3,297,259	4,990,910	2,727,901	1,608,037	1,697,081	
	Gardiner	4,455,400	1,287,000	1,950,000	2,299,300	665,000	2,877,000	
	Greater Augusta UD	38,408,000	26,901,000	17,646,000	21,680,000	7,120,000	3,680,000	
	Kennebec STD	135,444	0	0	1,797,554	0	0	
	Randolph	988,434	50,054	101,183	0	515,240	0	
	Skowhegan	4,238,875	4,746,538	3,861,193	6,786,698	4,168,672	738,844	
	Winslow	1,327,119	7,070	0	164,549	70,144	237,400	
	Sub Total	61,753,176	36,288,921	28,549,286	35,456,002	14,147,093	9,230,325	
Machias River	Machias	938,330	1,857,988	2,202,444	1,067,647	910,259	203,815	
		Sub Total	938,330	1,857,988	2,202,444	1,067,647	910,259	203,815
Penobscot Bay	Belfast	0	0	0	0	0	0	
	Rockland	0	0	0	0	0	0	
		Sub Total	0	0	0	0	0	0
Penobscot River	Bangor	69,940,000	32,140,000	87,748,000	40,109,000	48,586,000	13,310,000	
	Brewer	435,548	58,310	139,280	465,000	87,374	0	
	Hampden	0	0	0	24,105	151,055	0	
	Milford	26,970	0	10,000	25,000	20,000	0	
	Old Town	0	0	0	30,000	10,000	0	
	Orono	0	0	0	1,320,000	1,461,000	0	
	Winterport SD	0	0	60,000	90,000	0	0	
	Sub Total	70,402,518	32,198,310	87,957,280	42,063,105	50,315,429	13,310,000	
Saco River	Biddeford	141,198,828	90,581,675	194,302,147	95,830,208	99,492,656	49,504,091	
	Saco	2,964,929	1,100,985	1,739,425	1,057,000	599,000	304,000	
		Sub Total	144,163,757	91,682,660	196,041,572	96,887,208	100,091,656	49,808,091
St. Croix River	Calais	18,210,000	18,311,206	20,775,288	5,292,778	4,624,354	4,512,300	
		Sub Total	18,210,000	18,311,206	20,775,288	5,292,778	4,624,354	4,512,300
St. John River	Madawaska	377,488	349,400	1,830,563	0	0	1,562,430	
		Sub Total	377,488	349,400	1,830,563	0	0	1,562,430
		Total Annual Volume	1,289,260,178	472,341,866	874,838,678	515,981,907	548,577,356	294,507,766