Friends of Casco Bay
Casco BAYKEEPER®

Operating Plan
for
Friends of Casco Bay
FY18

Our 28th Year!

April 1, 2017 – March 31, 2018

FOR INTERNAL USE ONLY

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I. Context for FY18 (April 1, 2017 – March 31, 2018) as we near the close of FY17

As we transition from FY17 to FY18, we enter our 28th year of operation. Our staff members collectively have 100 years of service to the health of Casco Bay through our work here. The longevity of our staff and our experience working together over a long period of time allow us to deepen our program and community work. In addition, the engagements with our Board in guiding our work and with our Volunteers in assisting with the work is are central and unifying dynamics.

This Document

This document contains our FY18 Operating Plan with a summary of the FY18 budget highlights. These elements support our Strategic Plan 2013-2017, which identifies 6 strategic goals, a vision for the future, and 3 areas of our work seen as particularly strategic in advancing our mission for a healthier Bay. These strategic elements are summarized below. This plan and those which have preceded it over the years serve as incredible sources of documentation of our work and the supporting rationale.

This **Operating Plan** is for ***internal use*** and contains detailed narrative generated by Staff, specifically laying out the activities in which we will be engaged this year, April 2017 to March 2018, to make progress on the goals outlined in our Strategic Plan. The Operating Plan is in four sections: Program, Communications and Development, Technology and Capital Assets, and Management and Administration. The contents of this plan are open for discussion among Board and Staff.

Following the detailed plan are summaries of the highlights of the plan and of the FY18 Budget which is constructed to support this plan. **The FY18 Budget and its Supplemental Schedule are separate documents and will accompany this plan.**

While the Strategic Plan is elegant in its brevity – 3 pages, the Operating Plan is the opposite; the devil, as they say, is in the details. The beauty of this detail for us at the Staff and Board levels is that the plan makes our intentions and rationale transparent, and we can all be on the same page in our messaging. Having a clear plan helps coordinate our focus and use of resources, and it makes the search for resources – the details for our fundraising processes – markedly straightforward.

We engage in various assessment and planning activities throughout the year, and this year was a year of transition as we all began "breaking in a new Baykeeper." While this document may read a bit like a patchwork quilt, you hear the different voices of staff who wrote their sections following our planning meetings. The sections are submitted to me, and I weave the pieces together, identify elements that need clarification or refinement, chase details for clarification in the budget, edit, reformat, and try to limit our commitments where possible (Staff are very ambitious!). There are always more ideas to tackle than there is time to assess and implement, and work comes in over the transom unexpectedly every day. The assessment and planning processes we undertake through the year help us weigh alternatives and get our annual plan as close to right as we are able.

There is the occurrence of repetition in this document, what with multiple authors involved, and because this is for internal use only and because we have much to do, you will forgive us for not editing out occasionally repeated information. Arguably, the bulk of the value of this document

is as much or more in all of the engagement in assessing, planning, and decision making that leads up to its creation, as in the document itself. And please note, you will see references to both 2017, which likely indicates the field season in this next fiscal year, and FY18 itself; both are referring to efforts we intend to undertake in this next fiscal year.

Our mission is to improve and protect the environmental health of the Bay. This is supported by efforts in science, education, and advocacy – the three legs of the stool, so to speak. We conduct our advocacy using a "work with" approach, based on common sense, decency, humility, and compromise, backed up by science and the law.

Much of the value of what we offer to the community lies in our continuing programmatic work, making that work and its implications understandable and relevant to people throughout our community and our state, empowering our neighbors to engage in activities that have a positive impact on the health of the Bay, strengthening our working relationships around the Bay and across the state, encouraging policy changes that make a difference in the health of the Bay, while we run our organization responsibly and professionally. We strive to be an organization that is both leading and learning.

In summary, in FY18, we will be tackling our goals in the following ways:

1. Communicating information about the health of the Bay using science and storytelling, through credible data collection and accessible presentations to educate our community, using various forms of outreach: presentations, events, meetings, print, special reports and our Bay Papers, along with web postings, e blasts, social media, and other online communications, as well as television, radio, and press conferences
2. Advocating for behaviors that protect the health of the Bay
3. Building and maintaining collaborations and partnerships that advance our mission–with the Board and volunteers, colleagues and scientists, interns, members and donors, policy makers, municipal and other governmental partners, other water groups, Bay "users," and other members of the public
4. Building and maintaining our ability and operating capacity to realize our operating plan, while responding to issues, threats, requests, and opportunities, as they arise, effectively and in a timely manner
5. Growing funding resources to better deliver our mission

It takes a community to take care of a Bay, and an organization to lead that charge. It is a privilege to live in an area with such a relatively clean waterbody. We are fortunate and privileged, and with that privilege comes responsibility. Much of our work is preventive – which can be more of a challenge than crisis and disaster, as we "get people to warm up to cold water."

Many thanks to Staff for your contributions, both individually and collaboratively, for this plan and for each day we work together – we truly could not do the work without each and all of you – and to all of you readers for your dedication to considering the contents of this plan along with the budget and discussions that will follow in the days ahead.

Respectfully submitted,

Cathy L Ramsdell, CPA, CGMA
Executive Director
Friends of Casco Bay

II. Highlights from the Strategic Plan 2013-2017

[Please see the Strategic Plan in its three-page entirety for more detail] informational

Strategic Goals highlighted in the Strategic Plan 2013-2017

1. Advocate for standards and controls on nitrogen and acidification
2. Advance the visibility, branding, educational outreach, political involvement, and recognition of our mission
3. Apply technology and scientific methods; build credibility; communicate and educate
4. Pursue collaborations and partnerships that advance our mission
5. Build capacity in Baykeeping and maintain capacity in organization and infrastructure
6. Grow funding consistent with our resources

Our Areas of Work from 2013 to 2017

Our vision for the organization for the next five years is further refined by focusing on three strategic areas of work: Baykeeping, Community, and the Organization. The agendas for these areas cross connect and intersect dynamically. It is imperative that we balance staffing, budget, time, and energy, to maintain mission focus and avoid mission creep.

Closing summation

We plan to remain programmatically effective, financially strong, and growing in visibility and perceived value to the community by doing the following: Stick to our mission. Stay science-based in advocacy and policy. Build knowledge, build relationships, communicate our brand, educate, and maintain our credibility. Harness and apply technology. Use the "work-with" approach and develop alternative approaches when this is ineffective. Invest in the human capital of the organization and assure orderly succession. Build financial strength. Increase public awareness of impacts to the Bay and best practices to improve and protect the health of the Bay.

III. FY18 Operating Plan

A. Programs

The employees of Friends of Casco Bay meet together regularly throughout the year to discuss our work, track progress, calibrate our positions, and assess opportunities. We work as an ensemble, and while we rely on each individual to expertly perform the duties for which they are employed, much of the art of running our organization efficiently and perhaps more importantly, effectively, comes from the insights and synergies of working together over an extended period of time. The sharing of expertise, experience, and inspiration are essential to setting direction together, whether staying the course in certain areas, sitting together to rehash a position or strategy, or shifting our focus to launch new initiatives with all of the logistical particulars to be sorted out.

Themed meetings, sometimes involving collaborative partners from outside the organization, range from reviewing aspects of our water quality monitoring program and other scientific work to content messaging, advocacy and legal positioning, relationship management, education and outreach efforts, event planning, publication purpose and design, press releases, and web activity. The shared sense of rationale and understanding about why we are engaging in certain activities (and not others) is essential for outreach, for fundraising purposes, and for organizational harmony; we must continue tell the stories effectively and compellingly of what we are doing to improve and protect the Bay and ***why*** this work matters.

1. Water Quality and other Environmental Monitoring

2017 will be the 26th year of collecting data on the water quality of Casco Bay. We maintain and continue to add to one of the largest and most important long-term data sets on marine water quality in New England. The three main efforts this year will be maintaining the Citizen Stewards Monitoring Program, sustaining our Unattended Data Sonde Program (Continuous Monitoring Station) and be more responsive to emerging issues based on Citizen Stewards data or advocacy needs from the Baykeeping Program. Our data collection is conducted in accordance with our Quality Assurance Project Plan (QAPP) approved by EPA, which makes our data, after quality assurance checks by Staff, scientifically defensible.

a. Citizen Stewards Monitoring Program

In 2017, the Citizen Stewards Monitoring Program will continue, on 10 sampling Saturdays between April and October, to collect data twice each day, in the morning and afternoon (at 7 a.m. and 3 p.m.) on those sampling dates, resulting in 20 sampling events.

Our goals in 2017 will be to:

- Continue the program, as it engages substantively 90+ volunteers and provides a dataset, which is **surface, synoptic (at the same time), and spatial** (at sites all across the Bay), making up the basis for the Casco Bay Health Index
- Continue our strategy to streamlining our data entry process
- Perform quality assurance data checks on all Citizen Stewards data by December 31st

- Update our Health Index with 2016 data to create a presentation for our Annual Volunteer Appreciation and Members Meeting and continue to update the Health Index on an annual basis, using 5-year rolling data sets

- Incorporate Citizen Stewards data into our new web site to make data more accessible to the general public

- Continue to pull data as needed to investigate local issues reported to us, for example, to assess such things as levels of dissolved oxygen in the vicinity of a fish die off

We will continue to have exploratory conversations about the utility of other data sets, as we continue our planning around the vulnerability of the funding for the Citizen Stewards Monitoring Program.

Data to be collected: Volunteers will continue to measure water temperature, salinity, Secchi depth, dissolved oxygen (DO), and pH, as well as ancillary data on weather conditions, air temperature, and any unusual sightings. Volunteers are trained according to our QAPP.

Measuring the acidity at surface water sampling sites by our volunteers has been part of our program from the beginning. Acidity levels in ocean water are changing as a result of the absorption of atmospheric carbon dioxide at the surface, an effect of greater carbon loading in the atmosphere (ocean acidification), and as a result of the decay of organic matter in productive, nearshore waters (coastal acidification). Acidity is likely further exacerbated by reductions in populations of calcifiers and of eelgrass due to green crab foraging.

***Background*:** In 2011, we equipped and trained our volunteers to use digital pH meters to measure acidity levels, shifting from the colorimetric method we had used since 1991. Each year since, we assess the performance of individual meters for their precision and accuracy and replace electrodes and/or batteries as needed to assure the highest level of data possible in order to ensure the highest levels of precision of these instruments as well as the accuracy of the data collected. (Indeed, we re-measure Secchi lines for proper length, and all thermometers are checked for accuracy and swapped out if need be).

In 2016, our volunteers sampled surface water quality at 37 sites around the Bay. In 2016, 79 returning Citizen Steward Water Quality Volunteers were recertified to sample during the 2016 season. In addition, 19 new volunteers joined the ranks bringing our total number of water quality volunteers in 2016 to 98.

After the completion of the 2016 season, seven recipients were recognized for their dedication to our Citizen Stewards Water Quality Monitoring Program: three volunteers achieved their fifth-year milestone: Mary Holman from Chebeague Island, Carol Nale from Freeport, and Debbie Debiegun from Yarmouth. Two volunteers received recognition for their tenth year of service, Jan and Tom Brudzinski from Orrs Island and Portland. One received his fifteenth year milestone recognition, Rick Meisenbach from Harpswell and our longest attending volunteer Andrew Bertocci from Yarmouth completed his 25th year of service.

In 2017, returning volunteers will brush up their skills during the annual Quality Assurance testing in March and new recruits will begin training in April and May.

b. Profiles of the Water Column

***Background*:** Friends of Casco Bay staff have been monitoring the water column by **profile sampling** from surface to the bottom at stations around the Bay since 1991. The original profile effort was intended only to provide a "check-up" on the sites sampled, to determine the health of the Bay, at those sites, at that time – a simple snapshot. The program shifted in 2016, from sampling at 10 stations to sampling at only three of the ten sites. We decided to monitor at just the three sentinel sites after an analysis of historic profile data showed that monthly sampling was not sufficient to understand long-term trends. These three sites were considered "sentinel sites," a subset of the original ten sites that were sampled whenever weather or boat issues became an impediment to completing all ten. Profile monitoring was conducted monthly by using a data sonde and collecting water samples while aboard the Baykeeper boat. As often as possible, students, other scientists, and volunteers have accompanied staff on these trips. Parameters measured include temperature, salinity, Secchi depth, dissolved oxygen (DO), chlorophyll fluorescence, pH, DIN, and Total Nitrogen (TN). TN samples were collected at the surface at all three profile sites on a monthly basis. Data was collected in accordance with our QAPP.

In 2017, monthly water column profiling will not take place. The decision to move away from monthly monitoring at the sentinel sites was difficult. After more than two decades of data collection, the conclusion was that since the Citizen Stewards Program provides a synoptic look at spatial trends across the Bay and the Unattended Sonde program provides a better look at temporal trends, we could modify the Profile Program to make better use of that effort and the limited staff time available. Water column profiling is an important tool for understanding local contributions to, and seasonal influences on, water quality. The program may continue as an episodic, transect-based approach to monitoring in the challenged parts of the Bay that have been identified by our Citizen Stewards data as warranting further investigation.

This year, we revisited the question of "what is the goal of our Water Column Profile monitoring program?" and we looked at whether or not our current programs achieve current goals. We assessed whether we should move forward with just the three sentinel sites. Our conclusions: The Citizen Stewards program provides Friends of Casco Bay with the spatial distribution of sites necessary for an understanding of differences in water quality around the Bay. The new Unattended Sonde program will provide the frequency of data collection necessary to reveal trends over time in water quality with statistical veracity. The decision in 2016 to move to sentinel site monitoring allowed Friends of Casco Bay to reallocate staff time to Unattended Sonde Data Collection.

c. Continuous Monitoring Station

***Background*:** In 2015, we initiated a pilot effort to collect data using an **unattended data sonde**. This was in response to our data analysis efforts over the course of the past few years which led us to the conclusion that for some types of measurements, we would benefit from an increase in the frequency with which data is being collected. Analyses of twenty years of various aspects of our water quality profile data reveal that some long-term trends are difficult to determine with statistical confidence using data collected once a month. This lack of confidence is due to the very significant variability inherent in coastal embayments and estuaries. Deploying an unattended sonde would provide us with far more data, which may prove more statistically powerful.

In 2015, we deployed one sonde at the Southern Maine Community College (SMCC) pier from May through October. The sonde ran unattended, chained and locked to a float at a depth of 0.2 meters, collecting measurements hourly. Measured properties included water temperature, salinity, dissolved oxygen concentration and percent saturation, pH, and chlorophyll. Once a week, the sonde was checked for fouling, the data uploaded, and a water sample was collected for Total Alkalinity (TA) analysis. On a rotating basis, every other week, the deployed sonde was replaced by a clean, fully charged and calibrated sonde. The rotation continued for the entire deployment. A weekly secchi depth measurement was taken taken, and water samples were collected for dissolved inorganic nutrient and total nitrogen analysis.

This project has an additional goal – to better understand existing conditions and seasonal changes in carbonate chemistry and acidification in seawater in Casco Bay.

A LaMotte alkalinity test kit was used to determine TA. Our results will be compared with results of lab analyses for TA conducted by colleagues who were also collecting samples at the pier.

The alkalinity data is used with the pH data from the sonde to calculate dissolved inorganic carbon, partial pressure of carbon dioxide, and aragonite saturation state. These five parameters can then provide us with a much deeper look at the carbonate chemistry of Casco Bay (at least at one site), and the current level of acidification and how that may vary with water temperature, salinity, and dissolved oxygen.

In 2016, this program progressed from being a pilot project to a full monitoring program. We established a continuous monitoring station at the Chebeague Island Ferry pier on Cousins Island in Cumberland. We use existing infrastructure for sonde deployment rather than maintain a buoy system. Two additional sites are planned, one in Portland Harbor and one in eastern Casco Bay. These will be established only if and when funding becomes available.

Deployment was identical to the 2015 pilot project with the exception of the addition of a pCO2 sensor. This sensor takes hourly measurements and is housed next to the sonde. This parameter replaces the TA sampling done in 2015. With measurements of pH collected by the sonde, coupled with the pCO2 measurements, then dissolved inorganic carbon, TA, and calcium carbonate saturation state can be calculated. This information will provide an introduction to a basic understanding of the carbonate chemistry in the Bay and improve insight into coastal ocean acidification.

In 2017, the Continuous Monitoring Station (unattended sonde and a pCO2 sensor) will provide hourly data collection, uninterrupted except for a planned pCO2 sensor calibration in December. Biweekly sonde maintenance and calibration will not interrupt hourly data collection. At the biweekly station visits, the pCO2 data is uploaded and the sensor is cleaned. Samples of water are collected for dissolved inorganic nutrient and total nitrogen analysis. Additional samples of water may be collected for total alkalinity analysis, if an arrangement can be made with Dr. Mark Green of St. Joeseph's College. Data from both instruments are reviewed biweekly, and the calculations of additional parameters will be made. Brief updates and reports will be produced on a regular basis.

d. Sediment pH

In 2017, we will not be conducting any sediment pH monitoring or participating in any monitoring training. We may work with others who measure sediment pH, and we will continue to refine our message on sediment acidification. For background on our groundbreaking sediment pH work, see Appendix A.

e. Runoff on the Bay

***Background*:** In 2014, we tried to assess the presence and amount of **pollutants in stormwater runoff** in the Presumpscot River plume, near the Fort Gorges profile site. We sampled three times: during a dry-weather event, a moderate rain event, and a major rain event. The reason for this effort was to make public any evidence of pollution contents in runoff water on the Bay, water we characterize as "anything but fresh."

We had Katahdin Laboratory analyze the samples for bacteria, metals, organics, pesticides, nitrogen, suspended solids, and caffeine. A data sonde measured water temperature, salinity, dissolved oxygen, pH, and turbidity.

The only appreciable differences found in the samples from the three different events were increases in total suspended solids, bacteria, and nitrogen, with the highest results seen in samples collected following the major rain event.

In 2017, we are planning a different sort of sampling event. We will use a rain event as a media/public educational opportunity to continue to build awareness of the amount and the impacts of stormwater on the Bay. We will prepare to respond to a significant rain event by bringing media aboard the boat to watch us measure the depth of the stormwater wedge sitting up on top of the saltwater at Fort Gorges. We will consider collecting other data as well. Using photos and film, we will post about this through various on-line communications outlets.

f. Pesticide, Fertilizer Stormwater and Sediment Sampling

Background: Through our historical Stormwater Sampling Program, Research Associate Mike Doan has collected stormwater from pipe outfalls, catch basins, and small streams, for analysis of various fertilizer and pesticide compounds. This data has been instrumental in effecting behavioral changes in residents of neighborhoods in which these compounds have been detected in the runoff.

We have eight years of stormwater sampling results from 22 sites all around Casco Bay. We detected the presence of specific pesticides, including fungicides and herbicides. (We have seen references linking these chemicals to cancer, reproductive problems and birth defects, and we work to identify those specific scientific sources and clarify whether they refer to work done in the field or laboratory, and whether the effects are on humans or other creatures). Our sampling has also revealed the presence of nitrogen and phosphorous, components of fertilizers, at all of the sampled sites; these nutrients can pollute drinking water wells and when washed downstream can cause algal blooms, degrade marine water quality, and create conditions that worsen coastal acidification. Once they reach the Bay, certain pesticides (pyrethroids) can settle out in the sediments and threaten the health of marine life. These compounds are used in ornamental lawn care and for flea, tick, and mosquito control; however, once in the environment, they can

negatively impact marine species, including larval lobsters. As Gary Fish of the Maine Board of Pesticides Control (MBPC) and recipient of a Friend of Casco Bay Award says, "A pesticide that will kill a bug can kill lobsters and crabs."

We collaborated with the MBPC and the University of Maine to do this work. In 2009, working with MBPC, samples were taken of both stormwater (at three locations) and sediments (at nine locations). In 2010, we sampled sediments at two sites for pyrethroids. In 2010, MBPC did sediment sampling themselves. During 2014, we added the results of the most recent MBPC sampling to our tables and maps, plotting both FOCB and MBPC data. The presentation of these data at BayScaping socials builds fast awareness among neighbors throughout our community and motivates resistance toward applying these compounds heedlessly.

In 2015, Mike assisted MPBC with both site selection and sampling for another round of sediment collection for analysis of pyrethroid compounds, with a particular focus on habitat for juvenile lobsters.

In 2017, we ***may*** collaborate with MBPC and others by providing guidance on pesticide monitoring in stormwater and sediments. We certainly will be encouraging them to collect more data; current data seems to be more compelling to the public in discussions about municipal restrictions on pesticide applications.

g. University of Maine contract work

In 2017, pending approval of a grant proposal, Mike may work with the University of Maine and the University of New Hampshire to identify trends in acidification in the Gulf of Maine. This study would involve the management and analysis of existing data, including historical data collected by Friends of Casco Bay.

Also in 2017, pending funding approval, Friends of Casco Bay might be contracted to collect water quality measurements around the Bay through ten surface monitoring events. This data would be used by the University of Maine to check the accuracy of satellite imagery.

h. Southern Maine Community College projects

In 2017, we will work with the Marine Science Program at SMCC on several student led projects, including dissolved inorganic nutrient transects in Portland Harbor and a characterization of several of our Citizen Steward sites, including a benthic infaunal inventory. Our role will be limited to meeting with professors to discuss protocols and results.

i. Eelgrass

Eelgrass is a vital necessity in estuaries, providing a variety of key ecosystem functions, from nursery to filter to stabilizer to buffer. Dr. Hilary Neckles has been continuing efforts started by others to assess the health and stability (or lack thereof) of eelgrass beds in Casco Bay. Friends of Casco Bay has played various roles in supporting these efforts over the years. **In 2017**, we may contribute in an advisory role to several eelgrass monitoring projects, possibly including

preparation for a bay-wide mapping effort and a survey of Portland Harbor beds for impacts from excessive nutrients.

j. New Meadows Region

Background: The water quality of the New Meadows region of Casco Bay is severely degraded. In 1999, Friends of Casco Bay got involved with the New Meadows River Watershed Partnership, a then-active coalition of citizens, nonprofit organizations, and municipal, state, and federal officials concerned with the health of the New Meadows River. From 2009 to 2011, Friends participated in an effort to determine the feasibility of removing or modifying the causeway that impedes tidal flow between the New Meadows Lake and the upper New Meadows estuary, one of the least healthy areas of Casco Bay. Due to strong opposition from local quahog harvesters and abutting land owners about removing or modifying the causeway, the effort to restore tidal flow was tabled. In addition, significant changes in leadership in the coalition and the lack of a clear direction caused the coalition to meet very infrequently, now rarely. In spite of these setbacks, Friends continued to monitor the health of this embayment each year through our volunteer program and occasional staff led projects. Starting in 2000, we deployed an unattended sonde to collect data for a three-week period in July at the upper New Meadows; after 13 years of collecting this data we decided in 2014 to discontinue this.

In early 2014, there seemed to be renewed interest in meeting as a coalition to discuss options. Many coalitions agree that replacing the causeway with a bridge will be the most effective – albeit expensive – option to optimize flow. Some local residents disagree. Since the quahogs have been harvested out to a large degree, there is less opposition from harvesters, and there is the possibility that water quality will continue to decline due to a reduced number of quahogs filtering the water. One bad episode of a heat wave combined with resulting low dissolved oxygen in the water may produce another pogie die-off this summer.

In 2015, Friends of Casco Bay staff participated is quarterly meetings with stakeholders to stay in touch about current issues in this region.

In 2017, we will continue as in 2016 to participate in infrequent coalition meetings and will continue to highlight the fragile nature of this challenged region to all stakeholders.

k. Maine Coastal Observing Alliance

Background: In December 2013, eight coastal citizen monitoring groups, from Casco Bay to Blue Hill, joined together to discuss the feasibility of conducting a pilot study in 2014 to look at worst-case water quality conditions in the mid-coast region of Maine. This survey of Maine's coastal water quality was the first undertaken since a 1996 Maine Department of Environmental Protection (DEP) examination of regional conditions coast-wide. This effort is known as the Maine Coastal Observing Alliance (MCOA – not to be confused with MOCA – the Maine Ocean and Coastal Acidification Partnership!), representing 7 conservation organizations who collect data and 4 academic institutions who offer guidance (Georges River Tidewater Association, Medomak River Land Trust, Rockport Conservation Commission, Damariscotta River Association, Maine Sea Grant, Gulf of Maine Research Institute, Friends of Casco Bay, Kennebec Estuary Land Trust, Sheepscot Valley Conservation Association, University of Maine Cooperative Extension, and University of Maine Darling Marine Center).

The 2014 pilot project was designed to project worst-case conditions of late summer when water temperatures are highest, biological activity is greatest, and low pH and dissolved oxygen are most likely to occur. This study gathered data on pH, temperature, dissolved oxygen, nutrients (total nitrogen and phosphorus), chlorophyll, salinity, and turbidity in 8 coastal estuaries and embayments between Casco Bay and Blue Hill Bay.

Results of the study using the data collected showed that these estuaries were generally in a healthy state in that they did not exhibit excessive nutrient loading or oxygen deficits.

The Harraseeket estuary seemed closest to a state of some risk of eutrophication based on nutrient levels. The low pH of waters entering the estuaries at the seaward and landward ends are cause for concern, but it is unclear if these conditions are a result of human influence or natural processes of the watersheds and open Gulf of Maine

In 2016, Friends of Casco Bay continued to participate in MCOA meetings as the collaboration continued to evolve.

In 2017, Friends of Casco Bay and members of MCOA will not be monitoring as part of the MCOA collaborative due to the lack of funding. Instead, if MCOA continues to meet, members will continue to share information about our respective monitoring programs in order to reinforce the strength of Citizen Science in Maine.

l. Nabbing Nitrogen

In 2016, we launched a "Nabbing Nitrogen" campaign to educate the public, provide the DEP with data needed to implement nitrogen standards, and provide a low-threshold way for scores of volunteers to assist us in data collection. Our goals were to collect a significant amount of synoptic data, connect with users of the Bay, move the state forward on regulating nitrogen, and shine the public spotlight on an issue too few understand. We have heard from several community members that our 10-week Citizen Steward Monitoring Program is too time intensive for them. This brand-new effort was designed to recruit new volunteers, boaters, and fishermen who cannot commit to the rigorous time requirements of our Citizen Stewards to join us in taking a regional snapshot of nitrogen levels.

We harnessed volunteer power to collect scientifically useful data by inspiring 97 volunteers to join us on a day of action to "Nab Nitrogen." We initially recruited 171 volunteers, 125 of whom had never volunteered with us before. Volunteers signed up in advance and were assigned to specific sites—most of which were shore-side (90+) and some of which were on the water by boat.

There were heavy rains and rough waters the morning of our Nabbing day [July 10, 2016], so in the name of safety, we moved forward only with our shoreside sampling. Prior to the event, 55 boat volunteers showed up at our office to be trained on how to collect a nitrogen sample; because of this, organizationally, we count them as having volunteered with us.

Ultimately, 97 shoreside volunteers took part in the event, including TV meteorologists Sarah Long and Tom Johnston, who shared the event in their social media! Four members of Portland's

Water Resources Division along with South Portland's Stormwater Coordinator, also volunteered, illustrating the event's importance to policy makers.

Twelve of the sites were hand-selected for the DEP's nitrogen modeling efforts. Our Pumpout vessel was used as a sampling platform for some of these sites, collecting samples along a transect running along the mid-channel of the river. This was a very successful sample collection event, with over 100 volunteers and 90 sites. Since it was an unusually dry summer, this effort served as the "storm event" for the DEP Fore River monitoring program.

In 2017, we will report out on this data collection and work with the DEP, Portland Water District (PWD), EPA, and the cities of Portland and South Portland on a more comprehensive look at conditions in the Fore River.

m. Microplastics

Friends of Casco Bay is concerned about the presence of microplastics in the marine environment. Microplastics are defined as being smaller than 5.0 mm, and may enter coastal waters through primary (manufactured at that size, like microbeads) or secondary (by degradation of larger plastic materials) vectors. Many marine organisms will ingest microplastic, and there are health implications throughout the food chain, as toxic contaminants have been found to adsorb to the plastic. In 2016**,** we investigated the possibility of sampling for microplastics in Portland Harbor. Existing monitoring protocols and literature were reviewed, and a relationship was initiated with a Maine scientist with experience in microplastics monitoring, Abby Barrows.

In 2017, we will work with Abby Barrows to sample for microplastics in Casco Bay. Samples will be collected during a one day monitoring event, and delivered to Abby for analysis. Our goal is to detect the presence or absence of plastics in our water and to use the data in our public education efforts.

n. Data Management

Background: **Murphy Water Quality Database** The platform for our water quality database, known as Murphy, written in DOS in 1994, needed upgrading for some time, and during 2010-11, the original software designer, Sarah Rose Werner, redesigned the database platform in the relational database program Microsoft "Access." This database is more user friendly by being Windows-based. During 2012-13, she and Peter continued to debug the new program and migrated much of the historical data into the new database. The migration to the new platform enabled us to have multiple users working on data at the same time, and has the ability for us to export to other users and data access portals, potentially enhancing our collaborative efforts.

In the fall of 2014, we were fortunate to add an exceptional new member to our staff, Sara Biron, in the newly-created position of Database Assistant. Sara enters water quality data into Murphy (as well as fundraising data into Blackbaud Raisers Edge), assists with communications to members and volunteers, and helps host events for members and the community. Most significantly for the water quality monitoring program, Sara enters data collected by volunteer citizen scientists and is performing quality assurance checks on the data.

In 2016, we continued to improve our data import and entry practices by better utilizing our Survey Monkey and Profile import functions in MURPHY2010. We also developed screencast and written protocols to document data import practices and formatting. We stressed to our Citizen Steward volunteers the importance of using the Survey-Monkey/online data entry form in a timely manner to speed up data entry. We also perform Quality Assurance checks of data on a monthly basis.

In 2017, we will continue reinforcing to our volunteers the use of on-line data submission in order to insure timely input and quality assurance checks, as well as to provide rapid turnaround of data sets for those who request them.

In 2017, Mike will establish a new database to manage the hourly data from the sonde/pCO2 station. Possible platforms include the WRDB database used by the DEP. In addition to the hourly sonde and pCO2 data, calibration and maintenance data need to be included, as well as the calculated parameters (TA, DIC, omega aragonite).

o. GIS mapping and JMP statistical analysis

Mike continues to expand and deepen our GIS and statistical capabilities. This is crucial for analyzing our data and for making our data more accessible, understandable, and meaningful. **During 2017,** Mike will continue to look at the datasets of various water quality parameters we collect, to compare changes over time and to contrast geographical differences in water quality site-to-site and region-to-region in the Bay.

Mike spent a considerable amount of time in 2013-14 analyzing data sets and reviewing those analyses with staff, to determine what to use in the report, *A Changing in Casco Bay* (released April 2015). During that process, we continued to add to the list of ways we would like to review data sets, beyond what we include in the report, in order to determine not only what the data have to tell us, but also what might be the most optimal data sets going forward depending on what questions we want to answer. Our exploratory conversations will continue; in the meantime, Mike will maintain **annual updates** of the **Casco Bay Health Index**, as well as produce other data analyses and briefings.

Maps, tables, graphs, and other visual depictions are fundamental to the effectiveness of our presentations, our web-based outreach and education, and our assessment of data for making decisions about the direction of our programs. We benefitted greatly during 2014 from the assistance of graphic design services, and we will continue to avail ourselves of these services as we identify the products that could most benefit. In 2016, Mike and Sarah Lyman, Development and Communications Assistant, worked together to upload onto our website an interactive map of the Bay with our water quality data, anecdotal information about areas of the Bay, and other attributes.

In 2017, Mike will work with Sarah and Sara on data presentations and web language for various projects and data analyses. Mike will also continue to produce short analytical summaries and provide scientific support to the Baykeeper.

2. Baykeeping

As a baykeeping organization, we continue our work as a team to identify issues worthy of tackling and to craft our approaches and positions to respond carefully to ongoing issues as well as the variety of issues that arise and "come in over the transom." Our ethos is to work as much as we can, both internally and with our community, by listening, sharing, asking questions, educating if and when appropriate, and finding solutions together, as we build shared value(s) for the health of the Bay. We work with disparate partners to find reasonable alternatives to what may be negatively impacting the health of the Bay. We look for incremental progress. While we are–across the board–a baykeeping organization and all of our staff work in many ways on baykeeping, Ivy Frignoca as Casco Baykeeper is our lead advocate, listener, ambassador, and educator. Ivy is already planning that this section of the plan will be structured very differently; below is her first round at "going deep" on some of the issues we are working on to help provide context and build understanding.

a. Casco Baykeeper

Ivy completed her first year as Casco Baykeeper. Organizationally, we met all FY17 goals for integrating her into our team:

- Ivy worked with other staff to continue to develop our team approach to how Friends of Casco Bay does its work. Ivy, Peter and Mike spent more hours on the water and combined their scientific and regulatory knowledge to advance our work on the health of the Bay. Ivy formed a close alliance with Mary to promote communications concerning our Baykeeper advocacy.
- Ivy used social, print and visual media to connect with people, wore outerwear with visible Friends of Casco Bay and Baykeeper insignia, and spoke at many public engagements.
- She worked with staff to meet people who support our work and people with whom we work. She attended key convenings, such as the Fishermen's Forum and the Waterkeeper Alliance Conference, to establish relationships and network. She presented at numerous forums, continued existing alliances and created new alliances.

In FY18, Ivy will strengthen her work with Will, Mary and Sarah to further integrate Baykeeping with our communications messaging and strategies, as well as our fundraising efforts. Ivy will work closely with Cathy to identify and explore key issues and our positioning, and explore new initiatives and appropriate responses to the unexpected.

Baykeeping issues

b. Oil Spills

In FY17, we remained concerned about the decreasing availability of funding for the Port of Portland to respond to oil spills. Less oil transported into the port translates to less funding generated per barrel of oil going into the Surface Fund. That fund pays for oil spill preparedness, training, equipment, and response. As oil terminals downsize their staff and people retire, there are fewer people left with institutional memory, experience, and long term training. In addition, the Maine Department of Environmental Protection (DEP) also has lost staff to retirement in its oil spill response division, with an irreplaceable loss in expertise and institutional memory. Both the Maine Department of Marine Resources (DMR) and Department of Inland Fisheries &

Wildlife (IF&W) have lost staffers who acted as liaisons and natural resource trustees in oil spills. In FY17, the Marine Spill Response Corporation (MSRC) decommissioned its Maine Responder vessel (though other, smaller response vessels remain at the ready), and another respected DEP staff person retired. On the upside, DEP and DMR staff have updated mapping information to identify sensitive areas, welcoming our input, and they remain very committed to oil spill preparedness.

In FY17, Peter and Ivy took a proactive approach to address our concerns about preparedness.

- They took Joe Payne on a tour of the Bay to review historical information regarding oil spill preparation and response.
- They also toured the bay with state officials to examine the shoreline of islands most likely to be impacted by oil spills. That day they forged alliances, shared information to help protect sensitive areas, and identified data gaps to be filled. Ivy attended two meetings at DEP to discuss plans to fill remaining data gaps.
- They attended ME/NH area committee meetings and local planning meetings in prepratin for a full scale exercise to be conducted in June 2017. Both participated in a table top exercise in September 2016.
- Ivy helped create a volunteer subcommittee with the United States Coast Guard (USCG), state and local officials who will update and revise a draft volunteer plan that Peter helped create during the SONS exercise. Both Peter and Ivy are on the volunteer subcommittee.
- Ivy attended a Science of Oil Spills Class and will attend a 24 hour HAZWOPER training class in May 2017.
- Ivy met her goal to develop and strengthen relationships with critical USCG personnel, other federal personnel from NOAA and EPA, and state personnel.

In FY18:

- Ivy and Peter will draft an internal plan for the Friends of Casco Bay in the event of a spill. This plan will be practiced in June during the full scale exercise and then revised accordingly.
- Ivy will complete her HAZWOPER training and take on-line basic Incident Command System (ICS) training. She will then be qualified to be in the Incident Command Post during a spill.
- Ivy and Peter will develop better outreach for members and other potential oil spill volunteers, and begin assembling a training plan. There is an opportunity for this to occur in May, in coordination with other emergency response agencies and nonprofits.
- Ivy will continue monitoring the federal lawsuit filed by Portland Pipeline Company against the City of South Portland, challenging its Clear Skies Ordinance. There could be a decision on the merits in the near future. Any decision will likely be appealed. Given events in Canada, a decision may be moot in the sense that if tar sands oil is piped to St. John, New Brunswick, for shipping, there will be less need for reversal of flow in the to allow transport of tar sands oil through the Portland Pipeline.
- Ivy and Peter will continue their roles in oil-related meetings and will continue to assist state officials with identification of ways to bridge data gaps. The collective goal is to have the best data mapped at the most granular level for use in the event of a spill.

- We will engage in internal discussions to revisit the need for a fine scale circulation model for Casco Bay to predict the trajectories of oil spills and other pollutants, as well as larval transport. We have worked to encourage the Casco Bay Estuary Partnership (CBEP) over the years to facilitate this, but efforts have lagged due to lack of focus and funding.

c. Dredging

A working waterfront remains integral to Casco Bay's character, history, and economy. Oil tankers, cargo ships, and cruise ships, along with fishing boats, island ferries, and recreational craft use the shipping lanes of Portland Harbor. Periodically silt that accumulates in the shipping lane must be dredged to comply with federal law, which requires that the channel be maintained at 35 feet deep at mean low tide so oil tankers and other large vessels do not run aground and spill their loads into the Bay. In addition, business owners and municipalities sometimes seek to dredge outside the federal channel around wharves and piers to maintain berthing.

Here are three potential non-federal dredges Ivy is tracking:

- In 2016, Portland received federal funds to study the sediments around commercial piers on both sides of the Fore River. The city also received a grant to study potential locations for a Confined Aquatic Disposal (CAD) cell. A CAD cell is a deep hole dug into the ocean floor in which contaminated dredged material may be deposited. Once the contaminated material settles, it is capped with clean fill. This technique has been used successfully to clean up other harbors with contaminated sediment, but never in Maine.

  ***Background*:** The sediments around the wharves that line the Fore River contain pollutants from historical and likely more current commercial uses, combined sewer overflows, and stormwater runoff. In 2004, we tested marine sediments at 20 locations in the Fore River and Portland Harbor. We found toxic levels of polycyclic aromatic hydrocarbons (PAHs) in 19 of the 20 sites sampled (3 of these sites showed truly alarming levels). In large amounts, PAHs threaten the health of marine life, including lobsters, crabs, and other bottom-dwelling invertebrates. More recent testing analysis shows less contamination of compounds now banned by law (as we write this plan, we await the final report from CBEP). **In FY18**, it is possible that testing associated with the proposed dredge will begin in earnest and provide more current and detailed information about contaminants in the harbor.

  Ivy and Cathy sit on committees formed by the City of Portland to select a CAD cell location and review the brownfield (the contaminated site) surveys. Independent contractors have been chosen and begun the work of site selection.

  Ivy and Peter investigated one of the top four possible sites selected for the CAD cell, namely, a highly productive intertidal mudflat called Turner's Island, and we successfully "lobbied" to have that site removed from consideration. We did this behind the scenes without needlessly roiling public opinion/emotion.

  Cathy, Peter and Mike worked with Ivy to host a nautical tour of the Fore River with various public officials to discuss the dredge, CAD cell locations, combined sewer

overflow (CSO) remediation and waste water treatment plant demands. The purpose of the trip was to examine these competing uses in a unified manner to best achieve the goals of improving water quality and enhancing economic vitality. The trip fostered relationships and furthered the beginnings of a dialogue we hope will lead to better decision-making. Portland will start "integrated planning" for this purpose, discussed in more detail below in a CSO section.

- The second potential dredge is around the Stone Wharf ferry landing on Chebeague Island. Ivy has been tracking this and has an intern tracking information. Ivy has requested to be on the notification list for this dredge.

- The third dredge is a maintenance dredge around the Citgo oil terminal on the South Portland side of the harbor. Testing will occur in the near future. Ivy was contacted by the environmental consultant who will conduct the testing, and she will continue to track this.

In FY18, Ivy will continue to track these dredging projects.

d. Nitrogen Standard and Coastal Acidification

In FY 17, we continued to work to advance the science and public awareness about nitrogen loading to Casco Bay, still looking to find policy shifts that will help with load reductions. We saw evidence that areas of the Bay had nitrogen levels that were degrading water quality. We reviewed EPA's report of unhealthy eelgrass beds in the vicinity of the East End and we publicized what for this region were dramatic and obvious algal blooms.

We developed more targeted public and stakeholder education using various media and speaking engagements. We advocated for nitrogen testing and limits in wastewater discharge permits.

Here are some FY17 highlights:

- Ivy worked with Island Institute and University of Maine to organize and convene the Maine Ocean and Coastal Acidification Partnership (MOCA). This volunteer partnership developed following a failed legislative attempt to create an ongoing ocean acidification council. It has been successful. Ivy serves on MOCA's steering committee, and science and policy subgroups. Mike also serves on the science subgroup. Ivy and Mike also monitor Northeast Coastal Acidification Network (NECAN) meetings and briefings that help inform MOCA's regional efforts.

  In FY17, MOCA:
  - Held a symposium in June that gathered over 100 scientists, students and policy makers at USM to present and discuss current experiments and to review each of the goals recommended by the original Maine Ocean Acidification Study Commission. Mike spoke at this event and Ivy coordinated it and moderated a panel.
  - Held a November meeting in Augusta at the State House that gathered over 50 participants, including legislators and state officials, to discuss remediation and policy solutions. Ivy spoke at this; Mike and Mary attended.
  - Held meetings of the science and policy subgroups to discuss funding, coordination and direction of science, and identified possible policy solutions.

- Conducted a briefing for legislators who are members of the Coastal Caucus. Ivy spoke at this.

The consensus is that (no surprise) data gaps exist in our knowledge concerning the effects and causes of coastal acidification. Scientists agreed that acidification should be considered and addressed as part of research into the broader impacts of climate change. It worked well to isolate the issue of acidification in the beginning to heighten attention to the problem and avoid climate change skepticism, but that artificial divide no longer works. Coastal acidification is complicated by all facets of climate change, including the rise in invasive species due to warming ocean temperatures. We also agreed that rather than waiting for new criteria to be developed and implemented, we must use existing policies to reduce nutrient loading to marine environments while reducing carbon emissions. Consistent with findings by EPA and national researchers, we agreed that more science must be developed before acidification water quality criteria can be developed. In the interim, we will use regulatory tools such as wastewater and stormwater permits to try to reduce nutrient inputs to the Bay.

In FY18, Ivy and Mike will continue their work with MOCA, and Mary may work with them from time to time.

- Ivy worked with Mike and Peter to more fully investigate the status of nutrient criteria in Maine.
  Background: Friends of Casco Bay authored and successfully lobbied for the passage of a Legislative Resolve in 2007. That Resolve mandated that the DEP develop numeric nitrogen criteria for Maine's coastal waters and prioritized the development of such criteria for Casco Bay. Ten years later no such criteria have been established. With the lack of numeric criteria, DEP reviews waste discharge permits on a permit-by-permit basis and employs narrative criteria. [1] Ivy spent considerable time in FY17 researching this issue on a national and state level.

  A brief overview of that research is helpful. No state has developed a complete set of numeric nutrient criteria. Four states have criteria for 2 or more waterbody types and sixteen additional states have nitrogen or phosphorus criteria for some waterbodies. Maine has none. Maine has worked on phosphorus criteria for well over a decade, and nitrogen criteria for a decade and appears to have ceased its work on both. In the current political climate, EPA likely will not and the LePage administration surely will not push Maine to complete this work.

  Unless we determine that we should advocate for such criteria (perhaps with MOCA or a nutrient council the CBEP has suggested it establish), we will pursue strong and

[1] Water quality criteria are limits on particular chemicals or conditions in a water body that protect particular designated uses, such as propagation of fish and wildlife, recreation, and public water supply. The criteria can be expressed as acceptable quantifiable numeric levels (constituent concentrations) or as qualitative narrative statements. Most water quality criteria are expressed as numeric—or quantitative—parameters. This works well for toxic pollutants that have precise, measurable levels above which they will impair a water body's intended uses. For pollutants that cannot be precisely measured, narrative criteria can be used to express a parameter in a qualitative form.

scientifically responsible application of narrative nitrogen criteria. Initially, Joe believed narrative criteria should be set at 0.38 – 0.40 milligrams of Total Nitrogen per liter of seawater. Based on more current knowledge, we accept different limits derived from studies of Great Bay in NH and from criteria that EPA Region 1 applies in setting regulatory limits in NPDES permits. Our understanding in this area will continue to evolve as we continue to expand our testing and knowledge. At present, we find two limits acceptable: (1) 0.32 mg/L for the protection of aquatic life using eelgrass as the indicator; and (2) 0.45 mg/L for the protection of aquatic life in marine water using dissolved oxygen as the indicator in areas where no eelgrass historically or presently exists. Both DEP and EPA use those limits. We believe those limits are the most scientifically and legally defensible limits at present for use in Maine.

We disagree with how DEP is measuring narrative impacts; they have proposed use of a "far field dilution" model with which we have some issues. DEP has relied upon the far field dilution model in the Freeport, East End and Cape Elizabeth MEPDES permits issued since January 2016. Currently, we are engaging in deep internal discussions about this and will continue to weigh the incremental protection that application of this may afford versus the potential likelihood that no discharger would ever be found in violation of their permit and therefore never be encouraged or required to reduce nitrogen in their discharges in the future. Much remains to be discussed.

To set the stage, narrative criteria work as follows. If the ambient nitrogen levels including the discharge exceed the threshold, e.g. 0.32 mg/L for the protection of aquatic life using eelgrass as the indicator, then the reviewing authority must evaluate "the reasonable potential for the discharge of total nitrogen to cause or contribute to non-attainment of applicable water quality standards in marine waters." Maine DEP is applying a "far field dilution" model. This model sets up a very big area around the point source discharge and evaluates the outer extents of that large area, basically ignoring evidence close to the discharge. This model is new and still unproven, admittedly by the modelers. DEP has relied upon the far field dilution model in the Freeport, East End and Cape Elizabeth MEPDES permits issued since January 2016. Based on that model, it has found no reasonable potential for those discharges to cause a water quality violation based on nitrogen in the effluent, despite near field evidence to the contrary. We will continue to encourage DEP and EPA to refine this model or adopt different methodology.

In FY17, Ivy reviewed all major point source MEPDES permits that authorize wastewater discharges directly into Casco Bay. She planned and conducted a boat tour of the Bay to examine those point source discharges with Mike and Peter, EPA officials and a researcher from Norwich University who models tidal circulation in the Bay. We discussed the existing narrative criteria and far field dilution model used by the Maine DEP and identified data gaps in our collective understanding of nitrogen loading and its impacts to the bay.

Ivy wrote comments on the East End Wastewater Treatment Facility (EEWTF) and Cape Elizabeth Wastewater Treatment Facility draft MEPDES permits, which regulate the discharges coming of the treatment plants into the Bay. Comments on the Cape permit led to the inclusion of nitrogen testing requirements for one season. We realized, in the process, that our prior assumptions about the reasons for challenged water quality in

Peabbles Cove may be flawed. We had never acknowledged or accounted for the discharge pipe in considering the health of the cove. This is an area that warrants discussion over the next five years, before the next renewal MEPDES permit is drafted.

With respect to the EEWTF permit, we submitted comments on the draft permit, and as a result, extensive discussions have occurred since the summer that we hope may lead to historic and positive changes at the facility. The permit has not been finalized and discussions continue between the Portland Water District (PWD), EPA, DEP and us. These discussions have not been easy but we hope they are leading in a positive direction. Our goal is twofold: a permit that is stronger than the last permit, resulting in improvements in the quality of discharges to the Bay, while also being a permit that the plant can reasonably operate within without being in violation of the terms of the permit.

In FY18:

- Ivy will work with a qualified intern to gather and review successful numeric criteria from other jurisdictions to help evaluate what might be appropriate for Maine and criteria for Casco Bay, as set forth in the 2007 Resolve.
- Ivy will continue to work with MOCA on this issue. If CBEP does launch its nutrient council, she will work on this issue as part of that council.
- Ivy will work with an intern to map the major MEPDES permits that discharge into Casco Bay. This will be used to help us identify data gaps, work with DEP to fill those data gaps, consider related field work we may wish to undertake, and prepare to comment on draft permits.
- We will continue to contemplate how best to achieve a comprehensive strategy for understanding and reducing nutrient loading to Casco Bay. Ivy will work with Mike, EPA, and DEP to answer specific questions concerning nitrogen loading in Casco Bay. This work may include eelgrass surveys and more targeted research around discharge points.
- Ivy will focus on the South Portland MEPDES permit which has been pending for years.
- Ivy will work with Mary to update presentations and Bay Papers, and continue to educate the public about nitrogen pollution.

e. Portland CSO Remediation

Since its inception, Friends of Casco Bay has advocated to eliminate combined sewer overflows (CSOs) into Casco Bay. Most of these come from Portland. Now court orders and Clean Water Act (CWA) permits require Portland to do this work. We have helped advance this effort:

- In FY08, we helped pass a $61 million dollar bond to fund Tier II of the CSO Abatement Program and encouraged the City to have stakeholder meetings on CSOs.
- In FY12, when the City's consultants recommended 30 years to complete the Tier III plan, we convinced the City Council to vote for a 15 year time frame instead. We also helped obtain a commitment by the City to allocate an additional $169 million for CSO remediation.

In FY17, Ivy collected and reviewed many of the historical documents associated with the court orders and CWA permits that require the City to reduce its CSOs. She reviewed all CSO flow and weather reports and attended all water quality stakeholder meetings, often with Cathy in tow.

The intensive document review led to the discovery of information that we did not know, including monitoring requirements and existing nitrogen data. It also revealed discrepancies in permit requirements that would waste tax payer dollars and delay real improvements in water quality. These discoveries led to a series of meetings, discussions, and the boat tours with public officials and EPA personnel referenced in preceding sections. Those discussions have helped spur on an exploration into adopting integrated planning by the City of Portland.[2]

In FY18, Ivy will continue to work with city, state and federal officials to encourage and where appropriate help shape an integrated plan; she will also watchdog the process to be sure that integrated planning is not used as a tactic to delay meaningful work.

f. Monitoring Draft Discharge Permits

See preceding Section c above. Ivy and Mike teamed up this year to review MEPDES permits. Peter also assisted with this effort. With the exception of nitrogen, the permits we reviewed seemed to adequately protect water quality.

One issue lingers. Maine, under a delegation agreement with the EPA, issues wastewater discharge permits under the Clean Water Act. EPA, however, reserved its authority to regulate cooling waters under section 316(b) of the CWA.[3] Under the delegation agreement, this reservation of authority should have been temporary. Instead, due to governmental jurisdictional tensions, it has continued. As a result, there is no meaningful regulation of cooling water pollution in Maine. **In FY18**, Ivy will continue to monitor this issue.

The regulation of cooling water concerns us because Wyman Station on Cousins Island draws in cold water from Casco Bay to cool steam used to generate electricity and convert it back into water. The cooling water is then discharged back into the Bay.

We have two concerns with cooling water. First, in the act of drawing water into the plant, marine organisms get sucked in and die. Second, the warmer water discharged back into the Bay raises the overall temperature in the discharge area and can negatively impact habitat.

In 2013, we hired Super Law Group to draft comments on the draft MEPDES permit for Wyman Station. Super Law Group also worked with Ivy when she was staff attorney at the Conservation Law Foundation (CLF). Super Law Group drafted Friends of Casco Bay's comments on the need to comply with Section 316(b) cooling water provisions of the Clean Water Act. Ivy drafted comments for CLF on the need to study the impact of cooling waters on Casco Bay at a time when overall bay temperatures were rising. Ivy used Friends data on temperature in her comments.

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[2] Integrated planning allows a municipality to propose to meet multiple CWA requirements by identifying efficiencies from separate wastewater and stormwater programs and sequencing investments so that the highest priority projects come first. This approach can also lead to more sustainable and comprehensive solutions, such as green infrastructure, that improve water quality and provide multiple benefits that enhance community vitality.

[3] Thermoelectric power plants boil water to create steam, which then spins turbines to generate electricity. Once steam has passed through a turbine, it must be cooled back into water before it can be reused to produce more electricity. The plants take in water to cool the steam, and then discharge it back into the receiving water.

In FY18, Ivy will continue to check on the status of the section 316(b) delegation to the State and will monitor how frequently Wyman Station operates. At present, it operates as a peak load facility, meaning it runs only when electricity demand is high and all less expensive sources are already on line.

In FY18, Ivy will participate in the MS4 permit renewal process. MS4 permits are required under section 402(p) of the Clean Water Act to reduce stormwater pollution from municipalities within urbanized areas. Separate storm systems, such as highways and universities, are also included in the permit. An MS4 permit requires the permittee to develop a stormwater management plan that includes six specific minimum control measures. The permit renews every five year, to allow for progressive measures to reduce stormwater pollution. In December 2016, the EPA issued a new rule that makes fundamental changes to MS4 permits (changes codified in section 122) including that the permit now must contain "clear, specific and measurable" numeric or narrative requirements set by the permitting authority. In the past, the permittee determined how it would meet requirements. A number of municipalities in the Casco Bay watershed, including Portland, South Portland, Falmouth and Cumberland, are regulated through MS4 permits. Over the next year, Ivy will meet and work with stakeholders, through meetings convened by the municipalities and by DEP, to shape the new MS4 permit.

g. Legislation

We resolve many issues through collaboration with stakeholders, but some problems require legislation and the force of law. We advocate for laws that protect the health of the Bay and try to block passage of harmful legislation. At the state level, we maximize our impact by being a member of the Environmental Priorities Coalition (EPC), a group of 34 nonprofit organizations.

As we move into **FY18**, we will continue to monitor activity at the state legislature to advance solutions that protect and enhance the health of Casco Bay. Local solutions will become increasingly important if EPA loses its ability to enforce environmental laws.

Flares: In FY 2017, Ivy worked with Representative Jay McCreight, the US Coast Guard, the Coast Guard Auxiliary, and a few others to address the issue of expired flares. We took the lead in researching solutions and helped Rep. McCreight draft a bill to establish a flare disposal program that meets all environmental regulations and will help keep expired flares from being improperly disposed of in Casco Bay. Ivy and Mary are developing a public education campaign, including an information fact sheet with talking points for legislators and stakeholders. Ivy will testify in support of this bill. If it passes, this will be a major bipartisan accomplishment to a long-standing environmental issue. We will help with implementation it if it passes by hosting a flares take back event.

Ivy has met with the Coastal Caucus to discuss a number of bills related to climate change and coastal acidification.

Ivy has reviewed other bills that may have an impact on the health of Casco Bay, and she will work with Cathy to identify those she will track and to determine our position (ignore, watch closely, support, oppose, or testify neither for nor against). These bills include and are not limited to: a bill to require booming around ships that bunker in Casco Bay; several bills

designed to reduce or eliminate types of plastic waste; bills related to pesticide use; bills to clarify state and local aquaculture law; a bill to establish a coastal hazard and risk assessment commission.

In FY17, our representation on the Environmental Priorities Coalition (EPC) shifted from Cathy, who has been involved almost from its inception with Mary often also involved, to Ivy as the primary participant. Ivy helped create a federal subgroup that is prioritizing a few issues to focus on at the federal or regional levels. This subgroup has become necessary in an effort to protect the efficacy of the science and regulations we rely upon to do our work.

We will continue to monitor legislative initiatives vigilantly at the local level as well. Cathy and Mary have taken the lead locally with their work on pesticides ordinances and municipal plastics restrictions.

h. Other Issues of Concern

We identified a number of new and emerging issues in FY17. We are not adding any new issues to the list at this time.

i. Intertidal Aquaculture

Background: As predators and coastal acidification threaten soft shell clam populations, resource managers and harvesters have begun, in earnest, to contemplate intertidal aquaculture. They are experimenting with setting up nets or netted boxes that keep predators from eating juvenile clams, and they have begun to experiment with buffering sediment pH.

As FY17 commenced, the nonprofit Manomet and harvester Chris Warner had established a clam farm in Georgetown using a town authorized conservation closure, with landowner permission. Harpswell, Freeport, and Brunswick had drafted ordinances that would have permitted them to lease portions of the intertidal zone for aquaculture under a state statute. We care about this issue because healthy clam flats are a vital part of a healthy Casco Bay and a healthy coastal economy. The Georgetown plot is part commercial enterprise and part research project. It is funded and monitored by Manomet and is designed to evaluate aquaculture as a means of restoring the ecological and economic productivity of sub-productive areas. The project uses five long rows of nets in 70 patches spread across the intertidal zone. The netting protects juvenile clams from predacious green crabs (Dr. Brian Beal's so-called "Beal boxes" do protect juvenile clams from predators, including both green crabs and and milky ribbon worms. At this time, we do not know if the Georgetown project is utilizing Beal boxes.)

Harpswell proposed to lease 20% of its town-owned flats to itself for similar purposes. All shellfish diggers with licenses to operate in Harpswell would have access to the lease area. Other marine harvesters would not. Brunswick wanted to adopt an ordinance allowing it to lease intertidal land to private harvesters for clam aquaculture. In Freeport, Dr. Brian Beal conducted a two year experiment using netting (essentially an aquaculture technique) to study the effects of predation and acidification on clam populations.

In FY17, Ivy worked with Manomet and convened an intertidal discussion group. The group's purpose was to discuss how towns could use existing law to help clams survive against predation

and acidification. Ivy researched and presented a PowerPoint concerning the complex web of federal, state and local laws and helped convene meetings with state and local officials so that they could work out solutions and better communicate with and understand one another. This effort was highly successful. It has led to greater cooperation between towns and the state to foster a more appropriate approach to intertidal aquaculture leasing.

In FY18, Ivy will track legislation that has been proposed to clarify these laws, but otherwise our work should be done on this issue, for now.

ii. Rockweed

Background: In Maine, rockweed is managed like a fishery. Under the state's first ever fishery's management plan for rockweed, the state will lease sectors to harvesters who will be licensed to harvest rockweed exclusively within their assigned sector, as long as the harvester follows rules established by the DMR regarding how to cut the rockweed. In FY17, we identified several issues.

First, the plan's description regarding how sectors will be allocated is of concern. For example, it allows the applicant to define their sector (i.e. sectors are not predetermined), and the applicant's right to harvest the sector would renew automatically at the end of the lease term unless the applicant fails to follow harvesting rules. DMR is supposed to address these issues in major substantive rules, and Ivy is monitoring this.

Second, the plan's designation of no-cut conservation areas seems flawed and inadequate; it fails to protect habitat for other important marine species. Ivy will assess what may be done to push for stronger protections for critical habitat protection for species such as cod, pollock and juvenile lobsters that rely upon rockweed.

Third, the state awards licenses to harvest seaweed without landowner consent, unlike clam flat leases which require landowner permission. The licenses and the management plan state clearly that whether or not landowner permission is needed is a legal question that is unsettled and not covered by the license. A lawsuit to determine the answer to this question has been filed. This issue is important because wild harvest of seaweed is an ever-increasing and lucrative business in Maine. We must ensure that proper rules are in place for sustainable seaweed harvesting in Casco Bay.

In FY 2017, DMR suspended work on its rockweed management plan due to the pending lawsuit. Ivy is tracking the lawsuit and has read the briefs. The case will be argued and likely decided by the trial court during our **FY18**. It is anticipated that any decision will be appealed to the Maine Supreme Judicial Court. The decision will have important ramifications on the contours of the public trust doctrine and the state's ability to regulate resources in the intertidal zone.

iii. Plastics and Microplastics

See above, Water Quality and Other Monitoring, Section l. Plastics and microplastics in the ocean originate from many sources, including fishing gear, food containers, plastic bags, packaging, and personal care products, to name a few. Marine life often mistakes plastic for

food. Seabirds, marine mammals and sea turtles have all died from eating plastic. Researchers have found plastic particles in marine algae and in the tissue of mussels and oysters. These plastic pose a heightened environmental risk when they serve as an adherent substrate for toxic contaminants, such as PCB, PAHs, DDT, and PDBEs (fire retardants).

In Blue Hill, Maine, the Marine and Environmental Research Institute (MERI) developed a method to measure microplastics in seawater, which they are sharing with other research groups around the country. In 2014, MERI developed a study to measure microplastic fragments in Maine seafood. They found surprisingly large numbers of microplastic fragments in oysters and mussels. Oysters had the highest number of fragments, averaging 177 pieces per animal (see information at http://www.meriresearch.org/focus/plastics-and-microplastics). These numbers show microplastics may pose a serious health threat to the animals themselves, as well as to seafood consumers.

Very little is known about the distribution of and sources of plastics and microplastics in Casco Bay. We know of one sample showing 17 particles per liter of seawater (zoom in on world map at http://www.adventurescience.org/microplastics.html to Portland sample).

In FY17, Mike and Ivy met with colleagues, including a former researcher from MERI, and the New York/New Jersey Baykeeper, to review various protocols and put together a modest plan to test for plastics in Casco Bay. **In FY18**, we hope to obtain funding and conduct preliminary testing. We will continue to support local and state legislation that restricts the use of plastics.

iv. Other Aquaculture

As the effects of climate change make it more difficult for fishermen to rely upon wild harvesting, more are turning to aquaculture in Casco Bay. These ventures include shellfish and seaweed farms. In FY17, we noted the rise in and the specific activities of various aquaculture operations and tracked kelp farm experiments designed to test whether kelp can be used to buffer acidic water. {Also see section above about the Intertidal Aquacultue and Ivy's involvement with the intertidal discussion group.} **In FY18**, Ivy will continue to monitor aquaculture leases in the bay and will monitor pending legislation related to aquaculture.

v. Cargo Containers in the Port

Worldwide, approximately 5 to 6 million shipping containers may be in oceanic transit at any time. Thousands of containers are lost at sea every year, often due to rough seas, inadequate or faulty securing mechanisms, and failure to weigh all containers at the time of loading. These lost containers can have severe ecological, economic, and navigational safety consequences. In FY17, Ivy looked at the increased use of cargo containers in Portland Harbor. Her research revealed no concerns with ballast water exchange or accidents. Preliminary research revealed that a majority of containers carry items that pose a lower environmental threat, such as frozen fish, though as container traffic continues to increase, we will keep an eye out for types of cargo in transport which could pose significant hazards to water quality if spilled.

In FY18, Ivy will track the City of Portland's efforts to change its zoning to permit construction of a large cold storage facility on the waterfront. This will likely be a political issue with strong neighborhood opposition. As the zoning change relates to economic vitality and not the

environmental health of the harbor (other than potentially secondarily increasing traffic to the harbor), it is likely we will not take a position on it.

vi. Regional Ocean Planning

In FY17, pursuant to a 2010 Executive Order, the Northeast Regional Planning Body (RPB) developed an ocean plan that the Obama administration approved in its waning days. In FY17, Ivy attended meetings and wrote comments on sections of the plan that concerned Casco Bay, which helped strengthen the plan. The final plan includes a fantastic data portal and will serve as a starting point for federal decision-making. Our work on this issue is done, but we can use the resource into the future.

vii. Climate Change and Sea Level Rise

In FY17, climate change work continued to be a top priority. It is a unifying thread underlying much of our work to protect the health of the Bay, from our concerns about acidification, warming temperatures and invasive species, to storm surges and sea level rise and potential impacts on wastewater infrastructure. In **FY18**, a bill to establish a state-wide coastal hazard and risk assessment commission will likely win our support (this work will be done by region so we can have a focus on Casco Bay), and we will continue our work within MOCA to consider responses to coastal acidification in the context of climate change more generally.

3. BayScaping

A staple of our BayScaping outreach has been our neighborhood socials, which explain the connections between lawn care practices and water quality in Casco Bay. With nitrogen and ocean acidification identified as critical threats to the health of Casco Bay, our BayScaping messaging is as important as ever.

BayScaping presentations incorporate the dynamic relationship between coastal acidification and nitrogen pollution from fertilizer runoff. At these socials, our staff and volunteers share our data with residents in our communities, explain the harmful effects of lawn care chemicals, describe the dynamics of nitrogen pollution, and suggest Bay-friendly alternatives. We have found that providing evidence of pesticide use in a particular neighborhood (the results of stormwater and sediment collection and analyses) is one of the most compelling ways to inspire behavioral change.

We acknowledge, though, that after 18 years of doing BayScaping outreach, education alone is not changing lawn care practices or culture enough. While we continue to offer BayScaping socials to community groups, neighborhood associations, garden clubs, MOFGA, and Maine Landscapers & Nursery Association, our emphasis has turned increasingly to working with municipalities that are developing ordinances to restrict or ban lawn chemicals.

We have been working with municipal officials and community members in South Portland, Portland, Harpswell, Falmouth, and elsewhere. Because Maine is one of only seven states and the District of Columbia that allow local government – using home rule – to do such things as restrict the use of pesticides; communities are using this as an opportunity to exert local control. At the state level, a number of bills to address pesticides are currently among the 1,820 bills

introduced in the winter of 2017 (see Advocacy section below). In addition, there is once again a bill to prohibit municipalities from continuing to exercise home rule.

Some of the significant events of FY17 in which we participated reflect this change in emphasis:

April 14-15, 2016	*Beyond Pesticides* 34th annual Pesticides National Forum, held in Portland
June 14	First meeting of Portland Pesticides Task Force
August 15	Passage of South Portland ordinance after 18 months of work
September 24	MOFGA Common Ground Fair Public Policy Teach-in: *Local Pesticides Control*

These events continue to influence our plans for FY18.

In FY18, we will work in three areas:

Education

- As a result of our first Champions event in 2014, we realized that it would be more effective to focus on one issue at a time. We are considering offering a *Champions for the Bay* event specifically for those who want to learn more about BayScaping, especially *how to have the hard conversation with your neighbor about why we should reduce or not use pesticides and fertilizers*. On our volunteer application forms, 67 individuals have expressed interest in helping with BayScaping, and we have several current volunteers (including Board members) who have been involved in lawn care education with us or their own communities.
  We are still in the early stages of planning as we consider ways we might develop our approach and content: How would we get clear answers to our central theme? Do we facilitate a discussion with selected attendees to brainstorm together? Do we offer ideas to our audience? We are considering psychological approaches to how we might tackle these question, including adapting conversations about the local effects of climate change into our messaging about BayScaping.

- Continue to spread the BayScaping ethic through strategic media releases, op-eds, social media, emails, newsletters, and interviews.

- Share our BayScaping message at all our community outreach tabling events.

- Promote BayScaping presentations, where we continue to integrate our nitrogen pollution and coastal acidification messages into our presentations. Whenever possible, we will tag team with an experienced gardener such as a Master Gardener, who can answer practical lawn care questions, such as how to deal with grubs and crabgrass.

- Continue to work with municipalities and community groups as they explore restrictions on lawn care chemicals.

Advocacy

- Continue to press Maine Board of Pesticides Control to renew its commitment to public engagement, which has fallen off dramatically in recent years.

- There are several bill titles in this session that reference pesticides in the 128th Maine Legislature. We will follow these bills if and as they move forward:
  - LR 1286: *An Act To Protect Pollinators* (Rep. Devin of Newcastle)

- LR 1384: *An Act To Modify the Definition of General Use Pesticides* (Sen. Saviello of Franklin)
- LR 1451: *An Act To Educate the Public and Promote Integrated Pest Management Using Existing Resources (*Rep. Black of Wilton)
- LR 1046: *An Act To Enhance the Efficacy of the Maine Board of Pesticides Control (*Rep. Hickman of Winthrop)
- LR 163: *An Act To Limit the Use of Pesticides on School Grounds* (Rep. Daughtry of Brunswick)

Research (See Monitoring section for more details.)
Our goal is to collect and plot newly collected pesticides data in Casco Bay to keep our information fresh, relevant, and motivating.

- Encourage Maine Board of Pesticides Control to do more sediment sampling for pyrethroids.
- Assemble and assess data about the impact of pyrethroids on lobsters.

4. Casco Bay Curriculum

In FY17, we continued to refine and update the curriculum. We created new PowerPoint presentations and worksheets, and added new data and scientific and popular media articles about impacts of climate change on Casco Bay and beyond. We updated web links and references, clarified lessons, and standardized the format of all 20 activities. We renamed the curriculum *Casco Bay Curriculum: A Changing Estuary* to better reflect the two major topics it addresses:

- What is an estuary and how has it changed over time?
- How is climate change impacting us locally in Casco Bay and the Gulf of Maine?

In October 2016, we offered a two-session course (8 hours) for 15 teachers in conjunction with Southern Maine Community College (SMCC). The course received enthusiastic evaluations (see Appendix). Teachers received Continuing Education Units (CEUs) from SMCC's Continuing Education department, which has invited us to offer the course again and to consider other workshops.

Preparing and offering this course led us to identify several questions that we need to explore in **FY18** before and as we design the next offering.

We will have further internal explorations and discussions as we consult with outside educators around the following questions and issues:

Should we offer another teachers' course?
We could continue with the format of two evenings as we did in FY17 or consider offering a more intensive, three-day Summer Institute for teachers, as we did in 2010, 2011, and 2012. We would like to include more outdoor exploration, and possibly a boat trip, as we did on the *Lucky Catch* in previous Summer Institutes. What time frame for a short course would work best for teachers? We have started to ask education colleagues and will survey them about various scheduling options.

Should we align to education standards?
Every teacher we have spoken with to date says that the curriculum they teach first must be aligned to Common Core.

We believe that we need to align our curriculum with the topics and skills that teachers must cover. How do we align the activities with both Next Generation Science Standards and Common Core Education Standards (for language arts and social studies)? Several teachers with whom we consulted said that administrators often ask how continuing education opportunities meet learning standards before they will approve reimbursement. We will continue to explore how far we need to go to match our activities with the Standards, through personal communications and surveys with classroom teachers. One suggestion we may consider would be to do a workshop with teachers wherein they help us with the work of aligning the curriculum to the standards.

Incidentally, there is no science section in Common Core. Even the Next Generation Science Standards do not specifically mention marine science, though included are many investigative skills that could be related to our activities.

There is a bill before the 128th Maine Legislature to formally adopt the Next Generation Science Standards. Testimony before the Education and Cultural Affairs Committee on January 25th, 2017, on LD 49: "An Act To Improve Science and Engineering Education for Maine's Students" showed organized opposition, as well as support from actual teachers. Despite vocal opposition, there seems to be strong bipartisan support within the legislature. It remains to be seen whether or not this bill will become law.

How can we disseminate the curriculum to other teachers and retain some identity/branding for Friends of Casco Bay?
As we disseminate it further, how do we retain "ownership" or at least acknowledgement of our creation of the curriculum? Four of this year's 15 course participants were affiliated with informal educational institutions. Two Gulf of Maine Marine Research Institute staff members also asked to participate, but we did not have enough space; instead we offered to meet with them separately to share the curriculum. All the informal educators offer teacher training and work directly with students, so they will certainly adopt/adapt elements of our curriculum.

We could consider training "education ambassadors" who can disseminate the activities in their local communities.

Might we go to the other extreme? Might we explore how to complement or even combine our Casco Bay Curriculum with others, such as Island Institute's Kelp curriculum, to maximize outreach? What would be the advantages /disadvantages of offering joint workshops with groups like Island Institute's Outer Islands Teaching and Learning Collaborative (TLC) or through the Northeast Coastal Acidification Network (NECAN)?

How can we use our website to expand the curriculum to other audiences?

In our website revision process, we have identified **teachers** as a target audience. We will explore inviting educators to post their classroom activities and students' work, related to our themes of estuary, climate change, and helping the Bay.

What opportunities can we create to share elements of the curriculum and activities with families? **Parents** too are educators who can use fun activities and background information about our Bay and coastal critters. For our website, we will consider a **Kids' Corner** with did-you-know factoids, statistics, recommended books, and suggestions for what you can do to protect the health of Casco Bay.

5. Pumpout Program

Our Pumpout Program continues to play multiple and essential roles – the direct reduction of sewage discharges into the Bay, the education of boaters through the program's ambassadorial function, and liaison between DEP and those marinas whose pumpout facilities are in out-of-service mode. The effectiveness of this program hinges in large part on the boating and mechanical skills, as well as the character of the person who fills this position. Our Pumpout Coordinator and Captain Jim Splude, an exceptional ambassador on the Bay, will return **in 2017,** his eighth season with us. Customers and dock wranglers around the Bay respect and welcome Jim, who continues to provide excellent service and good cheer everywhere he goes on the water.

Thanks to our work in this program, Casco Bay was awarded the first No Discharge Area status in Maine in 2006. Since then, many other regions along the coast of Maine have attained No Discharge Area status. In order to attain this designation, regions have to have a requisite number of pumpout stations, and, in order to meet the spirit of the law, as well as the letter, these stations need to be operational and accessible at all tides. We will continue to notify DEP when stations are nonoperational.

This year, the DEP has agreed to increase our reimbursement rate through their federally funded program, from 75% (the rate used for private marinas and boatyards) to 90% (the municipal reimbursement rate). In addition, DEP has requested federal funding to provide us with a new pumpout boat; ours has been in service for over 20 years. The new vessel will be larger, safer, and more efficient. If the funding is received by DEP, we will proceed with the acquisition of the new vessel, as approved by the Board at the Feb 21, 2017, meeting; if the DEP does not receive the grant, we will not proceed.

During FY18, we are also further integrating the administration of the pumpout program across staff roles, meaning that our "customers" will be managed with the help of our powerful development database, aka relationship management software, the Raiser's Edge package we use now, not only for fundraising work, but also for volunteer management.

6. Volunteers

We will continue to recruit volunteers for a wide variety of activities, most notably, the Citizen Stewards Water Quality Monitoring Program, as well as for other field work, such as our work with SMCC on intertidal habitats (see Monitoring section) In addition, we will recruit volunteers

for coastal cleanups, stormdrain stenciling, office tasks, oil spill preparedness, and events. For more details about our use of volunteers, in oil spill preparedness, please see the Baykeeping section on oil spill preparedness, and other events related sections of this plan (e.g. Champions).

Recruitment:
We will use a variety of methods for recruitment including word-of-mouth, our website, displays, email marketing software, and social media outlets. We are fortunate to have a wonderful core of volunteers who love what we do and are more than willing to spread the word when we need volunteers. In 2016, Sarah Lyman assisted with recruitment of volunteers through the use of social media, specifically Facebook, in targeting new water quality monitoring volunteers in highly targeted posts. She also used Net Community, a web based email marketing program linked directly to our membership database. With these tools, we are able to target specific communities, thereby increasing our volunteer base.

Volunteer Growth:
Since 2010, enrollment through our volunteer application process has been on a steady increase. Around 2009 – 2010, we would typically receive 60+ volunteer applications in a given year. As our proficiency in social media grows, using our web site and email marketing techniques for recruitment, our volunteer applications have been rising; 2015 climbed to73 and in 2016 to 84.

The 2016 number does not include our Nitrogen Nabbing recruitment effort. Our Nabbing effort even more dramatically expanded our cadre of volunteers (see section above, III (A) 1 (l)Nabbing Nitrogen).

Internships:
We accept applications from many college and high school students each year for our summer internship positions. Typically, we invite two bright students to work with us during the summer in non-paid internships. The positions vary between 20 and 40 hours per week for roughly 8-10 weeks, beginning in late May and ending mid-August. In addition, we offer semester-long fall and spring internships to aspiring college juniors and seniors. Since 2011, Friends of Casco Bay has fostered a wonderful relationship with the University of New England (UNE), to provide students with real-world marine science and marine policy experiences. To date, we have hosted six UNE students to work with our research, development, advocacy and outreach staff. These experiences have been rewarding for staff as well as students. Our philosophy for all of our internships is to engage these students in all aspects of our operations at Friends of Casco Bay, while also engaging them in some projects that will foster growth in their main area of interest. Our goal is for them to understand how a small environmental non-profit works in the larger arena of environmental advocacy, using hands-on science and community engagement.

In 2016, Ivy reached out to Vermont Law School to recruit student interns with legal expertise who could help her “build the files” on key issues we are tackling. In the spring of 2016 we were fortunate to have the assistance of Jennifer (Jenny) Leech from Vermont Law School. Jenny assisted Ivy through an externship with Vermont Law School to help with emerging issues such as municipal clamflat leasing, wharf maintenance dredging and CAD (Confined Aquatic Disposal) cell proposal, and the New Meadows Watershed Partnership bylaws. Jenny’s attention to detail and ability to access legal information helped grow the Baykeeping capacity.

In 2017, Ivy will continue to reach out to students at Vermont Law School and the University of Southern Maine Law School, to establish internships to continue assisting with legal topics through the Baykeeping Program.

Storm Drain Stenciling:
Rain events and snow melt can wash down city streets and flow into storm drains. Some storm drains are connected to the same pipes that carry household wastewater (including sewage) from bathrooms, sinks, and kitchens to a wastewater treatment plant. Unless there is a heavy rain, these pipes carry the stormwater to the sewage treatment plant. Other storm drains empty directly into the ocean.

When people pour hazardous wastes, such as household cleaners, unused paint, paint thinner, used oil, and lawn care chemicals, down a storm drain, they don't realize that they may be dumping pollutants directly into the Bay. Even if these products reach the sewage treatment facility, the treatment process may not be able to remove the hazardous components.

A cigarette butt or pet waste thrown into one storm drain may seem like a small thing. But small actions add up, and Casco Bay suffers from the cumulative effects of these small injuries. Our Storm Drain Stenciling program lets people know where the stuff they dump down the drain actually goes!

Our Storm Drain Stenciling project is a hands-on way for volunteers to "take to the streets" and create greater awareness about the need to reduce stormwater pollution. We provide stenciling kits and easy-to-use instructions to help groups organize stenciling events. By painting "DO NOT DUMP" messages near storm drains in the neighborhood, they learn about the connection to Casco Bay and become local advocates for reducing stormwater pollution.

There are a number of benefits from this low-cost, easy-to-manage volunteer recruitment activity:

- community engagement
- hands-on activities that help the health of the Bay
- team building activities
- educational components

In 2016, we hosted a school group, a Girl Scout Troop, a Portland Water District intern stationed on Peaks Island, a bank's Day of Service volunteer group, a community action association, and a Friends's volunteer event. All told, an estimated 435 storm drains were stenciled using more than 40 volunteers. We put group leaders in touch with those city stormwater coordinators who helped with the choice of streets to cover and often provided in-school lessons.

In 2017, we will maintain and restock our five stenciling kits and nine stencils. As stencils need to be replaced, we will explore using new smaller stencils and hand brooms that will fit more easily into our kits and make transport easier. We will also consider creating a survey of past kit users to get feedback about their projects. Peter will respond to corporations interested in day of service activities whether coastal cleanups or storm drain stenciling projects. He will provide day of support for these efforts. Mary will maintain the calendar of stenciling events so we know when the kits are available, and will coordinate use of the kits for groups doing independent stenciling projects (often youth groups to which she will offer curriculum activities). Sarah will

provide communications support, helping to get the word out about these opportunities through our online communication channels.

Coastal Cleanups:
Coastal cleanups have been a core component of Friends of Casco Bay's volunteer opportunities. From island cleanups to trash removal at heavily used urban shores, Friends has been a leader in this form of community engagement.

In 2016, Friends coordinated three cleanups on the Bay, assisted by 41 volunteers from organizations, such as TD Bank, Bowdoin College Center for the Common Good and Maine State Planning Office. Coastweek 2016 efforts resulted in the removal of over 600 pounds of trash from the shoreline.

In 2017, we will schedule a coastal cleanup in Back Cove in late April or early May in order to capture the trash accumulated over the winter and prevent it from entering the Bay. We will also participate in Coastweek, by hosting a cleanup in the greater Portland area on September 23rd. In addition, we will continue to work with corporations looking to do days of service with employees as team building opportunities.

B. Communications and Development

We recognize that both our fundraising and outreach efforts can be described as **building relationships through story telling**. In this Operating Plan, we have merged these two areas, as each department informs the other, and we already share staff, ideas, and language for outreach materials and proposals. Further, we have been working many of our ideas through the one committee of the Board which meets regularly, which long ago recognized the inseparability of these efforts, hence its moniker, the PR and Development Committee.

We are working to foster a storytelling culture inside our organization. It is through the telling of stories that we connect with the community, help the public recognize and remember key facts, highlight our responsiveness to issues the Bay faces, change behavior, foster better decision making, and encourage more participation in our work.

In our Communications and Development efforts, relationship building is essential. Through building and maintaining relationships with individual donors and with individual members of the media, we are building a stronger, more visible, and more sustainable organization. Together, we seek to broaden our visibility, increase engagement, highlight our work, and get people to take action.

1. Communications

a. Fostering a storytelling culture

Stories are the most important communications tool we have, so we are devoting more time to focus on collecting them. Our goal is to create an ever-expanding Story Bank of content that represents our current positions on key issues and describes all of our areas of work.

Our efforts aim to support our programmatic and fundraising goals for the fiscal year. This process begins by taking a holistic look at our operating plan to identifying topics from areas of our work.

We will disseminate specific stories in timely ways—ever aware of development deadlines (such as foundation due dates and annual fund mailings) and programmatic efforts (such as Citizen Stewards trainings or advocacy hearings). We will also adapt the stories for use in our grant proposals—and vice versa.

Communications and development staff meet weekly to brainstorm story ideas that may resonate with our audiences, prioritize those topics, and assess progress on the stories in development. Some of these are time-sensitive (“Timely”); others can be used any time or at the appropriate time of the year or season (“Timeless” or “Evergreen”). In addition, we meet frequently with Staff, Board, and others to generate additional ideas. We conduct interviews, draft stories and headlines, fact check, make a plan for the release, and adapt the stories for distribution in different media. We are utilizing online planning tools and templates to help us stay on track.

Our stories will live on our newly redesigned website. You can read more on that in the branding section below. This digital story bank will allow us to keep our language consistent across our many forms of outreach, including our presentations, interviews, social media, print media,

fundraising appeals, grant proposals, and donor reports. It will keep up- to-date information accessible to our Staff, Board, Members and Volunteers.

b. Disseminating, sharing, and promoting our stories

Our experiences producing our *Casco Bay at Risk* report and promoting and reporting on our Nabbing Nitrogen effort helped inform both the direction of our Water Quality Monitoring Program and how we inform the public about our work. Rather than produce one ambitious, time-consuming product like the report, we have moved to a "digital first" strategy.

We are adapting the way we work to reach our audiences more effectively, with more frequent and timely messaging through email and social media. Frequency is important with today's short attention spans. Sarah Lyman gleans the most up-to-date best practices for these tools by scouring the internet, attending workshops, and participating in online webinars.

We will track the metrics of the stories we share online via email, our website, and social media. We will use this data to consider the most effective stories for our printed publications, i.e., our annual report and the two newsletters we release each year. We are replacing the twice-a-year emailed version of our newsletter with monthly or twice a month emails that feature one major story with an eye-catching photo and a great headline.

Internally, we recognize the need to serve our stories to our supporters in different ways. We have three distinct audiences. The first is comprised of the supporters who have given us only a mailing address (i.e. we do not have their email addresses); we serve this audience through our printed publications and mailings. The second group is our supporters who receive both our print publications and our email communications. Our third audience is comprised of those who stay up-to-date with our work only through email.

The table below shows the size of each audience. It also shows how many of each audience are donors. Our intent is that through good communications, no matter what their preferred medium, the Not-Yet and Lapsed Donors will move up into the Donors/Members category. The subtotal of 6,491 Not-Yet and Lapsed is a strong pool of potential which we will continue to grow and mine.

	Just Mail	**Mail and Email**	**Just Email**	**subtotals**
Donors/Members *	303	1,217	3	1,523
Not-Yet Donors and Lapsed Donors	2,910	871	2,710	6,491

* households or businesses that donated in 2017 or 2016

Social media and traditional media stories support our communications to all these audiences, if they consume each type of media.

We also reach "not-yet" supporters through social media and traditional media outlets. Our goal is to bring them closer to us, as members or volunteers, and inspire them to take actions to

protect the health of Casco Bay. We will continue to evolve our matrix of communications platforms based on the ever-changing preferences of our audiences (for example, last fiscal year, we began using Instagram).

c. Building relationships with news media

In FY17, our work was mentioned in at least **70 media outlets**, featuring stories about our work with local communities on banning pesticides, on coastal acidification, Nabbing Nitrogen, green slime outbreaks, and more. Our outreach efforts on Nabbing Nitrogen earned Friends of Casco Bay a Golden Arrow Award from the Maine Public Relations Council: Silver for Events by a Nonprofit. See Appendix A to see all of our FY17 media hits.

In FY18,

- We will continue to identify media opportunities for interviews on radio, TV, and print. We will tailor specific story ideas to pitch to targeted news media outlets. We will invite individual reporters (especially TV) to accompany us on our boat or any time we have a highly visual activity.
- We will generate media alerts, press releases, and press conferences when we have something worthwhile to tell.
- We will discuss topics and timing (plan 6-12 months ahead) before pitching a story to a glossy publication. We may want to identify a contact person who we will work to engage beforehand through our social media and publications, and personal contact. This has proven worthwhile with Maine Media Collective.
- We will digitize our media kits. Even Maine Public Radio is asking for photographs and video for its website to elaborate on radio stories. More and more, editors and producers have to produce multimedia stories for their audiences. We plan to help with that effort and increase our ability to get our story told accurately by providing reporters with a digital version of images, fact sheets, and other background information.
- We will continue to do sponsorships on Maine Public Radio, for Film Festival and other selected events or issues.

d. Organizing and taking part in community events

i. <u>Friends of Casco Bay events (ones we organize)</u>

For a list of our FY17 events, see Appendix C. In FY17, we reached more than 3,860 people through presentations or exhibits at public events. Several of these events were broadcast on TV and radio, and reported in the media, reaching a significantly larger audience.

Our Champions for the Bay event provides a useful model for how to continue to engage targeted audiences. Our next Champions event focuses on a single issue: BayScaping. (for more information, see the section BayScaping).

Baykeeper Speaker engagements (organized by us and others): Friends of Casco Bay's strengths include making scientific data understandable and identifying what we in the community can do differently to motivate people to change their habits in ways that will have positive impacts on the health of the Bay. People want to do the right thing. Our speaker engagements provide an opportunity for us to bring our data and science into the community in a

personal and easily understandable form. This builds knowledge about the issues, informs people about what they should and shouldn't do that can protect the health of the Bay, strengthens our relationship with attendees, promotes a sense of shared ownership of the Bay and its health, and increases the credibility, visibility, and relevance of the organization.

In FY18,

- We plan to continue to offer our annual events in FY18 (house parties, film festival, donor appreciation event, volunteer appreciation events and members annual meeting), in addition to the episodic events described elsewhere in this plan, such as coastal cleanups.
- Our website will list the Baykeeper Speaker engagement topics we will have available for the year. We will promote them if/when we feel that the staff presenters can accommodate additional requests.
- When we do promote events, we will do so strategically, as we consider organizations, geography, and fundraising opportunities (such as, targeting communities in which we may host a house party, upscale retirement communities, or zip codes to whom we may target an appeal). We envision our presentations in the community as one more facet of our donor-centered approach to fundraising.

ii. <u>Community events (ones organized by other groups)</u>

Frequently, we are invited to participate in events sponsored by other organizations, community groups, and businesses. We will assess the value of each request, including timing, audience, effectiveness, and potential benefit in terms of generating memberships or other engagement. We also take into account our longstanding relationships through our work partners, Board members, and like-minded organizations.

In FY18:

- We will make our guidelines for accepting invitations to attend events more transparent, so that staff, Board, and potential partners understand why and when we will participate in outside events.
- In order to try to meet increasing demand, we plan to recruit volunteers who are available and trained in the basics of our messaging. This is a process so that we do not assign volunteers to cover an event without staff support until we are confident they can represent our positions accurately and project our "work with" attitude.

e. Developing images that tell our story: infographics, photographs, videos, maps, posters, displays, swag, and other visuals

In FY18:

- We will enhance our Photograph Bank. Because pictures are worth a thousand words, we will continue to employ two outstanding photographers, Kevin Morris and Dave Dostie, to help move our communications forward. We were fortunate to be able to enlist the services of a drone operator who provided an aerial image of Back Cove covered with slime, which generated a huge response from the news media outlets and the general public. We will commission photographs of

the Baykeeper boat around the Bay. We may recruit Board members to accompany these photo shoots so we can get photographs of our Boat on the water.

- We will look for more opportunities to expand our online and visual skills in-house.
- We will continue to use USM Media Studies students for video projects, as available.
- We will work with student groups that approach us, to create video stories about us, including a study by a Greeley High School May 2017 independent team: "A Day in the Life of a Baykeeper."
- We will keep alert for infographics that we may come across that we want to emulate. Ask, "How could we create something similar to tell a Casco Bay story?"

f. Advancing our branding

We will advance our visibility through cohesive visual branding in our documents, publications, buttons, website, emails, social media, PowerPoints, displays, signage, and other materials. Our website and story bank will help us use consistent language and messaging across our work areas and communication channels. Our communications efforts will reflect our organizational values and our leadership.

In FY18, we are continuing to improve an important part of our brand, our website. Our website is the public facing place we can point folks to for information our work. It needs to represent our brand. Sarah is spearheading the plan she created and embarked on in FY17, to redesign our website for a look aligned with our brand and improved functionality. This project will continue into FY18 as we gather more input from Staff and Board Members. The resulting website will use our stories and great visuals to show our areas of work, current issues, and the actions our community members can take to help the Bay.

g. Expanding and updating Bay Papers

Bay Papers are a tool for encouraging our supporters to speak knowledgably with their friends, colleagues, and neighbors about key issues impacting Casco Bay. As we inspire Champions for the Bay, we are building a network that will help lead the charge in moving our issues forward, while better connecting us with their friends, family, colleagues, and neighbors.

Each paper begins with an engaging question or story, explains why the issue is a problem for the Bay, and suggests to the listener or reader what we can do about the problem. Bay Papers are a useful device for educating our community about the Bay and our work, for speaking with one voice about the issues, for promoting advocacy, and for promoting better choices. They help us create more ambassadors around the Bay who understand what we as an organization and what we as a community need to recognize about our relationship to this special resource. As completed, each Bay Paper is posted to our website and print versions are available at our events.

We have created six Bay Papers (You Can Make a Difference, Combined Sewer Overflows, Ocean and Coastal Acidification, Nitrogen Pollution, Health Index, and Snow Dumping), as well as two publications on BayScaping.

In FY18:

- We will continue to use Bay Papers as the foundation of our Champions for the Bay program, making sure that Champions past and present receive copies of new and revised Bay Papers.
- In addition, we will start planning a new Bay Paper to complement our BayScaping Champions event [see the BayScaping section]. This Bay Paper will reinforce the theme of our BayScaping Champions event: *Having the hard conversations*. We may wait until after the event to craft that paper, as we expect to gain insights from our participants.
- Our Snow and Acidification Bay Papers, in particular, need to be updated.

2. Development

The mission of the Development Office is to ensure Friends of Casco Bay's long-term success through developing and sustaining diverse funding sources. Relationship building is crucial to our work. Key to this effort is being able to tell stories that highlight our effectiveness and that resonate with our donor's understanding of the world. Development staff will work with Communications staff to integrate our stories into our development work and our development work into our communications efforts.

We recognize that our organization continues to operate in a challenging economic environment. The gap in income inequality among individuals in our community and across the country continues to widen. Government support will continue to diminish as government agencies are hamstrung by partisan politics and stagnating budgets. Meanwhile, corporate support is increasingly tied to quid pro quo agreements that Friends of Casco Bay does not always find agreeable.

Yet, the community values our work and there is capacity among individual donors, foundations, local businesses, and government agencies to support it.

We have detailed plans to continue to grow our individual and foundation income—and to buttress our government and corporate line items. The plans are donor-centered, focused on building long-term relationships, keeping in close contact with our supporters, and deepening their commitment to our work. **In FY18**, we will also explore ways to grow our volunteer involvement in our events, better involve new members in our mission, and build more connections to a younger demographic. In-depth conversations on these ideas and issues will be conducted with the Board's Development/Public Relations Committee.

a. Individual giving

Individual giving has the highest potential for growth and will be a key factor for our long-term success. Our individual giving strategies are donor centered. We will reach our membership and individual giving goal through continuing to use renewal mailings, prospect lists, house parties, our Annual Fund, and through special appeals for specific programs and projects. We will renew our members through mining our Raiser's Edge *(i)* (RE*i*) database. We will update our renewal letters [and Thank You letters] and continue to personalize our asks. Our membership renewal process is heavily automated through RE*i*. Our Annual Fund mailings will be sent in May and late October. New members will continue to be an important part of our base building.

In FY18, we will:

- Help find easy ways for Board members to take part in our individual giving efforts—for example, through signing renewal letters, penning notes on Annual Fund letters, inviting friends, family, and colleagues to our events, and offering gift memberships.
- Use our membership cycle to renew existing members, re-recruit lapsed members, and encourage lower level donors to become Calendar Islands Circle (monthly) donors.
- Encourage increased gifts and additional gifts through Annual Fund mailings and through Special Appeals for support.
- Gain new members through house parties and through targeted acquisition mailings. We will acquire lists through the Federal boat registration list and through purchasing addresses for specific regions of the Bay.
- Provide numerous opportunities to give to support our work, including toward our program work, our specific restricted funds, and toward other specific needs
- We will hold two house parties. Individual plans for each of these events will be made in conjunction with the hosts. Host committees, food, drink, etc., will be tailored for the community that is hosting the event.
- Launch the Anchor Society, our planned giving circle.
- Encourage individual giving through the **Boat Donation Program**, which exists in partnership with **Maine Maritime Funding Association**. While we cannot depend on this program for a steady stream of income, we can "make our luck" happen through:
    - Promoting our donation program on social media, our website and through our newsletter.
    - Sending at least one email to boat owners/pumpout customers about our boat donation program
    - Mailing to boat owners and marinas about our boat donation program

We will cultivate and steward our donors through personal visits, boat ride visits, emails, update mailings, invitations to follow us on social media, and through inviting them to our in-person events. Donors who give $100 or more or are Calendar Islands Circle Donors will receive a special update about our work. Donors who give $250 or more will be invited to our annual Donor Appreciation event.

b. Foundation giving

We will develop boilerplate proposals for:

- General Operating Support
- Baykeeping
- WQMP/Environmental Monitoring
- Champions for the Bay
- Plastics monitoring
- Ocean Acidification/Nitrogen/Mudflat pH work
- Capital support (data sondes etc.)
- Others as appropriate (Speaker series, Storm Drain Stenciling, Curriculum, capital support, etc).

We will meet all applicable deadlines, including reporting requirements, giving Cathy enough time to review proposals and budgets. We will send out more than 100 foundation proposals. We will attempt to meet with trustees of foundations when possible and appropriate. We will, when possible and appropriate, use photos in our proposals to make them more dynamic and to better tell our stories.

It is the nature of foundation fundraising that it is fickle. Very few foundations fund the same organizations with any regularity. Others will not consider proposals from an organization they have funded in the past year. We reviewed Maine Philanthropy Center's updated Foundation Directory and added potential funders to our plans. We will work to ensure we are meeting all appropriate deadlines. When we meet the majority of our foundation deadlines—including the "long shots"—we garner some unexpected grants.

c. Corporate donations

We have a corporate ask schedule much like our foundation plan. Our prospect list will include companies mined from our database, Board connections, other nonprofits' annual reports, MaineBiz's lists, and companies that use "Casco Bay" in their names. We will work to connect the health of the Bay with business interests in our region.

10th Annual Wild & Scenic Film Festival, November 4, 2017: Through raising sponsorships, this event is an excellent way to leverage corporate support for Friends of Casco Bay. Because ticket sales cover most of the costs associated with the event, 100% of sponsorships can go to supporting all the ways we protect Casco Bay. This event will build on our past success. In order to make the 10th anniversary feel special, we will form a committee to focus on hosting the event. Doors will open at 3p.m., films will begin at or before 4 p.m., and we will end the event by 7 p.m. making it easier for folks to have dinner plans following the event. We are exploring hosting a raffle of a couple of items of significant value, tickets for which would be sold over a period of weeks prior to the event.

d. Government grants and contracts

Our Pumpout Program—supported by Maine DEP via US Fish and Wildlife Service funds—and our relationship with the Casco Bay Estuary Partnership— supported by EPA funding—are at the heart of our government support. CBEP funding has declined considerably in the past fiscal year. We will continue to work to convince the Partnership of the importance of supporting our work on behalf of the Bay. We will also try to raise government funds through Maine Outdoor Heritage Fund (MOHF) grant proposals, South Portland Water Resource Protection, Portland Water District, Gulf of Maine Council, EPA proposals, NOAA proposals, and other government opportunities.

e. Helping build our organization

The development office will continue to have a role in organizational branding and visibility efforts. We will keep the website up to date, use our in-house design ability to create invitations, newsletters, and other materials, and take advantage of social media and the integrated email abilities of RE*i*.

f. Leveraging our Water Quality, Baykeeping, and Communication efforts

Development staff will work collaboratively with our program staff to help leverage community support for our efforts. This includes helping organize our annual Volunteer Appreciation Celebration, helping develop our Champions for the Bay event, recruiting ambassadors for the Bay, and helping to develop and distribute Bay Papers.

g. Organizational Memory: Tracking and Reporting

We will continue to make our records reliable and thorough. We will track our contacts with donors and create accurate solicitation and results reports from RE*i*. We will work to harness the numerous capabilities of RE*i* and, where appropriate, train other staff members on using the database**.**

h. Exploring new events and ideas

We will explore ideas on how to better involve new members in our mission—we have considered, for example, hosting a "new member" orientation-style event. We will explore ways we may build more connections to a younger demographic. In-depth conversations on these ideas and issues will be conducted with the Board's Development/Public Relations Committee.

Should we find that we have the opportunity to move into new office space during this fiscal year, we will work to craft a fund-raising strategy to help offset costs, identify in-kind opportunities for donors, and leverage the move as a great visibility opportunity for the organization.

i. Remaining nimble

We will tackle opportunities as they present themselves. We will remain open to imaginative ideas, learn from mistakes, and build upon successes. We will revisit and evaluate this plan monthly. We will revise our development strategy and tactics as needed.

C. Technology and Capital Assets

In FY17, we:

- Improved the timeliness of getting the water quality database populated with data and continued to improve its functionality. We will also develop more in-house expertise in using *Access* to facilitate the processes of data analysis.
- Established our Continuous Monitoring Station at Cousins Island, using a data sonde and carbon dioxide sensor.
- Established a database for the quality assurance and management of the sonde data.
- Continued upgrades in computer workstations, software, and other office tools.
- Investigate a new photocopier.

In FY18, we plan to:

- Replace our photocopier.
- Continue upgrades in computer workstations.
- Continue the redesign of our website.
- Replace our pumpout boat if funding materializes through the DEP's grant program (see pumpout section of this plan).
- Explore new office space. We will do a workshop with Board and Staff to help define the attributes we seek, form a working group to assist Staff with looking at properties, and bring to the Board any options worth considering.
- Acquire a waterproof go pro camera and a new carrying case for our tri-fold "about us" display.
- Continue to engage professional photographers to capture images for use in various media and outreach efforts.

We have learned that certain donors respond very favorably to making contributions for specific "hard assets," and so to that end, we will engage in specific campaigns designed to support our ongoing capital needs. This makes not funding depreciation in our operating budget slightly more justifiable, knowing we likely can raise funds outside of normal operating revenue sources, for specific assets that help us do our work.

D. Management and Administration

1. Staff

Staff at the beginning of FY18, with year when they joined the staff, with 100 years of service to Casco Bay:

Cathy Ramsdell, CPA, CGMA, Executive Director	2003
Ivy Frignoca, Casco Baykeeper	2016
Mary Cerullo, Associate Director	1998
Peter Milholland, Citizen Stewards Coordinator and Boat Captain	1995
Mike Doan, Research Associate and Boat Operator	1997
Will Everitt, Director of Development	2006, 2010
Sarah Lyman, Development and Communications Assistant	2011
Sara Biron, Database Assistant	2014
Jeff Fetterer, Office Manager	2007
Jim Splude, Pumpout Coordinator and Boat Captain	2010

We do not anticipate adding staff this year.

We continue to refine staff roles, tweaking job descriptions, and we may alter some job titles after we go through Staff reviews early in FY18. We will continue to work on the integration of Baykeeping activities; with a new Baykeeper came new ways to work, and FY17 proved to be a year in training for us all. FY18 will be a year of refinement, with more clarification about how we work, and with a continued deepening of our internal and external collaborations.

We update our emergency succession plans annually, for use in the (we hope unlikely) event of an unplanned temporary absence of staff (the E.D. asks for updates during the annual staff review process). These plans identify the key roles and responsibilities of each staff person, particular staff members who would fill in on certain responsibilities in one's absence, and the activities so unique to that individual that the activity simply might not be attended to until their return.

We will continue conversations about nonemergency succession planning.

Staff turnover continues to be exceptionally low. This is invaluable, as we are able to maintain momentum as we deepen our abilities to work together. We have assembled and retained an excellent team by maintaining a good benefits package and by running a fair and flexible workplace. In return, we expect a high quality of engagement, exchange, and discourse, along with collaboration, appreciation of the big picture and attention to detail. We provide professional development opportunities across the board, such as attending classes, workshops, seminars, and conferences. Staff members also provide teaching content on various subjects in a wide variety of contexts, from classes at SMCC and UMaine Law, to seminars at Bowdoin and the Maine Association of Nonprofits.

Compensation was frozen in the FY09 / FY10 / FY11 budgets, and when revenue goals were met, an accrued bonus that had been included in the budget was released and in two cases supplemented with additional funds. The FY12 budget contained a 3% increase in compensation integrated into the numbers, not accrued, and this was greatly appreciated by

staff. The FY13, FY14, and FY15 budgets each contained a 2% increase; in addition, a couple of modest adjustments were made during FY13 and FY15, for merit and for partial compensation in lieu of health insurance for those leaving the plan to join spousal coverage. The FY16 budget included a 3% increase. The FY17 budget contained a 2% increase, with 3 modest base adjustments.

The FY18 budget proposes a 2% increase, with two small adjustments to base pay. Overall, this seems like a wise and modest investment in our intellectual capital, given the continued performance of the Staff and by extension, the organization.

2. Office Space

As mentioned in the section on Capital Assets, we will explore new office space. Southern Maine Community College informed us in the fall of 2016 that our lease will not be renewed, and while they are in no hurry for us to leave, we are "at will" tenants. It was agreed at the 2/21/17 Board meeting that we will proceed with defining our needs and explore spaces. We will do a workshop with Board and Staff to help define the attributes we seek, explore options, and bring to the Board any specific spaces/properties worth considering.

3. Financial Stability

Friends of Casco Bay has a strong balance sheet and three dedicated funds used to support operations: the Emeritus Fund for Advocacy, the Baykeeping Program Fund, and the Boats Fund, all housed at the Maine Community Foundation.

Monthly interim financial reports will continue to be prepared, and budget versus actual 12

4. Board

Board will continue to work with the E.D. to structure informative and engaging Board meetings, expanded Board Executive Leadership check ins, and prepare for Board leadership succession. Staff will continue to engage Board members in building and maintaining community relationships, policy issues, program efforts and accomplishments, governance, events, and connections to resources – financial and otherwise.

5. Strategic Planning

Our current Strategic Plan runs from 2013-2017. After this calendar year, and during the last quarter of this fiscal year (January – March 2018), our Board and Staff will begin to define what sort of strategic planning process we would like to engage in. Then we will identify an amount to include in the FY19 budget, identify possible facilitators, and create a new plan for 2018 – 2022 or 2023. Likely key topics will include exploring and building the case for a capital campaign along with leadership succession plans.

IV. FY18 Operating Plan Summary

Monitoring:

- Continue Citizen Stewards Water Quality Monitoring
- Continue deployment of an unattended data sonde with a PCO2 sensor at our station on Cousins Island
- Sample for microplastics in Casco Bay seawater (a single event) and work with Abby Barrows in analyzing the results
- Host a media event following a significant rain storm, to look at the depth of stormwater near Fort Gorges and talk about the health of the Bay
- Work with DEP, PWD, EPA, Portland, and South Portland to understand conditions in the Fore River, using DEP data along with the results of Nabbing Nitrogen in 2016
- Water quality data:
    - Continue to maintain and refine water quality database input into Murphy (Citizen Stewards data)
    - Add continuous sonde data to new database with appropriate quality assurance
    - Perform analytics using statistics and GIS, on various data sets to produce Health Index, create data maps and illustrations, assess trends
    - Provide datasets to those who request our data
    - Provide data to a collaborative ocean acidification data synthesis project should funding become available to the host groups
- Assist outside groups with:
    - pesticide detection procedures in stormwater and sediments
    - protocols and results of SMCC student work, including dissolved inorganic nitrogen transects in Portland Harbor and benthic infaunal inventories of some of our Citizen Steward monitoring sites
    - eelgrass monitoring efforts
- Collaborate on:
    - New Meadows Region
    - Maine Coastal Observing Alliance
- Discontinue profiles at the 3 sentinel sites and instead perform episodic sonde profiling in particularly challenged locations in the Bay
- Discontinue collecting pH sediment data in collaboration with Dr. Brian Beal's research

Baykeeping

- Ramp up communications internally and with public to strengthen our baykeeping work, Ivy's role as Casco Baykeeper, and enhance public perception about what we are working on, why, and how
- Participate in oil spill preparedness exercises and prepare a draft internal response and communications plan for Friends
- Continue work on the Nonfederal Dredge Committee activity re CAD cell in Portland Harbor
- Track other potential dredge projects around the Bay
- Continue work with the Maine Ocean and Coastal Acidification Partnership
- Continue work on ways to limit nitrogen inputs into Casco Bay, from continued exploration of getting a standard in place, tightening nitrogen discharges in permits if possible, and increase public awareness through public speaking, MOCA work, etc.

- Continue attending Portland Water Stakeholder meetings to track progress on CSO separation projects
- Monitor draft discharge permits and comment as appropriate
- Participate in the early stage meetings as local communities prepare for the drafting of the state's new MS4 (stormwater) general permit
- Follow developments of state legislation and local ordinances; work with communications staff to alert membership to issues; testify as appropriate
- Track a number of other, emerging issues, such as intertidal aquaculture, rockweed management, plastics and microplastics, other aquaculture, cargo in the port, Regional Ocean Planning, climate change and sea level rise

BayScaping

- Continue to offer Bayscaping presentations to groups
- Explore and probably host a Champions for the Bay event focused on BayScaping and ordinances around the concept "Having the Hard Conversations in Our Community"
- Collaborate with municipalities and community groups who are considering pesticide and fertilizer bans and ordinances
- Track related bills in the legislature

Casco Bay Curriculum

- Continue to explore best next iterations for delivering the Curriculum to teachers, by meeting with teacher experts on aligning to standards
- Explore ways to protect or enhance Friends of Casco Bay's branding on the Curriculum
- Conduct a workshop with follow up, the design of which will depend on explorations above

Pumpout Program

- Continue to offer pumpout services for 2017 season
- Acquire a new pumpout vessel by working with Maine DEP and 90% reimbursement grant

Volunteers

- Recruit and care for volunteers at all levels: water quality, coastal clean ups, storm drain stenciling, Nabbing Nitrogen, office assistance, events
- Continue to recruit interns throughout the year

Communications and Development

- Foster a storytelling culture
- Continue to build relationships with news media
- Organize events and take part in community events (see Appendix D – FY17 Calendar)
- Develop images and visuals that tell our stories
- Launch our new website
- Update the Bay Papers
- Continue to grow and deepen giving from individuals
- Continue to garner foundation, corporate and government support
- Take advantage of and create visibility and branding opportunities as they arise

Technology and Capital Assets

- Replace the photocopier, acquire a go pro camera

- Continue our cycle of upgrading workstations
- Replace our pumpout boat (if DEP obtains their federal grant to do so)
- Continue to engage professional photographers to build our image bank

Management and Administration

- Maintain staff and financial stability and resiliency
- Explore new office space
- Prepare to engage in Strategic Plan in 2018

V. FY18 Budget Highlights

The Operating Plan for FY18 describes our plan for improving and protecting the Bay for the year April 1, 2017, through March 31, 2018. The Operating Plan describes the work and the rationale for our efforts in four sections: Programs, Communications and Development, Technology and Capital Assets, and Management and Administration.

A budget is the identification of the resources we believe it will take to accomplish our Operating Plan, and it represents a best guess at a point in time based on reasonable assumptions. Reality will prove to be different. The FY18 Budget is presented as a two-page summary with a Supplemental Schedule. These two documents are formed from a collection of detailed information, including a 400+ line item detailed budget, and supporting detailed worksheets on such areas as compensation, benefits, and estimated funds transfer calculations.

To meet the goals of our FY18 Operating Plan, expenses are budgeted at $921,050, a 2 % increase over this year's budget, and a 4% increase over this year's estimated actual expenses. As usual, expenses include a $12,000 contingency line item; if we do not have significant, unexpected expenditures, this expense line will help "absorb" some of the depreciation expense.

The Budget identifies $864,238 in operating revenue from a robust variety of sources. This is 2.6% lower than this year's expected revenue, estimated to total around $887,000, primarily because the Jane's Trust funding of $50k/year for 2 years to help with our Baykeeping transition is done. We anticipate continued strong growth in Individual giving, while we remain conservative about Corporate, Foundation, and Government sources.

In FY15, we incurred expenses related to the Baykeeper retirement, and funds were set aside to offset the annual costs into FY18. Per the terms of our agreement, this arrangement will be complete and will discontinue as of October 31, 2017.

This budget contains a line item Special Use of Special Releases for Operations Not to Exceed. In the past (FY09 – FY14) this section has reflected the potential use of accumulated surpluses from prior years, located in the Net Assets section of the Balance Sheet in the Board Designated Contingency Fund, to absorb an operating deficit, should one occur. The good news is that while budgeted many times as a "gap filler," ranging from $26,000 to $45,000 each year, we never had to utilize it. We have not included a gap filler since the FY14 budget.

Our goal each year is to achieve break even or better results in operations before depreciation, a noncash expense. This year, however, with the completion of the Jane's Trust support, the relatively small amount of carryover funds from FY17 into FY18, and the discontinuation of CBEP's $50k/year support for the Citizen Stewards Water Quality Monitoring Program, our budgeted expenses exceed realistic revenue goals. We propose a gap filler of $58,000 to create a balanced budget and responsibly show how we will use new resources as well as resources we have put aside. The supplemental schedule to the budget (Note O) suggests we consider using not only accumulated operating surpluses in Unrestricted Net Assets, but also special releasese from each of our restricted funds.

The beauty of having a fiscal year that ends on March 31 is that we can experience the results of calendar year-end giving, assess where we are in relation to where we thought we would be (an ongoing process, actually), and then together explore options to best meet our goals of delivering on our plan while striving to do better than break even.

The Budget to support the FY18 Operating Plan will be fodder for discussion at our upcoming March 6th Budget Workshop.

In addition to what is noted above, FY18 Budget highlights include:

- Increase in compensation of 2%, three small base adjustments, and maintenance of benefits–modest investments in the intellectual capital of the organization
- Continuation of Citizen Stewards Program and Continuous Monitoring Station
- Events, including microplastics sampling, a flares-take-back event, a provision for a launch event should the acquisition of a new pumpout boat come to pass, house parties, annual events, special 10th anniversary film festival work
- Equipment maintenance, additions and upgrades, from boats to workstations
- Continuing engagement of professional photographers
- Savings from not attending the upcoming Waterkeeper annual conference (last fiscal year, this line item cost $4,600 for registration and travel for 2 people)

The budget does not contain specific provisions for an office move, as discussed at the 2/21/17 Board meeting.

VI. APPENDICES

Appendix A – Measuring Sediment pH

***Background*:** Our concerns about ocean acidification, inshore nitrogen pollution creating conditions for coastal acidification, and reports about "death by dissolution" of baby mollusks unable to survive in low pH conditions led us, in 2011, to begin looking closely at how to assess the **pH levels of sediments in clam flats in Casco Bay**.

During the summer of 2011, we investigated the feasibility of various methods for collecting data on the pH levels of sediments in clam flats. Low pH is one of many factors that can inhibit the ability of clam spat to grow and prosper. We collaborated with Dr. Mark Green at St. Joseph's College and Dr. Joe Salisbury at the University of New Hampshire (UNH), experts on the effects of ocean acidification on calcifiers' ability to develop, or not, in acidic conditions, to design a simple protocol for data collection. The development of this protocol turned out not to be simple, as it took most of the summer of 2011 for us to get the bugs out of the protocol before we could finally use it to collect data in a consistent manner from flat to flat.

In 2012, we improved the protocol by upgrading our pH electrode to an Accumet AP 115, which allowed us to take measurements directly on the mud surface. We identified 30 flats to be sampled and collected data on sediment pH, seawater pH, water temperature, and sediment oxidation reduction potential (ORP). Nitrogen pollution can have a cascading effect, eventually resulting in lowering the pH of marine sediments, and measuring ORP provides some indication of the degree of eutrophication or organic enrichment in the area.

We also collected sediment samples to be analyzed for percent carbon, percent nitrogen, and surface area, by Dr. Larry Mayer of the University of Maine Darling Center. ORP, percent carbon and percent nitrogen, together, can be used to determine the extent of organic enrichment of the sediment, which is important as we continue to investigate whether and how nitrogen pollution is the cause of coastal acidification.

Data was grouped by productive clam flats (actively being clammed) and flats which were not or were no longer productive. The data showed that average pH was lower at the sites located on nonproductive flats, and organic carbon and nitrogen concentrations were higher at sites located on nonproductive flats. This may be evidence of the effects of nitrogen pollution on the flats. More work needs to be done.

In 2013, we began to assess the critical question of whether or not measuring the pH of mud is the most efficacious way to measure the mud's acidity. A low carbonate saturation state is what actually drives the dissolution of calcifiers, and pH has been used as an affordable and relatively easy proxy for saturation state. To test the correlation between pH and carbonate saturation state, we measured both parameters concomitantly during the 2013 field work. We also improved our understanding of sediment pH temporal and spatial variability by focusing on just one clam flat ("site") but collecting much more data, visiting the flat seven times between June and September and sampling at a number of places throughout the intertidal zone. Recompence Cove clam flat in Freeport was selected as the study site. The stations were determined prior to

the first monitoring event and marked with wooden stakes. Water temperature and salinity were measured, then sediment data was collected along two parallel transects running perpendicular to the waterline from the high intertidal to the low intertidal. These two transects were 5 meters apart and included 5 sampling points ("stations") each, with the samples and measurements being collected at the waterline edge of the outgoing tide. The stations were about 30 meters apart. Each station included 10 rounds of sediment measurements, including sediment pH, sediment temperature, and 3 rounds of sediment ORP. Sediment samples were collected at each site and analyzed for carbonate saturation state. Sampling frequency was twice per month in June, July, August, and once in September. Dr. Green and Dr. Joe Salisbury of the University of New Hampshire are collaborating with us on this component of the project, and the laboratory analysis was done at no cost to Friends of Casco Bay.

In addition, we deployed live clam spat (baby clams) to assess the effect of low pH in the mud and to obtain visual evidence. The spat were provided by Dr. Brian Beal's shellfish hatchery at the Downeast Institute in Machias. We developed and tested a clam spat exposure bioassay, using the hatchery-reared spat, deployed in mesh-covered PVC tubes on different parts of the flat, left on site for varying lengths of time (1, 3, and 7 days). After retrieval, the clam spat were examined and photographed using the Bowdoin College Scanning Electron Microscope to determine the extent of dissolution.

Again, pH was higher in the productive region of the flat and lower in the unproductive region. pH levels were similar between transects, and also showed a negative correlation with sediment temperature; higher sediment temperatures resulted in lower pH values. The clam spat bioassay was incomplete but did provide us with a good protocol to work with as well as a few images of "pitted" clams, indicating that dissolution may be taking place at the study site.

Our goal for 2014 was to collect strong visual evidence that clam dissolution is occurring in the sediment of Casco Bay. We refined our protocol for deploying clam spat and set up another round of spat deployment experiments. One to two-millimeter spat were purchased from the Beal hatchery in Machias, and were deployed for one-week and two-week periods. Spat were retrieved after the appropriate time period by removal of the sediment and sieving with a one millimeter sieve. Measurements of sediment pH and temperature were taken during both deployment and retrieval. Retrieved spat were cleaned and preserved, and then imaged at the Southern Maine Community College Microscope Lab. Most of the spat showed evidence of pitting, regardless of deployment period. Photos of this evidence appear in our report *A Changing Casco Bay,* released in 2015.

Also in 2015, we presented our sediment pH monitoring protocol at the Maine Water Conference and an international aquaculture conference. We set up trainings and informational presentations with interested groups statewide, and began sharing the methodology we use.

In 2016, we measured sediment pH biweekly on a Freeport clam flat as part of research conducted by Dr. Brian Beal of the University of Maine, Machias. He compared pH in the sediment of plots treated with crushed shell material to the pH of sediment in untreated plots, using our data. This analysis will be published in 2017. Also in 2016, we completed a large training in how to use sediment pH protocol.

Appendix B – FY17 Media Report

April 2016	Working Waterfront	Ivy Frignoca, new Baykeeper
April 8	Greenindustrypros.com	Another ME community moving toward pesticide ban
April 27	Bowdoin College NEWS	Common Good Grants Awarded to 9 Local Nonprofits
May 1	ME Sunday Telegram	Survival in the flats (clams) (p.1)
May 1	ME Sunday Telegram	Landscape/hardscape priority: Go soft on earth (Source)
May 17	PPH, Maine Voices	So Po on the right track with comprehensive pesticide ordinance, references FOCB
May 17	Maine Love Radio podcast	"Happy Lawns, Healthy Waters" #243 with Amy Witt, Frank Wertheim, Mary Cerullo, Ivy Frignoca
June 2	Vermont Quarterly	UVM People: Ivy Frignoca
June 9	The Atlantic Cup	http://www.atlanticcup.org/partners
June10, 13	GreenDrinks emails	FOCB is featured NP
June 10	Scarborough Leader	Lawns, Lobsters, and Legacies
June 11	Munjoy Hill News	The Atlantic Cup/P. Milholland
Summer 2016	Currents: Royal River Conservation Trust newsltr	Mary to speak at Annual Mtg
July 6	The Current/KeepMeCurrent	FOCB holds water sampling flash mob
July 8	WMTW/Ch.8 Sarah Long blog	Green slime belongs on game shows, not in our water
July 10	PPH	NN
July 11	WCSH, report	NN
July 11	WGAN	NN
July11	Wopular	NN
July 11	Getty News/Best of news	NN photo caption
July 14	What's new with MOHF?	Article on Mike Doan and clamflats
July 15	The Forecaster	So Po Nitrogen Nabber (Deb Sandler)
July 15	Tastemade/All Night	Cathy & Jack on Loading up on Lobster in Portland, ME
July 15	MPBN/Maine Calling	Citizen Science/ Nabbing Nitrogen
July 19	BDN	Ships aren't required to take precaution against oil spills when refueling
July 29	SoPo/CE Sentry	Harbor health exam (Photo caption of NN)
August 7	WGME	Green Slime (Ivy)
August 7	MST	Green slime points to pollution of Casco Bay (Cathy
August 7	SF Gate	Environmentalists concerned with algae levels near Portland
August 8	PPH	Dredging (Cathy)
August 9	WMPG radio interview by Gus Goodwin	Green Slime (Cathy)
August 2016	West End News	Ltr to editor re. pesticides ordinance, FOCB mentioned
August 14	MST	How do cruise ships stack up in environmental impact? (CLR)
August 15	MPBN	Green slime interview of Cathy by Gus Goodwin
August 16	PPH	Maine Voices Partnership contributes to SMCC student success, Casco Bay health by CLR and Ron Cantor
August 29	PPH	1000's of pogies turn up dead in Portland Harbor, Casco Bay Photo by Peter Milholland
August 30	PPH	Oil spill response ship pulled from service as Portland pipeline deliveries slow Interview of Peter Milholland
Sept 10	Bangor Daily News	Wild & Scenic Film Festival
Sept 14	PPH	SoPo rolls out plans to promote pesticide ordinance
Sept 16	The Forecasters	Education on Pesticide Ban in SoPo
Sept 18	West End News	Algae Blooms Could Spell Trouble for the Bay

Sept 21	As-it-happens update Monitoring A Changing Casco Bay: Mike Doan, Friends of Casco Bay (SMCC lecture)
Sept 23-25	MOFGA Common Ground Fair program Public Policy Teach-in: Local Pesticides Control (M Cerullo)
Oct 2016	West End News Fall Lawn Care Tips that Benefit Casco Bay
Oct 18	MANP Nonprofit Weekly Photo of Bk boat on the cover, credit FOCB
Oct 19	Maine Outdoor Heritage Fund newltr Protecting clam flats from acidification
Oct 31	The Forecasters Donation by Sea Tow
Oct 31	NRCM News Cathy pictured with their ED Lisa Pohlmann
Nov 4	*Wild & Scenic Film Festival Update* Our Nov. 12 Festival on tour
Nov	Maine Home Design Film Festival
Nov 14	WCSH TV Peter Milholland on King Tides
Nov 27	Maine Sunday Telegram Things Mainers can do to combat climate change
Dec 8	The Coastal Journal Citizen Science: How to help protect coastal waters
Dec 2016	Turner Digital News C-sense: CO2 sensor used in Carbonate Study (Mike Doan)
Jan 6, 2017	Wpopular Vol Appreciation & Annual Mtg announcement
Jan 8	MST/Scene & Heard Wild & Scenic Film Festival photos, Nov. 12
Jan 12	The Coastal Journal Connect the Dots: Fish Chlorine, Snow & Ocean
Jan 15	MST/The Source Annual Meeting info calendar
Jan 15	MST/The Source mag BayScaping presentation to Foreside Garden Club article
Jan 19	PPH Full-page EPC ad: vote against Scott Pruitt for EPA
Jan 22	MST, Scene & Heard FOCB Donor Appreciation Event, Nov. 30
Jan 30	PPH Chad Coffin ltr to the editor
Feb 3	The Forecasters Chad Coffin ltr to the editor
Feb 5	MST, Scene & Heard Annual meeting photos
Feb 8	The Working Waterfront Casco Bay better off for volunteer efforts https://mail.google.com/mail/u/0/?shva=1#inbox/15a24862aa033ae6
Feb 20	Mainebiz Board appointments
Winter 2017	Casco Bay Currents (CBEP) Nabbing Nitrogen, Sediment study report https://mail.google.com/mail/u/0/?shva=1#inbox/15a61c76e55332e5
Feb 23	WMTW-Ch. 8 Sarah Long on Nabbing Nitrogen http://www.wmtw.com/article/citizen-scientists-help-keep-casco-bay-healthy/8972719
Feb 24	Yahoo News Citizen scientists help keep Casco Bay healthy (WMTW)

Appendix B – Pumpout Metrics, 1999 – 2016

Year	Pumpout Coordinator	# of Pumpouts / Service Calls	Gallons of Sewage Diverted	# of Pumpout Customers	# of Pumpouts in 20 Gallon Increments	# of Flushes	Total $ Billed	Notes
2016	Splude	543	15,320	159	766	48	$ 7,655	measured in 20 gallon units
2015	Splude	535	13,640	105	462	44	$ 5,280	measured in 20 gallon units
2014	Splude	570	18,000	115	622	64	$ 7,180	measured in 20 gallon units
2013	Splude	637	12,740	100	448	42	$ 5,110	measured in 20 gallon units
2012	Splude	340	6,810	106	532	47	$ 6,055	measured in 20 gallon units
2011	Splude	405	10,400	122	529	37	$ 6,035	measured in 20 gallon units
2010	Splude	294	8,280	120	417	38	$ 4,335	measured in 20 gallon units
2009	Mattsson & Linnell	213	4,260	78	213	27	$ 2,565	measured in 20 gallon units
2008	Mattsson & Linnell	332	7,160	100	335	34	$ 2,185	measured in 20 gallon units
2007	Mattsson & Linnell	155	5,100	88	212	29	$ 1,485	measured in 20 gallon units
2006	Mattsson & Linnell	203	4,060	73	203	40	$ 2,380	measured in 20 gallon units
2005	Adibi	116	3,425					measured in 20 gallon units
2004	Saas	471	7,347					actual
2003	Saas	659	10,300					actual
2002	Saas	754	10,425					actual (est would equal 14,480 gallons)
2001	Madeira	1,126	16,125					actual (based on Palm Pilot information)
2000	Madeira	771	15,400					estimated
1999	McGivern	650	13,000					estimated
1998	McGivern	289	5,780					estimated (old estimate 4,500)
1997	Bertocci	215	4,300					estimated (old estimate 4,000)
1996	Hackett	160	3,200					estimated (old estimate 2,500)
1995	Hackett	51	1,020					estimated (operations 5 weeks 1st season)
		9,489	**196,092**					

Appendix C – Where We Have Been – FY17

		You may have seen us at these venues…		Speaking	# in audience at speaking event	# at tabling event	Volunteers and Staff in attendance
04/05/16	Portland	Waynflete School	Sustainable Ocean Studies lecture			250	Mary
04/12/16	Portland	Unum	Earth Day fair			100	Mary
4/15 &16	Portland	USM Portland	National Pesticides Forum		20	100	Mary, Abby Doane
04/22/16	Portland	DiMillo's Wharf	Buttlers Press conference	Ivy Frignoca	20		
04/23/16	Portland	Deering High School	Green Neighor Family Fest			800	Mary, Pat Ianni
04/27/16	Falmouth	TD Bank	Eco-fair			75	Pat Ianni
05/21/16	Yarmouth	World Fish Migration Day	Royal River Conserv mtg			500	Ann Thayer
6/1 to 5	Wilmington, NC	Waterkeeper Alliance Conference				200	Cathy & Ivy
06/02/16	Portland	Portland Waterfront	Storm drain stenciling with RBC	Peter Milholland	11		interns Josh Cluckey, Sarah Suslovich
06/11/16	Portland	Walking the Working Waterfront	The Atlantic Cup	Ivy and Peter	5		
6/14/2016-continuing	Peaks Island	Jones Landing	Green Drinks featuring FOCB	Ivy Fignoca		300	Sarah, Sara, Will, Peter
06/14/16	Portland	City Hall	Portland Pesticides Task Force	Cathy Ramsdell	35		Mary Cerullo
06/18/16	Portland	streets	Storm drain stenciling w/ YELP	Sarah Lyman	16		Meghan Suslovic
06/22/16	Cumberland	Quaker Tavern	Toxics Action event		35		Will Everitt, Mary Cerullo
06/23/16	Yarmouth	Royal River Conservation Trust Annual Mtg	BayScaping presentation	Mary Cerullo	40		
06/24/16	Portland	Bare Naked Ladies concert	Tabling			100	Kim Anania
06/25/16	Portland	Ri Ra Maine Beer Company Tap Take Over	Tabling			75	Will Everitt
07/10/16	Portland & South Portland	Fore River and Harbor	Nabbing Nitrogen	Ivy Fignoca	93		staff

07/11/16	Portland & Falmouth	Casco Bay	Jim took Pam & 2 others on a pumpout tour for 4 hours	Jim Splude	4	
07/12/16	South Portland	SMCC& Willard Beach	CIEE international students	Mary Cerullo	30	
07/18/16	South Portland	SoPo conservation Commission	pesticides ordinance deliberations		9	Mary Cerullo
07/20/16	Freeport	Home of Scott & Joan Samuelson	House party	Cathy, Ivy, Joanie, Eddie Woodin	150	staff
08/15/16	South Portland	City Council meeting	Vote on Pesticides ordinance	Mary Cerullo	80	
08/19/16	Scarborough	ME Bd of Pesticides Control meeting	Comments on MBPC Ed Program	Mary Cerullo	35	
09/17/16	South Portland	Bug Light	Coastweek Cleanup	Sarah, Iliana	12	
09/20/16	South Portland	SMCC	Monitoring a Changing Casco Bay	Mike Doan	60	
09/24/16	Unity	Common Ground Fair	Local Pesticides Control Teach-in	Mary Cerullo	60	
10/11/16	Yarmouth	Royal River Alliance	Words on Water	Mary Cerullo	15	
10/26/16	Brunswick	MANP Leadership Inst. for New Executive Directors	Building Financial Credibility in the Nonprofit World	Cathy Ramsdell	18	
11/01/16	Portland	City Hall	Portland Pesticides Task Force	Cathy Ramsdell	20	Mary Cerullo
11/02/16	South Portland	SMCC	Teacher course, wk 1	Mary Cerullo	15	
11/15/16	Augusta	State House	MOCA Symposium	Ivy Frignoca	51	Mike Doan, Mary Cerullo
11/16/16	South Portland	SMCC	Teacher course, wk 2	Mary Cerullo	15	
11/16/16	Portland	GMRI	Waterfront Alliance	Peter Milholland	22	
11/16/16	Falmouth	Portland Country Club	Dartmouth Club	Ivy Frignoca	6	
11/17/16	Portland	Cumberland Club	Sunrise Club	Ivy Frignoca	16	
11/18/16	Portland	Portland Museum of Art	Reading Moby Dick	Will Everitt	30	
11/28/16	South Portland	SMCC	BayScaping for Botany class	Mary Cerullo	20	
11/30/16	Freeport	Harraseeket Inn	Donor Appreciation event	Cathy Ramsdell, Ivy Frignoca,	131	staff

				Jack Thomas			
12/06/16	South Portland	SMCC	BayScaping for Turf Mgt.	Mary Cerullo	14		
12/10 16	Scarborough	Black Point Surf Shop Holiday Party	FOCB exhibit and brief presentation	Tollef Olson	75		
12/08/16	Augusta	2016 MANP Nonprofit Financial Conference	Having the Hard Financial Conversations	Cathy Ramsdell	27		
12/14/16	Freeport	Patagonia	Open House for Enviros		45		Sarah Lyman
12/19/16	South Portland	SMCC	CBEP Monitoring Committee	Mike Doan	25		
01/17/17	Augusta	Hall of Flags State House/EPC press conf	EPC members			45	Ivy, Mary
01/01/17	Augusta	State House	Marine Caucus	Ivy Frignoca	30		Mary
01/01/17	Falmouth	Falmouth Public Library, Foreside Garden Club	BayScaping	Mary Cerullo	25		Susan Gilpin, volunteer
03/08/17	Falmouth	Ocean View	BayScaping	Mary Cerullo			
03/16/17	Cumberland	Cumberland Library Lecture Series	FOCB	Ivy Frignoca			
03/31/17	Portland	Portland Flower Show	BayScaping	Mary Cerullo			
Totals					**1315**	**2545**	

FY18 Calendar

April	May	June	July	August	September
		House parties			Pumpout Boat Launch?
		Flares Take Back Day?			
1 Sa Flower Show	1 Mo	1 Th	1 Sa	1 Tu	1 Fr
2 Su **Flower Show**	2 Tu	2 Fr	2 Su	2 We	2 Sa
3 Mo	3 We	3 Sa	3 Mo	3 Th	3 Su
4 Tu	4 Th	4 Su	4 Tu Independence D.	4 Fr	4 Mo Labor Day
5 We	5 Fr	5 Mo	5 We	5 Sa	5 Tu
6 Th	6 Sa	6 Tu **Oil Spill Exercise**	6 Th	6 Su	6 We
7 Fr	7 Su	7 We **Oil Spill Exercise**	7 Fr	7 Mo	7 Th
8 Sa **WQ Training**	8 Mo	8 Th **Oil Spill Exercise**	8 Sa **WQ Sampling**	8 Tu	8 Fr
9 Su	9 Tu	9 Fr	9 Su	9 We	9 Sa **WQ Sampling**
10 Mo	10 We	10 Sa	10 Mo	10 Th	10 Su
11 Tu	11 Th	11 Su	11 Tu	11 Fr	11 Mo
12 We	12 Fr	12 Mo	12 We	12 Sa **WQ Sampling**	12 Tu
13 Th	13 Sa	13 Tu	13 Th	13 Su	13 We
14 Fr	14 Su	14 We	14 Fr	14 Mo	14 Th
15 Sa **WQ Sampling**	15 Mo Hazwoper Training	15 Th	15 Sa	15 Tu	15 Fr
16 Su	16 Tu **Board Meeting**	16 Fr	16 Su	16 We	16 Sa
17 Mo Patriot's Day	17 We Hazwoper Training	17 Sa **WQ Sampling**	17 Mo	17 Th	17 Su
18 Tu **Board Meeting**	18 Th	18 Su	18 Tu	18 Fr	18 Mo
19 We	19 Fr	19 Mo	19 We	19 Sa	19 Tu **Board Meeting**
20 Th	20 Sa **WQ Sampling**	20 Tu **Board Social**	20 Th	20 Su	20 We
21 Fr	21 Su	21 We	21 Fr	21 Mo	21 Th
22 Sa Urban Runoff	22 Mo Vol. Train, Oil Spil	22 Th	22 Sa **WQ Sampling**	22 Tu	22 Fr
23 Su	23 Tu	23 Fr	23 Su	23 We	23 Sa **WQ Sampling**
24 Mo	24 We	24 Sa	24 Mo	24 Th	24 Su
25 Tu	25 Th	25 Su	25 Tu	25 Fr	25 Mo
26 We	26 Fr	26 Mo	26 We	26 Sa **WQ Sampling**	26 Tu
27 Th	27 Sa	27 Tu	27 Th	27 Su	27 We
28 Fr	28 Su	28 We	28 Fr	28 Mo	28 Th
29 Sa	29 Mo Memorial Day	29 Th	29 Sa	29 Tu	29 Fr
30 Su	30 Tu	30 Fr	30 Su	30 We	30 Sa
	31 We		31 Mo	31 Th	

October	November	December	January	February	March
Pumpout Boat Launch?					
1 Su	1 We	1 Fr	1 Mo New Year's Day (obs.)	1 Th	1 Th
2 Mo	2 Th	2 Sa	2 Tu	2 Fr	2 Fr
3 Tu	3 Fr	3 Su	3 We	3 Sa	3 Sa
4 We	4 Sa **Film Fest**	4 Mo	4 Th	4 Su	4 Su
5 Th	5 Su	5 Tu	5 Fr	5 Mo	5 Mo
6 Fr	6 Mo	6 We	6 Sa	6 Tu	6 Tu
7 Sa	7 Tu	7 Th	7 Su	7 We	7 We
8 Su	8 We	8 Fr	8 Mo	8 Th	8 Th
9 Mo Columbus Day	9 Th	9 Sa	9 Tu	9 Fr	9 Fr
10 Tu	10 Fr Veterans D. (obs.)	10 Su	10 We	10 Sa	10 Sa
11 We	11 Sa Veterans Day	11 Mo	11 Th	11 Su	11 Su
12 Th	12 Su	12 Tu	12 Fr	12 Mo	12 Mo
13 Fr	13 Mo	13 We	13 Sa	13 Tu	13 Tu
14 Sa **WQ Sampling**	14 Tu	14 Th	14 Su	14 We	14 We
15 Su	15 We	15 Fr	15 Mo M. L. King Day	15 Th	15 Th
16 Mo	16 Th	16 Sa	16 Tu **Board Meeting**	16 Fr	16 Fr
17 Tu **Board Meeting**	17 Fr	17 Su	17 We	17 Sa	17 Sa
18 We	18 Sa	18 Mo	18 Th	18 Su	18 Su
19 Th	19 Su	19 Tu	19 Fr	19 Mo Presidents' Day	19 Mo
20 Fr	20 Mo	20 We	20 Sa	20 Tu **Board Meeting**	20 Tu **Board Meeting**
21 Sa	21 Tu **Board Meeting**	21 Th	21 Su	21 We	21 We
22 Su	22 We	22 Fr	22 Mo	22 Th	22 Th
23 Mo	23 Th Thanksgiving Day	23 Sa	23 Tu **Volunteer Appr.**	23 Fr	23 Fr
24 Tu	24 Fr Thank You Day	24 Su	24 We **& Annual**	24 Sa	24 Sa
25 We	25 Sa	25 Mo Christmas Day	25 Th **Meeting**	25 Su	25 Su
26 Th	26 Su	26 Tu	26 Fr	26 Mo	26 Mo
27 Fr	27 Mo	27 We	27 Sa	27 Tu	27 Tu
28 Sa	28 Tu **Donor**	28 Th	28 Su	28 We	28 We
29 Su	29 We **Appreciation**	29 Fr	29 Mo		29 Th **New Fiscal Year**
30 Mo	30 Th **Event**	30 Sa	30 Tu		30 Fr **Party**
31 Tu		31 Su	31 We		31 Sa