WORK PLAN & BUDGET
FOR
FISCAL YEAR 2021

MORRO BAY NATIONAL ESTUARY PROGRAM
WORK PROGRAM & BUDGET
FISCAL YEAR 2021

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1.0 Introduction

The Morro Bay National Estuary Program (Estuary Program) works to protect and restore the Morro Bay estuary and its watershed through the implementation of our Comprehensive Conservation and Management Plan for Morro Bay, most recently updated in Federal Fiscal Year 2020 (FY20). The three Estuary Program programmatic focus areas are: (1) habitat protection and restoration, (2) environmental monitoring and research, and (3) public participation, education, and outreach. This Work Program describes our planned efforts for FY21, which covers the period from October 1, 2020 through September 30, 2021.

Morro Bay was accepted into the National Estuary Program in 1995 when the Administrator of the U.S. Environmental Protection Agency (EPA) accepted Governor Wilson's nomination of the program. With financial support from EPA, Estuary Program staff worked with government agencies, non-profits, businesses, and the local community to develop a watershed-based management plan, the Comprehensive Conservation and Management Plan for Morro Bay (Management Plan). The Management Plan defines the priority issues facing the estuary and watershed, and identifies specific Action Plans to address them. It also defines the management structure of the organization, which is based on collaboration and partnerships between the many groups that make up the Estuary Program.

The EPA formally approved our Management Plan in January 2001 and has continued to provide significant grant funding to further the implementation of that plan. Almost every Management Plan action plan was initiated, and nearly a half are either complete or fully in place and ongoing. The Management Plan was revised in 2012 through a public process and approved by the Estuary Program's Management Conference in February 2013. The Management Plan was updated in 2020, with approval by the Estuary Program's Management Conference. Various action plans from the Management Plan are referenced in this Workplan. The Estuary Program works with its many partners to implement these actions in the watershed.

Congress allocates funding for the National Estuary Program (NEP) under Section 320 of the Clean Water Act. EPA provides a portion of those funds to each of the 28 National Estuaries. The expected funding available to the Estuary Program through these Section 320 funds for FY21 is $662,500.

The Bay Foundation of Morro Bay, a 501(c)(3) non-profit corporation, will continue to serve as the legal and fiscal agent for the Estuary Program by employing staff, signing contracts, and applying for grants. The Estuary Program Executive Committee oversees the progress of the annual workplan and is the policy decision-making body for the Estuary Program. The Section 320 funding requires a non-federal match of at least one-to-one. The Estuary Program will meet that match through both direct expenditures of local and state funds awarded directly to the Estuary Program, and through tracking the in-kind match that our many partner organizations are spending to help implement the Management Plan.

The Estuary Program is excited to continue our work to protect and restore the Morro Bay Estuary and watershed, and we are thankful for the financial and technical support of EPA, as well as the ongoing participation of so many partners in the Morro Bay watershed and beyond.

1.1 Management Conference Structure and Membership

Technical Advisory Committees – The Technical Advisory Committees (TAC) are composed of experts in various areas that provide technical advice and input to the program. These TACs are formed for specific technical topics such as Sedimentation, Estuarine Habitats, and Education and Outreach. These TACs are to provide advice to staff in collaborating and reviewing Community Project options, investigating technical issues, providing advisory oversight to monitoring, restoration, and education efforts, recommending changes to the Management Plan, and tracking and reporting on implementation. The TACs meet on an as-needed basis. Membership is not limited to a specific number of seats, and members are invited by staff to join.

Executive Committee – The Executive Committee (EC) is the key decision-making body for the Morro Bay National Estuary Program. It provides broad policy direction, approves priorities for Management Plan implementation, seeks and develops funding sources, and approves Management Plan changes, as necessary. Specific responsibilities include: approving funding requests for the Morro Bay Restoration Fund, monitoring and evaluating the performance of the program, approving the annual workplan, and providing leadership and overall direction for the Estuary Program. The EC meets quarterly. Membership includes representatives from specific agencies and interest group seats that are appointed through a majority vote of the EC and serve two-year terms.

Bay Foundation Board of Directors – The Bay Foundation is the nonprofit home of the Estuary Program, and its board of directors approves priorities for Management Plan implementation, workplans, Community Projects, and other major components of the work of the Estuary Program. The Board of Directors works collaboratively with the Executive Committee on strategic direction and priorities of the Estuary Program.

2.0 Previous Year's Program Accomplishments

This section reports on accomplishments from the second half of FY19 (April to September 2019) and the first half of FY20 (October 2019 to March 2020). During this reporting period, the Estuary Program completed a number of substantial Workplan tasks. These accomplishments are also included in the semi-annual reports submitted to the EPA in May and November.

Highlighted Success Stories:

Morro Bay Bathymetry Survey

Project Objective: Collect a high quality topo-bathy LiDAR survey of the bay to support eelgrass restoration and research and studies related to bay sedimentation.

To support this project, the Estuary Program sought funding for this effort. Funders included US Fish & Wildlife Service (USFWS) as well as EPA, the Bay Foundation, the Restoration Fund, and NOAA's Office of Coastal Management. NOAA offers technical expertise and contract management support for mapping projects. A contract was developed with NOAA to manage the project, including contractor selection, procurement, and contracting.

The high resolution topobathymetric LiDAR data was collected on May 22, 2019 by Quantum Spatial, Inc. The acoustic bathymetry sonar was acquired by Merkel & Associates on June 17 to 19, 2019. The information was processed and the two data sets were seamed together to create a single topobathy LiDAR survey for the bay. A second phase of the project involved deploying tidal stations at two locations in the bay. JOA Surveys deployed the sensors in July and removed them in September.

This new dataset has already been utilized in numerous ways. The data was fed into a baywide hydrodynamic and circulation model as part of a Sea Grant project studying Morro Bay's eelgrass decline. This new and highly accurate dataset allowed comparisons to data from a decade ago for the model. Additionally, the recent elevation data supported eelgrass restoration efforts in 2020, helping to pinpoint optimal locations for transplanting. Dr. Ryan Walter, a physical oceanographer at Cal Poly, authored a scientific paper focused on the elevation changes in the bay (where erosion occurs versus where accretion occurs) in relation to eelgrass losses. Additionally, the Estuary Program is in the process of calculating the tidal prism of the bay for comparison to historic values to assess overall sedimentation in the estuary.

The effort supports the following CCMP Actions: ECR-6 (hydrology and bathymetry), ECR-7 (eelgrass data and research), and ECR-8 (eelgrass restoration).

Eelgrass Restoration and Monitoring

Project Objective: Conduct experimental transplants and restoration monitoring to determine method and locations for larger-scale eelgrass restoration efforts.

Eelgrass, a submerged aquatic vegetation, is a valuable habitat type in Morro Bay. It provides nursery habitat for juvenile species, dampens wave action, and helps hold the bay bottom in place. Precipitous declines in eelgrass acreage over the last ten years have been of great concern. The Estuary Program has been working closely with Cal Poly researchers as well as other eelgrass experts to conduct experimental transplanting in different regions of the bay. The transplants are then monitored according to a scientific methodology to determine the optimal season, locations, etc. in which to plant eelgrass. Based on information from experimental transplanting efforts in 2017 and 2018, the Estuary Program conducted a planting effort in February and March 2019. Each year, the Estuary Program continues to implement lessons learned.

During this reporting period, the Estuary Program completed 3, 6 and 12-month post project monitoring of 2019 restoration sites with a grant from the California Department of Fish and Wildlife (CDFW) and conducted additional restoration in spring of 2020 with funding from the Pacific Marine and Estuarine Fish Habitat Partnership (PMEP) and a donation from a local water fowl hunting group. Eleven sites were planted throughout the estuary in 2019. Sites had a larger range of depths than previously tested. At two sites, we compared anchoring eelgrass within the plots with garden stakes and no anchoring. At another site, we tested three different planting depths. A total of 21 rebar pieces and 34 plots were planted. Monitoring of the sites at 6 and 12 months post planting showed that nine of the eleven sites were successful. Overall, sites at shallow elevations had lower survival.

Funding for eelgrass restoration efforts in FY20 and partial funding for FY21 was awarded from PMEP. In spring FY20, staff and volunteers planted eelgrass at nine sites- 25 plots and 24 rebar/bamboo pieces. Eelgrass plantings were expanded to new sites away from the main tidal channel and at prior restoration locations to create larger more stable beds. We will continue to monitor transplant success to inform future efforts and we will continue to seek funding and partnerships to further this effort.

Monitoring of restoration efforts from 2017 and 2018 show expansion of eelgrass beyond the original one-meter-square quadrats in which it was planted.

The efforts support the following CCMP Actions: MON-5 (Monitoring Partners), MON-6 (Support Research Activities), ECR-7 (Data and Research to Protect Eelgrass).

Educational Programming

Project Objective: Update the Morro Bay Estuary Nature Center with interactive exhibits.

The Estuary Program strives to reach both local residents and visitors with estuarine science and stewardship messaging. The Morro Bay Estuary Nature Center is a key part of our public outreach and education program, reaching more than 25,000 visitors each year. The Nature Center has been in constant operation since 2004, and most of the exhibits were in need of updating or replacement. In FY2019, we completed the installation of a Wildlife Viewing Station that includes two sturdy, high-powered binocular sets, one of which is wheelchair accessible; a large wildlife ID educational panel; and a bookshelf that includes wildlife ID guides. We also finished installing an interactive exhibit that focuses on climate, weather, tides, and sea level rise. This exhibit includes a full-color educational panel; a real-time weather station with a bay water thermometer; a whiteboard where kids can use picture magnets to represent the current weather and share wildlife observations; and a sea-level rise scenario viewer that allows visitors to superimpose the footprint of one, two, and three meters of sea-level rise in the Morro Bay area. The Estuary Program plans to update two new exhibits during FY21.

These efforts support the following CCMP Action: EO-1 (Public Education and Outreach), CLIM-3 (Climate and Adaption Education).

Project Objective: Expand hands-on science education and monitoring opportunities for secondary students.

The Estuary Program is interested in developing opportunities for student monitoring, in particular those that support expanded scientific understanding. In FY19, the Estuary Program began developing a microplastics monitoring effort and the curriculum to support it. In FY19, staff partnered with the local high school to present background information on the environmental hazards associated with microplastics and to teach students the microplastics monitoring protocol. Staff then led students in microplastics monitoring at Coleman Beach, a popular place for recreation along the estuary. After the microplastics collection, staff returned to the classroom to lead a lab session during which students processed their microplastics samples and analyzed the results. This has the dual benefit of providing hands-on science opportunities for local students while broadening our own understanding of plastics pollution on local beaches. All 180 freshmen at Morro Bay High School learned about this emerging contaminant and conducted hands-on monitoring.

In FY20, the Estuary Program and the local high school expanded this monitoring and education partnership. We worked with multiple new classes including Junior and Senior level Environmental Science classes with whom we were able to go deeper into the science behind microplastic contamination and monitoring protocol. With these changes, we reached more than 240 students with this program. We also expanded our monitoring areas to include a site on Morro Strand Beach, just outside of the watershed, so that students could compare and contrast the data from our watershed and the adjacent watershed. We also increased the frequency of the monitoring efforts from every six months to every three months to increase students' exposure to scientific concepts and fieldwork as well as to increase the amount of data gathered. We plan to continue this partnership in FY21.

These efforts support the following CCMP Action: EO-4 (Formal Education Programs).

Community Projects

Project Objective: Provide support to Community Projects that address the goals of the Estuary Program.

The Estuary Program maintains an active Community Projects Program. Current projects are as follows.

- Wildlife Camera Project: Dr. John Perrine received funding to support two years of wildlife camera deployment and data analysis at sites throughout the watershed. The first year of the project resulted in two rounds of deployments. One was on a private ranch in the Los Osos Valley and one was on the Chorro Creek Ecological Reserve. The goal of the effort was to determine the distribution and activity level of medium and large mammals. The second year of project results are pending.
- Cuesta College Study of Eelgrass Wasting Disease: Cuesta College, with support from the Estuary Program, embarked on a research effort to study *Labyrinthula spp.*, which is the slime mold responsible for wasting disease. At other estuaries around the country, wasting disease has been responsible for widespread eelgrass declines. Cuesta professors Laurie McConnico and Silvio Favoreto wanted to better understand the prevalence of this disease and how it impacts eelgrass in Morro Bay. The Estuary Program awarded funding to the two professors to purchase reagents and equipment and to pay the course registration fees for students volunteering in the lab. The project involved the Cuesta faculty and students collecting eelgrass blades with and without signs of necrosis (dark areas on the blades) throughout Morro Bay and using this material for the isolation of strains of *Labyrinthula spp.*, resulting in 18 isolates cryopreserved in liquid nitrogen. During the summer of 2018, they collected eelgrass from four sites (Coleman Park, Windy Cove, Mid Bay, and Back Bay) and in summer 2019 they collected from three sites (Coleman Park, Windy Cove, and Back Bay). The blades were used to quantify necrotic tissue and an Excess Green Index was created, to represent the health of the eelgrass based on its color. All samples were collected and initially processed by students participating in a summer environmental microbiology

course. Preliminary data analysis indicates *Labyrinthula spp.* is found at all sample locations within the estuary, and in both green and necrotic eelgrass tissue.

- SLO Marine Protected Area Collaborative Outfitting Exploration: The San Luis Obispo Marine Protected Area (MPA) Collaborative is a partnership of agencies, nonprofits, and private citizens working together to share resources for MPA outreach, enforcement, and monitoring. The group was given funding to purchase a controller for an underwater ROV that was donated to the collaborative. Project activities include working with Cal Poly Engineering classes to develop and build a sampler attachment for collecting water samples, field trips with all Morro Bay High School freshman biology students, and a field trip for county foster care children and their caretakers. Additional education, outreach, monitoring, and research efforts are planned or underway using the controller and ROV.
- Upcoming Community Projects: Numerous projects are currently underway. These include: 1) a project with the SLO MPA Collaborative to translate a kids' activity booklet into Spanish, adjust the graphic design, and print the document, and 2) a project with California State Parks to build and utilize a watershed protector demonstration station for education of rangers, firefighters, students, and the general public. Both projects will be completed during FY2021.

3.0 Goals for CCMP Implementation in Fiscal Year 2021

This work plan describes the Morro Bay National Estuary Program's broad goals, specific projects, and planned budget for FY21, which spans from October 1, 2020 to September 30, 2021. This work plan will guide Estuary Program efforts in FY21 and provide a mechanism to measure our success over the coming year. It is important to recognize that the nature of a collaborative, non-regulatory program such as the Estuary Program demands flexibility; just as some planned projects may be delayed, other unforeseen opportunities and partnerships to further implementation of the Management Plan will present themselves. The program goals are summarized below.

Water Quality Protection and Enhancement: Water quality in the Morro Bay watershed and estuary supports diverse habitats and wildlife populations, safe recreation, clean drinking water, and well-balanced economic uses.

One of the main tenets of the NEP is to protect and restore water quality, as the NEP is part of the federal Clean Water Act. This goal illustrates the aspiration for clean water that supports a variety of uses by people and wildlife in Morro Bay.

Ecosystem Restoration and Conservation: The Morro Bay watershed and estuary sustain a resilient community with high habitat connectivity, ample biological integrity, proper ecosystem function, and a vibrant economy.

This goal illustrates the Estuary Program's interest in conserving and restoring habitats, biodiversity, and ecosystem processes, all of which affect the local economy. The goal also envisions a healthy ecosystem and economy even in the face of change.

Public Education, Outreach, and Stewardship: Citizens and visitors around Morro Bay understand basic estuary science and the impacts of specific actions on estuary health and are engaged stewards of the Morro Bay estuary and watershed.

This goal represents the importance of informed and engaged citizens for the future health of Morro Bay and a vision that community members will increasingly become stewards of the estuary.

Fostering Collaboration: Local citizens, local government, non-profits, state and federal agencies, and public and private landowners collaborate and leverage resources to facilitate effective management and increased scientific knowledge of the Morro Bay estuary and watershed.

Another core tenet of the NEP is collaboration, as described in the Clean Water Act. This goal showcases the Estuary Program's commitment to fostering collaboration to effectively understand and manage the resources of Morro Bay.

Actions to complete these goals are described in detail in Section 5.

4.0 Budget and Staff Elements

4.1 Budget Discussion

Tables 4.1 and 4.2 provide an overview of the budget for FY21. The Estuary Program meets a portion of the EPA's fifty percent match requirement using the Estuary Program-controlled Morro Bay Restoration Fund. These funds are private, locally-controlled, and already committed and available for these projects. Other sources of match funds include local and state funds and private donations, volunteer time, and contributed services and facilities.

4.2 Budget Overview

Table 4.1: Budget Overview for FY21

Category	Subcategory	FY21 Anticipated Request	Match	Total
Personnel	Salaries	$378,117	$12,800	$390,916
	Fringe	$58,243	$1,095	$59,338
	Management Conference	$0	$16,430	$16,430
	Subtotal	***$436,360***	**$30,325**	***$466,685***
Travel	(category includes local mileage)	$10,200	$0	$10,200
Supplies	Computers, software	$2,000	$0	$2,000
	Monitoring supplies	$11,300	$0	$11,300
	Misc. office supplies	$8,150	$0	$8,150
	Subtotal	***$21,450***	***$0***	***$21,450***
Contractual	Audit/Taxes/Accounting	$13,594	$9,025	$22,619
	Education and Outreach	$29,300	$239,073	$268,373
	Monitoring and Research	$16,500	$124,333	$140,833
	Restoration and Protection	$53,567	$231,004	$284,571
	Subtotal	***$112,961***	***$603,435***	***$716,396***
Other	Rent	$57,984	$13,740	$71,724
	Utilities	$3,081	$0	$3,081
	Postage	$1,200	$0	$1,200
	Copying, Printing	$2,700	$0	$2,700
	Training, Prof. Dev.	$1,000	$5,000	$6,000
	Telephone, Internet	$5,256	$0	$5,256
	Repairs and Maintenance	$5,000	$0	$5,000
	Insurance	$3,308	$0	$3,308
	Vehicle maintenance, fuel	$2,000	$0	$2,000
	Community Projects	$0	$10,000	$10,000
	Subtotal	***$81,529***	***$28,740***	***$110,269***
	TOTAL	**$662,500**	**$662,500**	**$1,325,001**

Note: $10,000 of Community Projects match comes from Restoration Fund. Remaining match is from partners.

4.3 Detailed Budget

Table 4.2: Direct Expenses by Program Area

Program Area	Project	320 Grant Request	Match (non-federal)		Total
			MB Restoration Fund	Other	
Education and Outreach A	Communications 1	$11,500	$0	$0	$11,500
	Community Partners 2	$500	$0	$36,099	$36,599
	Bay Friendly Recreation	$0	$0	$20,398	$20,398
	Clean Boating 3	$2,000	$0	$65,500	$67,500
	Education and Nature Center 4	$13,200	$0	$117,076	$130,276
	Other E&O Tasks 5	$2,100	$0	$0	$2,100
	Subtotal	***$29,300***	***$0***	***$239,073***	***$268,373***
Monitoring and Research B	Benthic Invertebrate Monitoring	$0	$0	$7,600	$7,600
	Stats	$4,500	$0	$0	$4,500
	Water Quality Monitoring 1	$3,000	$0	$95,733	$98,733
	Equipment 2	$0	$0	$21,000	$21,000
	Tidal prism analysis 3	$9,000	$0	$0	$9,000
	Subtotal	***$16,500***	***$0***	***$124,333***	***$140,833***
Habitat Protection and Restoration	Restoration Maintenance and Monitoring	$6,000	$0	$55,381	$61,381
	Eelgrass Restoration	$7,000	$0	$18,954	$25,954
	Other Restoration	$2,000	$10,000	$146,669	$158,669
	Conservation & Restoration Proj Dev	$18,567	$0	$0	$18,567
	Invasive Management	$20,000	$0	$0	$20,000
	Subtotal	***$53,567***	***$10,000***	***$221,004***	***$284,571***
	TOTAL	***$99,367***	***$10,000***	***$584,410***	***$693,777***

Note: Total for Restoration Fund match is **$20,000** because it includes $10,000 for Community Projects (see note for Table 4.1). Expenses shown combined contractual, supplies, and equipment expenses by Program Area to more clearly represent the resources devoted to these aspects of the Estuary Program FY21 Work Program. This table does not include Estuary Program staff time or overhead.

Education and Outreach Expenses (section A):

1. Communications expenses include graphic design work and printing for the annual report; pamphlets and publications; and ongoing maintenance expenses for our electronic newsletter, blog, and website.
2. Community Partners includes support for partner education efforts such as Coastal Cleanup Day and the Los Osos Community Services District conservation efforts.
3. Clean boating match includes the city of Morro Bay's Clean Marina program.
4. Education and Nature Center includes expenses such as aquarium maintenance, binoculars, display repairs and upgrades, watershed model demonstration supplies, handouts, microscopes, educational activity supplies, and coloring supplies.

5. Other E&O Tasks includes work on various community efforts as opportunities arise. Includes costs such as printing, development of education materials, renting venues for scientific talks, and conducting surveys of the public to determine changes in behavior and attitude.

Monitoring and Research Expenses (section B):

1. Water Quality Monitoring expenses include analytical laboratory services (couriers, sample analysis, and data reporting), equipment servicing and repairs, small equipment purchases, and data management support (technical support for maintaining our data management system and submitting data to a state-wide data portal).
2. Equipment includes purchases of equipment of value greater than $5,000 each.
3. Tidal prism analysis includes work by a contractor to calculate bay tidal prism from topo bathymetric LIDAR surveys from 2019 and from 2010.

Program Staffing Anticipated for FY21

All personnel are employees of the Bay Foundation of Morro Bay. As in any small organization, the roles of personnel are fluid enough to change with the needs of the organization.

- Executive Director: Leads the organization and Management Plan implementation. Responsible for Management Plan update. Manages CWA 320 grant, staffs committees, and non-profit board. Oversees general operations – budgeting, accounting, records management, and human resources. Supervises Estuary Program staff. Principal liaison to other agencies and organizations. Principal liaison to EPA. Serves as the public face of the organization. Represents the Estuary Program on local committees. Oversees Management Plan tracking, annual report, and workplan. Attends ANEP/EPA meetings.
- Assistant Director: Responsible for assisting the Executive Director with Management Plan implementation, managing CWA 320 and other grants, and staffing committees and non-profit board. Supports budgeting, accounting, records management, and managing NEP staff. Assists with Management Plan tracking, annual reports, and workplan. Coordinates project development and grant management across the organization. Manages monitoring program strategy and other special projects, such as State of the Bay. Attends ANEP/EPA meetings.
- Restoration Projects Manager: Develops and implements restoration efforts. Oversees restoration projects, including coordinating with partner agencies as appropriate, securing grant funding, grant management, obtaining permits, and procuring outside services. Manages monitoring and maintenance of restoration projects. Coordinates a diverse set of external experts to assist with technical aspects of specific projects.
- Communications and Outreach Coordinator: Responsible for public relations and marketing work to engage community, targeted outreach campaigns geared towards increasing environmental stewardship, weekly blog posts, website updates, and representing the Estuary Program at public events. Implements the Finance Plan with Executive Director and non-profit board. Other projects include field trips and tours, educational brochures, press releases, planning outreach efforts, and various other public outreach projects.
- Monitoring Projects Manager: Responsible for overseeing monitoring program budget, schedule, and workload. Develop monitoring protocols and help ensure that quality assurance goals are being met. Manage data, data quality, and reporting to the state-wide data portal. Conduct mapping projects to support monitoring and other Estuary Program efforts. Recruit, train, and coordinate volunteers. Develop reports, memos, and other documents to share program data with technical and public audiences.
- Monitoring Coordinator: Conducts Estuary Program monitoring efforts. Under direction of the Monitoring Projects Manager, completes data analysis, reports, and protocols. Assists with volunteer

recruitment, training, and fieldwork. Reviews and updates QAPP, monitoring protocols, and indicators/baselines work. Manages QA/QC functions. Manages data and share with partners. Submits data to state-wide data exchange network for use by agencies and the public.

- Finance & Operations Coordinator: Responsible for records management, bookkeeping, general office functions, front desk liaison to the public, and general administrative assistance. Handles payroll, insurance, and payables.
- Intern(s) (as needed): Assists with field work, data management, analysis, and outreach. These are part-time positions.

Fringe Details: $58,243

- Expenses:
  - Workers Compensation – Workers' compensation insurance as required by law and specific to each position.
  - Health Insurance – Health insurance costs that the Bay Foundation of Morro Bay covers for eligible full-time employees.
  - IRA Match – Bay Foundation match payments for eligible employees' IRA contributions.

Miscellaneous Office Supplies: $8,150

- Expenses:
  - Supplies (printer paper, toner, pens, checks, post-it notes, batteries, business cards, etc.)
  - Water delivery
  - Office furniture
  - Meeting space rentals and materials
  - Phone maintenance and repairs
  - Forms, checks, and employee policy posters and guides
  - First aid supplies and CPR training

Monitoring Program Supplies: $11,300

- Expenses:
  - Bacteria monitoring supplies – Reagent, supplies, and other ancillary items needed to monitor bacteria levels. This includes supplies needed for health and safety and for quality assurance procedures.
  - Water quality monitoring supplies – Reagent, calibration supplies, small equipment, batteries, and other ancillary items for monitoring conventional water quality parameters in the estuary and creeks. This includes necessary items for health and safety and for quality assurance procedures.
  - Field gear – Protective gear to ensure that staff and volunteers can work effectively and safely.

5.0 New and Ongoing Project Information

Where applicable, the estimated budgets include project and field costs. Staff time is excluded from these budget estimates.

5.1 Habitat Protection and Restoration Activities

5.1.1 Project Name: Land Conservation and Planning

Project Status: ***Ongoing***

Objective: Conserve land to achieve Management Plan goals as opportunities arise.

Description: The Management Plan calls for protection of ecologically-valuable habitats in part to help minimize nonpoint sources of pollution entering the estuary and to promote clean water in the bay. Over 5,000 acres of land have been protected through conservation easements and fee title acquisitions by the Estuary Program and partners. In FY21, the Estuary Program expects to work with The Land Conservancy of San Luis Obispo County and other partners to develop conservation easements with interested landowners in the watershed. Some easements may qualify for funding from Army National Guard Base Camp San Luis Obispo (Camp SLO) to limit development encroachment on the base. In addition, the Estuary Program is participating in community efforts within Morro Bay to support open space preservation around the city. This task represents an anticipated share of staff time to develop these opportunities and support partner efforts.
Partners and Their Roles: The Land Conservancy is the recipient of funding to develop a buffer surrounding Camp SLO. Their role is to interface with landowners and the funders to develop easements and acquisitions. Other partners with interest in land conservation in Los Osos and Morro Bay include Morro Bay Open Space Alliance, CDFW, California Coastal Conservancy, Wildlife Conservation Board, Morro Coast Audubon Society, California State Parks, Coastal San Luis Resource Conservation District (CSLRCD) and private landowners.
Output/Deliverables: The deliverable will be a map or similar documentation of acquisitions or easements.
Estimated Milestones: Easement timelines are dependent on landowner and funding timelines.
Estimated Budget: Depends on acquisition and easement opportunities.
Long-Term Outcomes: Achieve land conservation projects as opportunities arise, with a focus on the Los Osos Valley.
CWA Implementation: Addressing diffuse nonpoint sources of pollution. Protecting wetlands. Protecting coastal waters through the National Estuary Program.

5.1.2 **Project Name: Restoration Maintenance and Monitoring**
Project Status: *Ongoing*
Objective: Complete monitoring for conservation easements and restoration projects, as necessary.

Description: The Estuary Program with its partners has implemented multiple complex restoration projects that require ongoing monitoring and maintenance. This work includes monitoring of conservation easement compliance, riparian fencing maintenance and effectiveness, best management practice (BMP) effectiveness, and pre- and post-project restoration effectiveness. These efforts will continue as necessary. Currently, ongoing monitoring occurs on the Maino Conservation Easement. These activities will continue, along with monitoring the Chorro Creek Ecological Reserve Project. As appropriate, compliance monitoring and photo documenting will be conducted. The Estuary Program and its partners continue to monitor eelgrass restoration beds to track their success. The Estuary Program also plans to provide maintenance funding for defunct off-channel watering systems at Camp San Luis Obispo to limit cattle use of riparian areas along Chorro Creek.
Partners and Their Roles: Landowner partners include private landowners, Camp San Luis Obispo, CDFW, Cal Poly, PG&E, and US Forest Service. Their role is to permit land access and maintain project sites.
Outputs/Deliverables: Monitoring results kept at Estuary Program as reference for future projects, to identify areas of concern, etc.
Estimated Milestones: Maino Easement monitoring completed in Spring 2021.
Estimated Budget: $6,000 for supplies and gear.
Long-term Outcomes: Conservation easement monitoring is completed annually and landowner communications continue. Eelgrass restoration monitoring continues annually and informs restoration decisions.
CWA Core Program Project Supports: Addressing diffuse, nonpoint sources of pollution. Protecting coastal waters through the National Estuary Program.

5.1.3 Project Name: Eelgrass Restoration

Project Status: ***Ongoing***

Objective: Identify eelgrass restoration goals based on ongoing monitoring and research activities with various partners.

Description: Eelgrass in Morro Bay experienced a precipitous decline in acreage from 2007 to 2010. Large-scale restoration efforts in 2012 through 2014 did not yield successful eelgrass growth, despite using a well-tested method that had demonstrated success in the bay and many other California locations. The Estuary Program has increased engagement with federal agencies, researchers, and local scientists to help develop a systematic approach to understanding the stressors to eelgrass and what may be driving the decline and any limiting factors for restoration success. With small patches of eelgrass returning to the bay, the Estuary Program and partners conducted experimental restoration projects in FY17, FY18, FY19, and FY20. These results are being utilized to inform efforts in FY21 (depending on funding available) and allow for eventual development of numeric targets for restoration. Funding for eelgrass restoration efforts in FY20 and partial funding for FY21 was awarded from the Pacific Marine and Estuarine Fish Habitat Partnership (PMEP). In spring FY20, staff and volunteers planted eelgrass at nine sites in 25 one-meter-square plots and 24 rebar/bamboo pieces. Eelgrass plantings were expanded to new sites away from the main tidal channel and at prior restoration locations to create larger more stable beds. Monitoring of 2019 restoration locations was also conducted at 12-months post-planting, which showed most sites growing and expanding from the original planted area. Estuary Program staff are continuing to actively pursue multi-year funding opportunities to further track baywide water quality conditions and implement additional restoration efforts now that restoration has been successful. This allows us to better understand eelgrass dynamics and identify a strategy for successful recovery of eelgrass in Morro Bay.

Partners and Their Roles: Partners include Cal Poly and California Sea Grant (research expertise and field support), Cuesta College (research expertise), NOAA (funding and technical expertise), CDFW (permitting, funding, and monitoring), the Black Grant Group (funding), and local oyster farmers (monitoring and boating support).

Outputs/Deliverables: Work conducted for this item will be summarized in a semi-annual report.

Estimated Milestones: Apply for a CDFW permit for transplant work, conduct a round of transplanting in the spring, and conduct three rounds of transplant monitoring.

Estimated Budget: Staff time and $7,000 towards restoration. Additional efforts depend on funding opportunities available.

Long-term Outcomes: Monitoring results inform future recovery actions and are comparable across years. Develop numeric targets for eelgrass restoration.

CWA Core Programs the Project Supports: Protecting coastal waters through the National Estuary Program.

5.1.4 Project Name: Chorro Creek Ecological Reserve Restoration Phase 3

Project Status: ***Ongoing***

Objective: Complete implementation of the Chorro Creek Ecological Reserve Restoration Project.

Description: In 2003, the Chorro Creek Ecological Reserve, a 580-acre parcel at the base of Hollister Peak, was purchased with Estuary Program support and leadership to prevent future development. The property was transferred to CDFW for ownership and management. Conceptual designs were completed in 2008 to address floodplain restoration and gully remediation, but it was agreed upon that the 2008 designs strayed from the overall goals of the site and the high project costs could have prevented implementation. As a result of efforts in FY16 to obtain funding and begin planning, coordination with CDFW was conducted through early 2017 in developing designs for a restoration project. With CDFW and California Coastal Conservancy funding, the project was largely implemented in summer and fall 2019. Two floodplain side channels were constructed, large wood structures and willow baffles put in place, a creek crossing was improved, and native plants were planted. The final phase of the project involves planting native plants and conducting the final

reporting for funders. In FY21, Estuary Program staff will work with the California Conservation Corps to finish planting a small number of remaining plantings (e.g., sycamores, CA rose). The revegetation efforts will be monitored quarterly to track survival for a minimum of three years (permit requirements). Vegetation will also be watered on an as needed basis. Additional geomorphic monitoring will be conducted after the channel is activated with Chorro Creek flows to evaluate channel migration or sediment accretion/erosion. A California Rapid Assessment Monitoring (CRAM) survey will also be conducted in spring FY21 to track vegetation and channel changes. Additionally, floodplain flows will be tracked via cameras and temperature data loggers. If the channel is activated, fish will be monitored within the floodplain to assess possible stranding issues.

Partners and Their Roles: Project partners include CDFW as they are both a funder and the landowner. Other partners include the State Coastal Conservancy, who provides review and feedback and is a funder; EPA, who offers technical assistance and is a funder through the Climate Ready Estuaries program; and California Conservation Corps who provides technical expertise and project labor.

Outputs/Deliverables: Checklist of permits, including type and completion date. Monitoring report summaries for permit agencies.

Estimated Milestones: Complete plant, geomorphic, and flow monitoring on site.

Estimated Budget: Staff time.

Long-term Outcomes: Project implementation supports climate ready estuary goals including floodplain restoration.

CWA Core Programs the Project Supports: Addressing diffuse, nonpoint sources of pollution. Protecting wetlands. Protecting coastal waters through the National Estuary Program.

5.1.5 Project Name: Other Restoration Efforts

Project Status: ***Ongoing***

Objective: Engage in other restoration efforts that arise and help achieve Management Plan goals.

Description: Additional water quality and habitat restoration opportunities often arise in the course of the year that are worthy of immediate attention. This task reserves some staff time for these opportunities. Some examples include riparian fencing, the SLO County Integrated Regional Water Management Group, the Central Coast Water Conservancy, supporting partner restoration projects on private property, and supporting the city of Morro Bay and stakeholders in eelgrass management efforts. The Estuary Program will act as a partner on water conservation, habitat restoration, and steelhead projects as needed. Invasive species management will continue in the watershed, and the Estuary Program will continue to work with partners on these efforts. The Estuary Program worked with partners to create a habitat Conservation Planning Initiative. The plan identifies the indicators, projects, and partners involved in protecting and preserving each habitat type. The Estuary Program will continue to reach out to partners to gather input through working groups regarding the most projects most needed and most feasible for implementation in the watershed.

Partners and Their Roles: Potential partners include San Luis Obispo County, the city of Morro Bay, the Los Osos Community Services District, Coastal San Luis Resource Conservation District, Cal Poly, Camp SLO, the Morro Bay Harbor Advisory Board, California Department of Fish and Wildlife, and others. These are partners in funding, planning, and implementation. Partners for the Conservation Planning Initiative are numerous and include the city of Morro Bay, California State Parks, San Luis Obispo County, local consultants, and local experts.

Output/Deliverables: If the opportunity arises and work is conducted for this item, then a description will be provided in the semi-annual progress report provided to the EPA Project Officer (semi-annual report).

Estimated Milestones: As opportunities arise.

Estimated Budget: Staff time for partnership support and participation on committees. Current year budget includes $2,000 to support partner projects. Other expenses depend on opportunities that arise.

Long-term Outcomes: Restoration efforts support CCMP implementation and partner projects.

CWA Core Programs the Project Supports: Addressing diffuse, nonpoint sources of pollution, protecting wetlands. Protecting coastal waters through the National Estuary Program.

5.1.6 Project Name: Conservation and Restoration Project Development

Project Status: *Ongoing*
Objective: To develop projects and funding for conservation and restoration.

Description: Often plans, permits, and initial monitoring must be conducted before a project is eligible for funding. This task reserves some staff time to work with partners to conduct these initial efforts. Efforts anticipated for FY21 include coordination with Coastal San Luis Resource Conservation District to apply for funding to address nutrient and sediment impacts in the Warden Creek and Los Osos subwatersheds. Estuary Program staff will also support Camp SLO in stormwater management projects. The Estuary Program is participating in a CCRWQCB-led working group to look at developing bioreactor projects, which could lead to projects that address nitrogen pollution in the watershed. Efforts may also include engaging landowners in implementing best management practices on private property throughout the watershed. Additionally, studies or implementation projects may also be completed (e.g., identify sediment basins, floodplains, migration space) that were identified during the Conservation Planning Initiative.
Partners and Their Roles: The primary partners for landowner best management practices are the Coastal San Luis Resource Conservation Service and the National Resource Conservation Service. Instream flow projects could potentially include Creek Lands Conservation with the role of winning and managing funding and providing technical expertise; the California Conservation Corps, who would contribute technical expertise, materials and field support; and potential landowners. The primary partners for the steelhead habitat efforts are Creek Lands Conservation, the city of SLO, and the California Department of Fish and Wildlife with the role of providing technical expertise, California Conservation Corps who would contribute technical expertise, materials, and field support; Stillwater Sciences who would contribute technical expertise and equipment; and the city of San Luis Obispo who would provide technical expertise. For conservation planning and invasive species management, primary partners include California Department of State Parks and SLO County, who provide technical expertise and field support. Partners for stormwater projects include Camp SLO, Watershed Progressive, Creek Lands Conservation, and California Conservation Corps.
Output/Deliverables: If this condition arises (need before funding) and work is conducted for this item, then a description will be provided in the semi-annual report.
Estimated Milestones: Depends on funding deadlines. For conservation and steelhead projects, the milestones are TBD depending on funding and permitting.
Estimated Budget: $18,567, includes funding for partners to collaborate on grant applications and studies needed for the Conservation Planning Initiative to establish numeric targets.
Long-term Outcomes: Expand steelhead access to areas in the watershed with the habitat and water quality to support sensitive species. Expand landowner water conservation efforts to protect surface flows. Best management practices to address sediment and water quality concerns.
CWA Core Programs the Project Supports: Addressing diffuse, nonpoint sources of pollution.

5.1.7 Project Name: State Park Marina Stormwater Management Project

Project Status: *Ongoing*
Objective: To implement a stormwater management project at State Park Marina.

Description: Stormwater runoff can have significant impacts on waterbodies like Morro Bay. To address these impacts, the Estuary Program partnered with the California Marine Sanctuary Foundation and California State Parks to install stormwater best management practices and apply for an Ocean Protection Council (OPC) grant to fund the design and construction of the State Park Marina parking lot redesign. The parking lot is currently a source of metals, bacteria, and other

nonpoint source pollution via unmanaged sheet flow. In 2021, the Estuary Program will continue to work with project partners and funder (Ocean Protection Council) to complete final design and construction phases, working together to meet the needs of partners. The Estuary Program is the grantee for the project and will be responsible for project management, invoicing, and reporting. We will also provide support for fiscal and contractual administration as well as monitoring and outreach expertise.
Partners and Their Roles: The primary partners for the project are California Marine Sanctuary Foundation, who led the grant application process and will lend planning and coordination support, assist with project reporting, and conduct public outreach. California State Parks is the landowner and will also provide project management, technical support, and match.
Output/Deliverables: Project designs are expected by the end of 2020 with construction in Summer 2021.
Estimated Milestones: Project designs, project implementation, final grant reporting. The timing is TBD based on grant contract currently being revised by project partners and California Ocean Protection Council.
Estimated Budget: All costs, including staff time, are covered by the OPC grant.
Long-term Outcomes: Reduce pollutant load in stormwater runoff from this large parking lot to the nearby estuary, resulting in cleaner water. Potential groundwater recharge impacts as water is treated and then allowed to percolate.
CWA Core Programs the Project Supports: Addressing diffuse, nonpoint sources of pollution. Protecting coastal waters through the National Estuary Program.

5.1.8 Project Name: Aquatic Invasive Species Management

Project Status: ***New***
Objective: To implement invasive management efforts to address pikeminnow and other opportunities as they arise.

Description: Steelhead recovery in Choro Creek is inhibited by invasive Sacramento pikeminnow (*Ptychocheilus grandis*). Pikeminnow were introduced to the watershed and inhibit steelhead recovery by reducing juvenile abundance and survival through predation and competition for food and habitat. A management plan to control pikeminnow was developed in 2017. Recent efforts have nearly eliminated the source pikeminnow population in Chorro Creek Reservoir, and annual efforts have demonstrated an effective approach to suppressing pikeminnow and increasing abundance of steelhead. In FY21, Estuary Program will continue to work with partners to manage the pikeminnow population in accordance with the management plan.
Partners and Their Roles: The primary partners for this project will include Stillwater Sciences who hold the permit for implementation. California Conservation Corps will also provide field support. California Department of Fish and Wildlife will provide technical support.
Output/Deliverables: A summary report of pikeminnow management efforts (e.g., number of fish caught) will be completed yearly.
Estimated Milestones: The number of steelhead observed in select sampled reaches of Chorro Creek will increase after management.
Estimated Budget: Staff time and $20,000 for implementation support.
Long-term Outcomes: Measurable targets are met in the 2017 Pikeminnow Management Plan. For example, the ratio of steelhead (all ages) to pikeminnow (all ages) of greater than one-to-one in habitat units sampled with multiple pass electrofishing within five years of full funding ($60K annually).
CWA Core Programs the Project Supports: Protecting coastal waters through the National Estuary Program.

5.2 Environmental Monitoring and Research

Work for all Environmental Monitoring and Research tasks is aimed at achieving results for the following Outcomes:

1. Project effectiveness evaluations conducted in partnership with relevant agencies and parties are shared broadly.
2. Understanding of TMDL effectiveness and the actions needed to eventually de-list local waterbodies is improved.
3. Overall understanding of waterbody status for 303(d) listed waterbodies in the watershed is improved.
4. Increase understanding of the effectiveness of stormwater management efforts.
5. Understand the impact of implementation actions on long-term, watershed-wide trends.
6. Strengthen collaboration among watershed partners while implementing actions laid out in the CCMP.

5.2.1 Project Name: Monitoring Program Coordination

Project Status: ***Ongoing***

Objective: Continue coordination of Monitoring Program and collect data that meets QAPP guidelines.

Description: The Estuary Program has an extensive and rigorous volunteer monitoring program. The Volunteer Monitoring Program (VMP) plays a lead role in the program's monitoring efforts. Without volunteers, the program could not collect as extensive a dataset. The VMP will continue ongoing volunteer monitoring, tracking of key environmental indicators, and developing new efforts to monitor effectiveness of implementation projects. This task includes monitoring coordination, volunteer recruitment and training, equipment maintenance, and program management tasks.

Partners and Their Roles: Primary partners in the Estuary Program monitoring effort include the CCRWQCB, whose Central Coast Ambient Monitoring Program (CCAMP) lends technical advice, monitoring equipment, and field support. Landowners such as State Parks, Cal Poly, Camp SLO, San Luis Obispo County, the city of Morro Bay, and numerous private landowners are also partners, allowing access on their land for monitoring. Program coordination follows the approved QAPP (a deliverable under Task 5.2.4) and data is submitted to the CEDEN database (a deliverable under Task 5.2.3).

Outputs/Deliverables: A summary of work conducted for this item will be provided in the semi-annual report.

Estimated Milestones: As appropriate, monitoring protocols are updated to reflect changes to sites, monitoring methodologies, etc.

Estimated Budget: Staff time and $11,300 for monitoring supplies and $2,000 for laboratory analysis.

Long-Term Outcomes: An increase in understanding of the long-term trends in ambient water quality in the watershed and estuary. Identification of potential projects and assessment of existing projects.

CWA Core Programs the Project Supports: Identifying polluted waters and developing plans to restore them (TMDLs). Addressing diffuse, nonpoint sources of pollution. Protecting coastal waters through the National Estuary Program.

5.2.2 Project Name: Monitoring Program Reporting and Analysis

Project Status: ***Ongoing***

Objectives: Analyze data and share results with grantors, partners, local landowners, and the public.

Description: The Estuary Program continuously compiles and analyzes program-generated data to

assess long-term trends and project-specific effects on water quality and other indicators of environmental quality. These analyses are shared with program partners, local landowners, and the general public to help inform decision-making. A series of data summary memos will be completed in 2021. This includes an analysis of the sediment impacts to macroinvertebrate populations. Projects for the year include statistical analysis of recent sediment monitoring as well as a bay tidal prism calculation using results from the 2019 bathymetry survey.
Partners and Their Roles: Primary partners in the reporting and analysis of monitoring data include the CCRWQCB, whose CCAMP lends technical advice to the program. Public and private landowners make use of the data in their own land management and monitoring efforts. Cal Poly also lends technical expertise.
Outputs/Deliverables: When work occurs for this item, a summary will be provided in the semi-annual report.
Estimated Milestones: Monitoring updates for bioassessment, creek health, and bay health are expected in 2021.
Estimated Budget: Staff time, $4,500 for statistical analysis, and $9,000 for tidal prism analysis.
Long-Term Outcomes: Outcomes include making analysis available for agencies, project partners, and others throughout the state to inform and improve their own efforts to protect and restore.
CWA Core Programs the Project Supports: Identifying polluted waters and developing plans to restore them (TMDLs). Addressing diffuse, nonpoint sources of pollution. Protecting coastal waters through the National Estuary Program.

5.2.3 Project Name: Monitoring Program Data Management

Project Status: ***Ongoing***
Objectives: Maintain data in SWAMP-compatible format.

Description: This task includes the on-going maintenance of program-generated data in a SWAMP-compatible data format. SWAMP (Surface Water Ambient Monitoring Program) is a California State Water Resources Control Board program to increase usability and compatibility of water quality data from various sources. Data is quality controlled and entered into a SWAMP-compatible database to increase access for groups throughout the state.
Partners and Their Roles: Primary partners in the Estuary Program monitoring effort include the CCRWQCB, whose CCAMP lends technical advice and data management support to the program. The State Water Resources Control Board is a partner, providing support for the state's California Environmental Data Exchange Network (CEDEN).
Outputs/Deliverables: When work is conducted for this item, a summary will be provided in the semi-annual report. Program data available at CEDEN website.
Estimated Milestones: Continual input of data into SWAMP-compatible database. Semi-annual submittals of data to the CEDEN and/or SWAMP system.
Estimated Budget: Staff time.
Long-term Outcomes: A high quality dataset available to the public and the state for use in TMDL analysis, 303(d) assessment, land management, etc.
CWA Core Programs the Project Supports: Identifying polluted waters and developing plans to restore them (TMDLs).

5.2.4 Project Name: Monitoring Program Quality Assurance

Project Status: ***Ongoing***
Objective: Maintain an approved Quality Assurance Project Plan and implement necessary quality assurance methods.

Description: The monitoring program maintains a Quality Assurance Project Plan (QAPP), approved by EPA, which documents the program's monitoring methodologies, sites, and equipment. This task includes laboratory sample analysis to aid in assessment of quality assurance. In addition, some staff time is necessary to keep the QAPP up-to-date. The monitoring program collects scientifically

rigorous data valued by many of our partners, and the QAPP ensures that the data collection and analysis methods maintain this high level of scientific quality. Data submitted to CEDEN now requires that an accompanying QAPP be included to document the data quality.
Partners and Their Roles: The EPA Office of QA is a primary partner, providing oversight of the QAPP and technical assistance. The SWRCB QA Officer also provides review and oversight of the QAPP. Other partners include laboratories that analyze Estuary Program samples, and partners conducting monitoring in the area such as the CCRWQCB's CCAMP, the Cooperative Ag Monitoring Program, and others.
Output/Deliverables: The deliverable will be an EPA and Water Board-approved QAPP document.
Estimated Milestones: The updated document is submitted on an annual basis. This is dependent upon the EPA approval schedule.
Estimated Budget: Staff time plus $750 for QA laboratory analysis.
Long-term Outcomes: A high quality data set with data supporting efforts throughout the watershed including 303(d) and TMDL assessment.
CWA Core Programs the Project Supports: Identifying polluted waters and developing plans to restore them (TMDLs).

5.2.5 Project Name: Project Effectiveness Monitoring

Project Status: ***Ongoing***
Objective: Complete monitoring to show project effectiveness for various restoration projects.

Description: Many monitoring efforts to demonstrate effectiveness of restoration or other projects are conducted by program staff (rather than volunteers) due to safety concerns, technical challenges, or a landowner's request. This task encompasses protocol development and monitoring work that falls into this category. This task will include monitoring of restoration projects and monitoring the freshwater seeps in Los Osos. The seeps are expected to demonstrate reduced nitrate contamination of groundwater by septic systems since the Los Osos sewer system came online in 2016. Monitoring data will be compiled to support restoration projects, partner data requests, etc.
Partners and Their Roles: Project partners include landowners or responsible entities such as Cal Poly, Camp SLO, and San Luis Obispo County Office of Education. Project partners lending expertise and funding include Trout Unlimited, Creek Lands Conservation, the California Department of Public Health, and others.
Output/Deliverables: When work is conducted for this item, a summary will be provided in the semi-annual report.
Estimated Milestones: Monitoring and data reports will be compiled as needed.
Estimated Budget: Staff time and $250 for laboratory analysis of seeps samples.
Long-term Outcomes: Conduct monitoring and develop analysis that informs future management and restoration efforts.
CWA Core Programs the Project Supports: Identifying polluted waters and developing plans to restore them (TMDLs).

5.2.6. Project Name: Eelgrass Monitoring and Research

Project Status: ***Ongoing***
Objective: Conduct research and monitoring efforts for eelgrass to determine distribution in the bay as well as bed health.

Description: Seasonal eelgrass monitoring is conducted to aid efforts to protect and restore eelgrass habitat. In FY21, the Estuary Program will continue to monitor according to the robust approach designed to maximize data quality. The effort is engaging experts and agency participants to help inform the monitoring approach and to seek funding to support research and monitoring (see more information under Task 5.1.3). This task also involves a component of research collaboration with partners to understand eelgrass stressors and gain insights needed for successful restoration efforts. While eelgrass survival depends on many factors, sediment is a primary driver for eelgrass health

because of its impacts on elevation and light limitation. An estuary-wide topobathy LiDAR map was recently created. Analysis will include this data to help determine sediment accumulation and change over time while informing future eelgrass restoration efforts. The information will help drive development of our acreage goals for eelgrass establishment.
Partners and Their Roles: Project partners include Cal Poly, whose expertise is supporting expanded monitoring and research efforts to study sedimentation and circulation. They are actively seeking funding to conduct research to understand bay hydrodynamics as it relates to eelgrass beds, sediment impacts, light limitation, etc. Cuesta College, the local community college, conducts research related to wasting disease and eelgrass health. Other partners include CDFW, who is are also conducting eelgrass monitoring and are potential funders for the effort. NOAA, USFWS, and others have provided funding and technical support for the effort. EPA provides both funding and technical support. Secondary partners with an interest in eelgrass in Morro Bay include the California Coastal Conservancy, the city of Morro Bay, State Parks, local oyster farms, and other local businesses.
Output/Deliverables: The deliverables include an eelgrass monitoring report and reporting required by funders for research efforts.
Estimated Milestones: Provide a summary in the semi-annual report when work is conducted for this item.
Estimated Budget: Staff time.
Long-term Outcomes: To better understand eelgrass dynamics and stressors, thus enabling the Estuary Program to develop restoration strategies and numeric goals for acres restored.
CWA Core Programs the Project Supports: Protecting coastal waters through the National Estuary Program.

5.2.7 Project Name: Partner Research Efforts

Project Status: ***Ongoing***
Objective: Support science partners in pursuing research efforts relevant to the goals of the Estuary Program.

Description: The Estuary Program collaborates with partners such as Cal Poly to facilitate research projects through data sharing, the pursuit of funding, and contributed time. Anticipated projects include research into causes of eelgrass decline (biological and physical factors) and related water quality issues and impacts to the biota that depend on eelgrass habitat. Other potential efforts include sea level rise around the bay, bay water quality including ocean acidification (OA), bay sediment characteristics, and others. Reports and results will be compiled in the Estuary Program library. With sensors purchased with funding in FY20, the Estuary Program is partnering with a Cal Poly researcher to conduct OA monitoring in the bay.
Partners and Their Roles: Cal Poly, due to its nearby location, is a primary partner in these joint efforts. Cal Poly will conduct monitoring of OA parameters in the estuary. Other research collaboration partners have included University of San Francisco, Southern California Coastal Water Research Program, USGS, Cuesta College, and others.
Output/Deliverables: Deliverables are dependent on partner projects and vary by funding sources. A list will be provided in the semi-annual report of partners' reports that are added to the library during the reporting period. A final report documenting Cal Poly's OA research results, including the plan for future monitoring. The report will be available in the Estuary Program library and via our website.
Estimated Milestones: Variable, depending on funding sources. Fall 2021 for OA results.
Estimated Budget: Staff time.
Long-term Outcomes: Improve understanding of resources in order to better target efforts such as monitoring and restoration.
CWA Core Programs the Project Supports: Protecting coastal waters through the National Estuary Program.

5.3 Public Participation, Education and Outreach

5.3.1 Project Name: Communications

Project Status: ***Ongoing***

Objective: Communicate with a variety of audiences using presentations, printed materials, online presence, social media, and other venues.

Description: The Estuary Program's Education and Outreach program conducts regular communication with a variety of audiences. Several channels will be employed during FY21 to reach these audiences with meaningful information to educate the public about the program's efforts. These efforts include the following:

- **Website** – The Estuary Program website (www.mbnep.org) will be updated with content on a regular basis.
- **Blog** –The Estuary Program will continue the Estuary Program blog. Posts are made once a week and can be viewed on the website or by subscription. They are also shared via social media.
- **Social Media** –The Estuary Program utilizes Facebook, Instagram, and Twitter extensively; these have proven to be important tools to communicate with the community. Photos and status updates are posted to the Facebook page and Twitter multiple times a week (https://www.facebook.com/mbestuary), and Instagram posts are made at least once per week. Posts are strategic and integrated with the messaging incorporated into our website and blog. Messages cover a variety of topics, such as project and fieldwork highlights, volunteer opportunities, community events, presentations given by Estuary Program staff, and other information related to the Estuary Program mission. Currently, the Estuary Program has more than 2,285 Facebook followers, 2,078 Instagram followers, and more than 575 Twitter followers. In FY21, the Estuary Program will continue to increase two-way communication using social media tools.
- **Annual Report** – The annual report summarizes the reach and impact made by the Estuary Program across all programs (Education and Outreach, Restoration and Conservation, and Research and Monitoring). The report is created annually and is available online and in limited print.
- **Speaking and Exhibit Engagements** – Estuary Program staff present watershed and estuarine information for interested groups throughout the area.
- **News Releases** – News releases will be distributed for news-worthy activities or milestones, such as volunteer opportunities, and completed major projects. Key messages will be drafted and incorporated into the news releases. These key messages will be integrated into other communication channels.
- **Brochures and Other Print Materials**– Brochures and other print materials about the Estuary Program, issues related to the health and stewardship of the Morro Bay estuary, volunteer opportunities, and formal educational opportunities will be distributed at the Morro Bay Estuary Nature Center, community events, and presentations in which Estuary Program staff participate. They will also be made available online when possible. In FY21, the Estuary Program will work to translate some of our most popular materials into target languages to better serve visitors and residents whose primary language is not English.

Partners and Their Roles: Partners in Estuary Program communication efforts include the city of Morro Bay, the county of San Luis Obispo, the Morro Bay Natural History Museum, State Parks, and others. These partners provide resources and expertise, promote Estuary Program events, and share our materials and message with the public.

Output/Deliverables: A summary of work conducted for this item will be included in the semi-annual report.

Estimated Milestones: The Estuary Program maintains a social media and blog schedule that addresses current events and other topics and is updated in real time.

Estimated Budget: Staff time and $1,500 for design and printing of annual report; $3,000 for website maintenance, hosting and design, including the update of our Morro Bay Knowledge Base; $7,000 printing of brochures and other outreach materials as well as translating some materials into other languages. Total: $11,500.
Long-term Outcomes: Residents and visitors better understand their roles as stewards of the Morro Bay estuary. They practice behaviors that help keep our waters clean.
CWA Core Programs the Project Supports: Protecting coastal waters through the National Estuary Programs.

5.3.2 Project Name: Education

Project Status: ***Ongoing***

Objective: Develop formal education partnerships and services, and continue to maintain the Nature Center and other education efforts.

Description: In FY21, the Estuary Program will continue working with partners to integrate estuary-focused activities into existing formal educational programming. The existing partnership with Central Coast Aquarium to provide hands-on science-based field trips for local students will continue. We are also exploring the opportunity to expand this partnership. In FY21, some pilot efforts will test the Estuary Program as science and training partner and Central Coast Aquarium as implementing partner for classroom visits and field trips. Activities include watershed model demonstrations in classrooms, microplastics monitoring with local high school students, hosting estuary fieldtrips for students through the Central Coast Aquarium, and supporting watershed education by partners. The Estuary Program will also continue to provide trainings to local docents, online educational resources, and a select number of educational opportunities that are unique to the program (e.g., Mutts for the Bay education efforts). The Estuary Program staff and docents will also continue to provide a limited number of field trips as requested for K-12 students. Field trips and classroom presentations by Estuary Program staff will be primarily for undergraduate and graduate classes. In addition, the Estuary Program will maintain the Estuary Nature Center, which is visited by approximately 5,200 individuals monthly during the high season, with an average of 25,000 people visiting each year. In addition, Estuary Program staff and guest speakers present research and projects that relate to the health of the Morro Bay estuary through our annual Morro Bay Science Explorations with the Estuary Program speaker series. The goal of this speaker series is to educate the general public about issues facing the Morro Bay estuary as well as stewardship actions that people can take to help protect it.
Partners and Their Roles: Partners include the Morro Bay Museum of Natural History, a direct collaborator in creating education programs. Teachers, parents, and volunteers from local schools reach out to the Estuary Program for direct support in developing education programs on topics such as watersheds and the water cycle. Cal Poly and Cuesta College faculty are also partners, bringing classes to the estuary to conduct research and fieldtrips. Staff also visit classrooms from primary through college-level to present the results of our work. Central Coast Aquarium has been a key partner, providing their Floating Lab fieldtrips to students from outside of the area.
Outputs/Deliverables: The deliverables will be Nature Center statistics, watershed model demonstration statistics, and fieldtrip and presentation statistics, included in semi-annual reports to EPA.
Estimated Milestones: The Nature Center promotional materials and statistics will be ongoing. The statistics on watershed model demos and fieldtrips will be included in the semi-annual report.
Estimated Budget: Staff time and $200 for classroom supplies. $6,500 for field trips and partnership projects.
Long-term Outcomes: Formal educational partnerships disseminate estuary-related messages to local students. The Estuary Nature Center serves as a learning center about the estuary with updated and engaging exhibits.
CWA Core Programs the Project Supports: Addressing diffuse, nonpoint sources of pollution. Protecting coastal waters through the National Estuary Program.

5.3.3 Project Name: Nature Center Update

Project Status: ***Ongoing***

Objective: Update the content and displays in the Nature Center.

Description: About 25,000 visitors have stopped by the Estuary Program's Nature Center each year since it was established in 2005. A fish tank, a watershed mural, a wildlife viewing station with high-powered viewing scopes, a touch-screen educational kiosk, and stereoscopic photo images are some of the most popular exhibits. After more than a decade of heavy use, the Nature Center's worn displays need to be updated or replaced. In FY21, the Estuary Program will continue to seek funding for this update effort and engage local partners in developing exhibits and funding. The Estuary Program will develop grant applications and reports and deliverables for funders. We expect to be able to complete updates to two exhibits in FY21.

Partners and Their Roles: The Morro Bay Museum of Natural History will be a partner in this effort, lending their expertise in the development of exhibits and seeking funding for such efforts. Others such as the Monterey Bay National Marine Sanctuary, the Historical Society of Morro Bay, and the UC Santa Cruz Seymour Marine Discovery Center lend advice and expertise.

Output/Deliverables: A summary description of work conducted for this item will be included in the semi-annual report.

Estimated Milestones: Updates to two exhibits will be completed by the end of FY21.

Estimated Budget: Staff time, $6,500 for exhibit updates and replacements.

Long-term Outcomes: The Estuary Nature Center serves as a learning center about the Estuary, with updated and engaging exhibits.

CWA Core Programs the Project Supports: Addressing diffuse, nonpoint sources of pollution. Protecting coastal waters through the National Estuary Program.

5.3.4 Project Name: Other E&O Tasks/Community Partner Projects

Project Status: ***Ongoing***

Objective: Support outreach projects in the community that further the Management Plan goals.

Description: Opportunities for various community projects will be maximized throughout the year as they arise. Some of these projects will be pursued as a result of community partner projects. In addition, several standing community projects include:

- **Participation in the San Luis Obispo Marine Protected Areas Collaborative:** The Estuary Program is a key member of the San Luis Obispo Marine Protected Area Collaborative (SLOMPAC), which provides education and outreach materials for students and community groups related to local MPAs, including the Morro Bay estuary. The group also provides training related to MPAs for local enforcement agents and provides a collaborative space for community members and enforcement agents to meet and share concerns related to the health of MPAs. SLOMPAC projects are collaboratively devised and executed. The Estuary Program houses the SLOMPAC's ROV unit and facilitates the checkout and reporting procedures for it. An education staff member from the Estuary Program currently serves as a co-chair of the Collaborative.
- **Sewage Pumpout Monitoring:** In partnership with the Bay Foundation of Santa Monica and the San Francisco Estuary Partnership, the Estuary Program participates in an effort to monitor the usability and efficacy of pumpout units in the Morro Bay estuary. With funds provided by the Bay Foundation of Santa Monica, the Estuary Program monitors pumpout units quarterly, provides signage for pumpout stations, and provides or facilitates the purchase of consumable replacement parts for these sewage pumpout units.

Partners and Their Roles: Partners include the 28 member organizations of the SLOMPAC, California State Parks through their SeaLife Stewards program, the city of Morro Bay's Harbor Department, San Francisco Estuary Partnership, Bay Foundation of Santa Monica, and local recreational boating business owners. This effort also includes supporting the Central Coast Aquarium in developing Morro Bay-specific content and ECOSLO in executing annual cleanups within the Morro Bay watershed.

Outputs/Deliverables: Materials completed as projects develop.
Estimated Milestones: Materials are completed as projects develop.
Estimated Budget: Staff time, and $2,000 to fund the repair of a sewage pumpout unit at the Yacht Club marina.
Long-term Outcomes: Coordinate with partner organizations about key messages associated with each community project. Rollout of the messages and education and outreach material will be closely tied to the project implementation.
CWA Core Programs the Project Supports: Addressing diffuse, nonpoint sources of pollution.

5.3.5 Project Name: Mutts for the Bay

Project Status: ***Ongoing***
Objective: Support pet waste management program to prevent bacterial contamination in the bay.

Description: The Estuary Program has managed a Mutts for the Bay Program since 2008. The effort involves accepting donations, installing dispensers, coordinating volunteers, and working with partners to install and maintain pet waste bag dispensers throughout the watershed. Use of the bags prevents bacteria from pet waste from reaching the estuary, where shellfish farms and recreational bay users require clean water.
Partners and Their Roles: Partners include the City of Morro Bay and San Luis Obispo County, the two entities responsible for stormwater management efforts in the urban areas surrounding the estuary. A portion of the effort involves public education to share a clean water message and encourage responsible pet owner behavior. The Harold J. Miossi Charitable Trust is a private foundation who awarded the Estuary Program three years of funding to support operational and educational costs related to the effort.
Outputs/Deliverables: Program statistics and milestones will be provided in the semi-annual reports.
Estimated Milestones: Program statistics will be ongoing.
Estimated Budget: Staff time.
Long-term Outcomes: Responsible behavior by pet owners reduces bacterial loading to the estuary, protecting beneficial uses such as shellfish farming and recreation.
CWA Core Programs the Project Supports: Addressing diffuse, nonpoint sources of pollution. Protecting wetlands. Protecting coastal waters through the National Estuary Program.

5.4 Program Management

Work for all Program Management tasks is aimed at achieving results for the following Outcomes:

1. Morro Bay National Estuary Program will maintain good standing with the EPA and ANEP.
2. Morro Bay National Estuary Program will continue to improve administration and program management to successfully support environmental goals and manage resources in a fiscally responsible manner.

5.4.1 Project Name: Manage Committees and Build Partnerships

Project Status: ***Ongoing***
Objective: Hold quarterly committee meetings and support partnerships.

Description: The Estuary Program will continue to staff and coordinate the Executive Committee on a quarterly basis. Staff provides notice, meeting materials, and helps facilitate the meetings.
Partners and Their Roles: The Management Conference committees are made up of representatives from various economic, environmental, and educational organizations. The technical advisory committees that support monitoring, restoration, and education are made up of local experts who can advise the Estuary Program in these various programmatic areas. The Bay Foundation Board of Directors includes community members, local educators, business owners, and volunteers.

Outputs/Deliverables: Deliverables include Executive Committee meeting minutes, agendas, staff reports, and other materials.
Estimated Milestones: These deliverables are produced quarterly.
Estimated Budget: Staff time.
Long-term Outcomes: Committees meet as needed to provide input and direction for the Estuary Program and to ensure that other partnerships are well supported.
CWA Core Programs the Project Supports: Support contribution toward all CWA core programs.

5.4.2 Project Name: Grants and Contracts Administration and Financial Management

Project Status: ***Ongoing***
Objective: Develop workplan, administer grants, and complete annual financial management tasks.

Description: Each year we must evaluate our prior year's progress, anticipate the upcoming year's potential, and develop a workplan and budget. The workplan for FY22 is due to EPA Region IX in April 2021. Other grants and financial management tasks include reporting and tracking for grants, preparing financial reports for the Bay Foundation and management committees, and completing year-end financial statements and an annual audit. Estuary Program staff will attend the fall 2020 and spring 2021 NEP Tech Transfer meetings.
Partners and Their Roles: Partners include the Bay Foundation, the board that serves as the bursar for the Estuary Program. EPA is a primary partner, providing oversight and guidance for the program.
Outputs/Deliverables: The deliverables include the work program and budget (Spring 2021), biannual EPA grant reports (Spring 2021 and Fall 2021), annual financial statements submitted to the federal clearinghouse (Spring 2021), and annual state and federal tax submission submitted to the State of California and the IRS (Spring 2021).
Estimated Milestones: See above.
Estimated Budget: Staff time; accounting/auditing costs of $13,594; NEP Tech Transfer meetings and other travel costs of $9,000. Total cost of $22,594.
Long-term Outcomes: Grant administration and financial management tasks are completed in a timely and accurate manner.
CWA Core Programs the Project Supports: Support contribution toward all CWA core programs.

5.4.3 Project Name: General Administration and Human Resources Management

Project Status: ***Ongoing***
Objective: Maintain accurate financial and human resource records and manage personnel.

Description: The Estuary Program requires ongoing financial and administrative functions, including recordkeeping and filing, bookkeeping, preparing audited financial statements, equipment and office space upkeep, as well as interacting with the general public. In addition, the Director spends time managing staff performance and workplan progress. Other HR tasks include training and professional development, recruitment when applicable, managing interns, and keeping all personnel policies and procedures up to date. Staff maintains up-to-date bookkeeping records, public-friendly office space, orderly and properly operating office and field equipment, annual staff performance reviews, and updated policies and procedures. Bi-weekly staff meetings will be conducted.
Partners and Their Roles: The primary partner for this task is the Bay Foundation board. As the employer of Estuary Program staff, they set the policies and procedures for the organization.
Outputs/Deliverables: The Estuary Program provides program management updates in the EPA semi-annual reports.
Estimated Milestones: See above.
Estimated Budget: Staff time, and professional development costs of $1,000.
Long-term Outcomes: Policies and procedures must remain up to date so that the organization can function smoothly, allowing staff to focus on attaining the goals of the organization.
CWA Core Programs the Project Supports: Support contribution toward all CWA core programs.

5.4.4 Project Name: Tracking Implementation of the Management Plan and Work Plan

Project Status: ***Ongoing***
Objective: Keep track of workplan and Management Plan implementation.

Description: The Estuary Program tracks progress on the Management Plan Action Plans on a biannual basis. Workplan implementation is tracked with biannual reports on deliverables. Tracking project and program effectiveness is ongoing and includes biannual reports, NEPORT reporting, grant reporting, monitoring, and general project management.
Partners and Their Roles: The primary partner is the Bay Foundation board who oversees the organization's finances.
Outputs/Deliverables: The deliverables include semi-annual reports to EPA (Spring 2021 and Fall 2021), and NEPORT data (Summer 2021).
Estimated Milestones: See above.
Estimated Budget: Staff time.
Long-term Outcomes: Management Plan and workplan tracking occurs to ensure that tasks are completed in a timely and accurate manner.
CWA Core Programs the Project Supports: Support contribution toward all CWA core programs.

5.4.5 Project Name: Community Projects Program

Project Status: ***Ongoing***
Objective: Provide support for community projects that further the goals of the Management Plan and engage the community.

Description: Community Projects allow community members to be active participants in conservation efforts by helping to implement the Management Plan. The Community Projects program has a special focus on projects that engage the community. The Estuary Program staff meets with community members, prepares contracts, and monitors and evaluates products. The Estuary Program will continue to oversee current projects and develop new projects in FY21.
Partners and Their Roles: Partners include the City of Morro Bay Harbor Department, Cal Poly and Cuesta College researchers, and the SLO County MPA Collaborative.
Outputs/Deliverables: The semi-annual report will detail the projects completed in FY21. Final reports from Community Projects.
Estimated Milestones: Project ideas are considered twice a year, dependent on budget, and will be listed in the semi-annual reports.
Estimated Budget: Staff time.
Long-term Outcomes: All projects meet guidelines on community involvement and Management Plan nexus.
CWA Core Programs the Project Supports: Addressing diffuse, nonpoint sources of pollution. Protecting wetlands. Protecting coastal waters through the National Estuary Program.

6 Completed Major Projects

This section reports on major projects that were completed or expected to be completed in FY20. These accomplishments are also included in the biannual reports submitted to the EPA in April and October.

Project Name: Chorro Creek Ecological Reserve Floodplain Restoration Project

Project Objective: The objective of the project is to restore and enhance floodplain connectivity and riparian vegetation within approximately five acres adjacent to Chorro Creek for steelhead and other wildlife/aquatic species, while reducing sediment loading to the Morro Bay estuary.

Project Description: The project improved floodplain conditions at the site by: 1) expanding a levee breach to route flow to secondary channels, 2) grading a lower floodplain adjacent to the two secondary channels, 3) installing large wood and willow baffles, 4) planting and seeding riparian vegetation, and 5) creating a gentler slope at a creek road crossing. The first two actions helped to enhance floodplain connectivity, increase groundwater, and provide moisture for vegetation colonization. Grading of the secondary channel floodplains also helped to reduce future erosion. Riparian plantings will aid in vegetation establishment on the floodplain. All project elements were completed in summer and fall 2019 with the exception of a small number of plantings that will be installed in fall 2020. Overall, the project improved habitat conditions on five acres of previously farmed land and half a mile of steelhead stream habitat.

Lead Implementer, Partners and Their Roles: The project included a number of contractors to complete implementation. Environmental Science Associates help support bid development and engineering oversight of construction. Precision Construction supported bid solicitation and contractor project management. Four M Construction led most construction aspects including channel de-watering for access, site grading, erosion control material placement, among others. Farm Supply upgraded an onsite irrigation system. The California Conservation Corps members assisted with willow baffle and large wood construction and led the revegetation efforts. Biological and cultural resource monitors, including Stillwater Sciences, Terra Verde Environmental Consulting, and Applied Earthworks, were also hired.

Accomplishments and Deliverables: The restoration project was complete per 100% designs. Permitting and other mitigation measures were followed. Photo monitoring points also show all aspects of project implementation.

Amount of 320 Grant/Cooperative Agreement Funds Spent: Staff time. Climate Ready Estuary funding also supported this project.

Expected Long-term Outcomes: The vegetation on the site will continue to grow to increase riparian cover along the side channels (closely monitored for three years). Fish will utilize the side channels during winter flows for refugia. Erosion will be prevented from the previous avulsion channel, thereby reducing sediment delivery to Chorro Creek from this site.

CWA Core Program Project: Addressing diffuse, nonpoint sources of pollution. Protecting wetlands. Protecting coastal waters through the National Estuary Program.

External Constraints: A few challenges rose for permitting the project. For example, permitting through the Fisheries Restoration Grant Program was delayed, so additional permits were obtained outside the program. The restoration project was largely implemented as planned. Due to much larger quantities of rip rap found on site than expected, the number of large wood structures was reduced to offset the additional cost of hauling away the concrete. Minor changes were also made to willow baffle construction and erosion control measures.

Project Name: Comprehensive Conservation and Management Plan Update

Project Objective: Review and update the program's Comprehensive Conservation and Management Plan (CCMP).

Project Description: The program's original CCMP was approved in 2001. In 2012, the plan underwent a revision with an extensive public input process. For the 2020 review, it was determined that the process qualified as an update rather than a revision because none of the goals, priorities, and objectives were changing; significant changes to action plans were not needed; new monitoring and research was not driving changes in CCMP actions; and the study area was unchanged.

The update process was as follows:

- Planning interns created and populated a database to track implementation status by Action Plan.

- Based on this analysis, the Action Plans were reviewed. It was determined that four Action Plans could be eliminated (either because they were completed or no longer relevant) and that five pairs of Action Plans could be combined.

- Interns reviewed the Climate Vulnerability Assessment and incorporated elements into the Action Plans.

- The document was updated by a graphic designer.

- The document, and associated materials (Financial, Outreach, and Monitoring Plans) were approved by the Management Conference.

- The document is currently under review by EPA Headquarters.

Lead Implementer, Partners and Their Roles: The Estuary Program is the lead implementer, with support from EPA. Program partners are also implementers, working with the Estuary Program to make progress on Action Plans.

Accomplishments and Deliverables: Deliverables include an updated CCMP for 2020, along with ancillary documents including Frequently Asked Questions and a Snapshot summary document. The subplans were also submitted, including the Monitoring Plan, Communications Plan, and Finance Plan. All will be available via the program's website and in limited print copies. The document will be shared with all partners upon completion of EPA HQ review.

Amount of 320 grant/cooperative agreement funds: Staff time.

Expected Long-term Outcomes: The expected long-term outcomes include an up-to-date, well-thought-out management plan that is useful to the program and its partners.

CWA Core Program Project: The Estuary Program played a central role in implementing a CWA tool: Identifying polluted waters and developing plans to restore them (total maximum daily loads). Addressing diffuse, nonpoint sources of pollution. Protecting wetlands. Protecting coastal waters through the National Estuary Program.

External Constraints: The objectives, milestones, and deliverables of the workplan are being met.

Project Name: State of the Bay Report and Event Series

Project Objective: The objective of the project is to share information with the public about the health of the Morro Bay estuary and watershed, based on Estuary Program and partner data.

Project Description: To meet the project objectives, the Estuary Program completed a 28-page printed report that addresses ten questions about the health of the estuary and watershed by presenting analysis of data gathered by the Estuary Program and our partners. We also developed an interactive digital version of the report that includes multimedia elements and additional exploration of the State of the Bay questions that would not fit in the print version of the report. More than 200 stakeholders and supporters have received via mail the print report and a link to the digital report. The digital version of the report has also been shared with all primary and secondary schools in the San Luis Coastal school district, as well as target schools throughout San Luis Obispo County and the Central Valley. To help expand the reach of the triennial State of the Bay report, the Estuary Program always conducts a series of public outreach and education events based on the information presented in the report. The FY20 events included three Morro Bay Science Explorations with the Estuary Program events, based on the topics covered in the report; two guided hikes, which were adjusted to an online format due to the COVID-19 shelter-at-home directive; an on-the-water trash pickup; an adult and youth poetry contest; multiple presentations to community groups; and several educational social media campaigns.
Lead Implementer, Partners and Their Roles: Staff from the Estuary Program were the lead implementers for this project. The Estuary Program hired a graphic designer to design the print report and a web developer to

design and develop the website pages. The Estuary Program partnered with the Botanical Garden of San Luis Obispo and the local public radio station KCBX to host and promote the Science Explorations talks. ECOSLO partnered with us in promoting the events. Many partners contributed data to the report, including Cal Poly, USGS, California State Parks, Audubon, the Central Coast Regional Water Quality Control Board, California Department of Public Health, NOAA, the Coastal San Luis Resource Conservation District, The Land Conservancy of San Luis Obispo County, and others.

Accomplishments and Deliverables: 1,000 copies of the report were printed and the digital report is available online at www.mbnep.org/state-of-the-bay. Numbers of event attendees will be reported in semiannual reports.

Amount of 320 Grant/Cooperative Agreement Funds Spent: Staff time. $18,200 for report, advertising, website, events, and other related costs for the report and events.

Expected Long-term Outcomes: Locals will be better informed about the health of the Morro Bay estuary and, thus, will be able to make better-informed decisions about actions they can take to help protect and preserve these critical areas.

CWA Core Program Project: The Estuary Program played a central role in implementing a CWA tool: Protecting coastal waters through the National Estuary Program.

External Constraints: The print and digital versions of the report were completed and distributed on schedule. The COVID-19 pandemic and the resulting social-distancing directives have forced the Estuary Program to reimagine several in-person, group events for the digital realm. We anticipate that audience sizes for events occurring after March 13 may be lower due to the current public health situation.

7 Areas of Special Interest

Nutrient Management and Control Activities

The issue of elevated nutrients is one of the priority problems facing the Morro Bay estuary and its watershed. The monitoring, restoration, and education efforts of the Estuary Program and its partners often focus on this issue. Multiple efforts are on-going and planned to specifically address nutrient management.

Resource Conservation District Partnerships to Address Nutrients

The Estuary Program worked with the Coastal San Luis Resource Conservation District (CSLRCD) to engage private landowners in the watershed on best management practices through a workshop and individual landowner meetings in FY19. This was funded through a grant from the Resource Legacy Fund. Through this one-year outreach effort, a number of landowners were identified who have interest in implementing a range of projects to improve water quality including: culvert replacement, keyline plowing and other soil management efforts, and irrigation audits, among other projects. Estuary Program staff also helped support the CSLRCD's restoration of the Los Osos Wetland property owned by the CSLRCD through a support letter and technical review of the project.

Coastal Community Resiliency

A changing climate presents threats to coastal communities around the globe. The Estuary Program works with partners, agencies, and others to work to understand potential changes and how we can increase our resiliency to protect habitats and infrastructure.

Climate Change Outreach: USGS recently completed their CoSMoS model for the Central Coast. This user-friendly online tool allows you to zoom in on your local area to look at the potential effects of sea level rise, storm surge, cliff failure, and other expected impacts from climate change. The Estuary Program hosted a meeting for

USGS to share the tool with planners and other professionals. The Estuary Program also hosted a Science Explorations public science talk on Estuary Health, which included a presentation of the CoSMoS model. Both events were well-attended and helped spread the word about this valuable new tool.

CCMP Update with Climate Analysis: As part of the CCMP update process, the Estuary Program assessed the status of CCMP Action Plans with an eye toward actions, threats, and outcomes outlined in the climate vulnerability assessment. Climate change information was incorporated into the relevant Action Plans for the 2020 CCMP Update.

Climate and Adaptation Education: As part of our education & outreach efforts, the Estuary Program has integrated climate change and adaptation into our curriculum and our messaging. The Nature Center now features a climate, tide, and weather exhibit, as well as climate change related content on the interactive kiosk. The Estuary Program also participates in the Central Coast Climate Collaborative, which brings together local municipalities and nonprofits to develop the tools the central coast needs to help understand climate change and its impacts. These tools include the CoSMoS model, which is localized coastal storm monitoring, and the city of Morro Bay's sea level rise analysis.

Climate Ready Estuaries Funding: Climate Ready Estuaries funding was used to support necessary surveys, permits, and equipment needed for implementation of the Chorro Creek Ecological Reserve floodplain restoration project that was completed in fall 2019. Red-legged frog surveys were conducted to support ACOE permitting requirements. Frog, avian, and archaeological monitoring and training was also completed before and during construction. Rare plant surveys and a California Rapid Assessment Monitoring (CRAM) site survey were conducted to meet permitting and monitoring requirements. Permitting fees for the Central Coast Regional Water Quality Control Board were paid with these funds. Monitoring equipment was also purchased to track floodplain flows required by permits. Climate Ready Estuary funds also supported a number of other aspects to move the project forward including: contractor bid development and selection, on site well improvements and electricity for irrigation supply, and aerial mapping of the project site.

7.1 Community Projects in prior year

Table 7.1: Community projects (Spring 2019 - Spring 2020):

FY Year	Partner	Project Title	Purpose and Deliverables	Amount
2018	Dr. John Perrine	Documenting Large and Medium-sized Mammals in the Morro Bay Watershed Using Automatic Wildlife Cameras (2-year project)	Purchase wildlife cameras to deploy throughout the watershed. Work with students to manage the cameras and the data. Collect information on wildlife presence and corridor use, which will support future conservation and restoration efforts.	$1,880
2019	San Luis Obispo Marine Protected Area Collaborative	Kids Booklet in Spanish	Redo graphic design with Spanish translation, print copies, distribute copies and online version.	$3,800
2020	California State Parks	Watershed Protector Demonstration Station	Build demonstration station, develop curriculum, purchase ancillary items, design & print a booklet.	$5,000
Total Amount Expended:				**$10,680**

Table 7.1 summarizes the Community Projects over the last year (Spring 2019 – Spring 2020). All projects help implement the Comprehensive Conservation and Management Plan with an emphasis on engaging the community in the project. Funds used to support Community Projects come from the Morro Bay Restoration Fund, a match source to the EPA 320 funding.

7.2 Travel Expenses

Table 7.2: Travel expenses charged to 320 funds (October 1, 2019 – March 31, 2020)

Event	Location	Trip Purpose	Dates	Staff Attended	Costs Included	Total Amount
NEP Tech Transfer Conference	Delaware NEP	Information sharing and technology sharing between NEPs and partners	9-30-19 to 10-4-19	Lexie Bell	Airfare, lodging, per diem, incidentals	$815
Bioassessment Training	Davis, CA	Bioassessment monitoring training to discuss field protocols, data analysis, and research	10-22-19 to 10-25-19	Karissa Willits	Mileage, meals, incidentals, lodging	$865
PMEP Annual Meeting	Arcata, CA	Tech transfer and planning, field trips, develop workplan for upcoming year.	1-28-20 to 1-31-20	Lexie Bell	Airfare, meals, incidentals, lodging	$706
NEP Tech Transfer Conference	Washington, D.C.	Information sharing and technology sharing between NEPs and partners. Airfare credit issued to be used for upcoming ANEP meeting.	Cancelled due to pandemic.	Lexie Bell	Airfare (credit for future flight awarded due to pandemic)	$875
TOTAL						**$10,476**

Table 7.2 details travel expenses incurred so far during FY20, including attendance at the biannual NEP meetings, professional development trainings, and conferences.

No travel is planned for the second half of FY20.

7.3 Outreach Events and Field Trips

Table 7.3: Outreach Events and Field Trips for April 2019 through March 2020

Date	Organization	Presentation Topic	Audience Type	Audience Size
3/18/2019	Oceanography class with Debra Stakes	Morro Bay water quality monitoring and field measurement techniques lab	College students	35
3/11/2019	Morro Bay High School Freshman Biology Classes	Effects of microplastic on environment and wildlife and microplastic monitoring training	High school freshmen	180
3/13/2019	Morro Bay High School Freshman Biology Classes	Microplastic monitoring sampling	High school freshmen	90
3/14/2019	Morro Bay High School Freshman Biology Classes	Microplastic monitoring sampling	High school freshmen	90
3/15/2019	Morro Bay High School Freshman Biology Classes	Review of field work activity and lab analysis to determine mass/weight of microplastics in sand samples	High school freshmen	180
3/20/2019	Baywood Kindergarten classes	Watershed model demonstration	Kindergarten Students	52
3/21/2019	Estuary Program, the public	Wildlife and restoration in our creeks (Speakers were Karissa Willits, Freddy Otte, and Kate Lundquist)	Public, many supporters	44
3/23/2019	Girl Scouts of the Central Coast	Watershed model demonstration	Girl scouts age 5-14 and parent chaperones	56
3/26/2019	NWQM Conference poster session	Bioassessment and partnerships	Technical water quality conference	50

Date	Organization	Presentation Topic	Audience Type	Audience Size
4/9/2019	Middle school from Los Angeles with Adam White's educational travel company	Introduction to Morro Bay National Estuary Program, watershed overview, estuary, biodiversity, stewardship	Middle school students and chaperones	16
4/24/2019	Del Mar Elementary School 5th Grade Classes	Estuary as biodiversity hot spot, migratory birds, importance of stewardship	5th grade students and chaperones from watershed	60
4/26/2019	Del Mar Elementary School Kindergarten classes	Watershed model demonstration, stewardship	Kindergarten Students	50
5/4/2019	ECOSLO organized through Seas to Trees Day	Paddleboard, Kayak, and by-land cleanup, stewardship	Fraternity and sorority members from Cal Poly	27
5/6/2019	Guadalupe Nipomo Dunes Center and Guadalupe 5th grade students	Watershed model, stewardship, nonpoint source pollution, estuary introduction	5th grade students and chaperones from Guadalupe elementary school	150
5/11/2019	CCSPA/CA State Parks/SeaLife Stewards	Orientation to the bay--landmarks, paddling routes, and intro to Estuary Program	SeaLife Stewards new and returning volunteers	20
5/16/2019	Estuary Program, the public	Shellfish and aquaculture	Public	52
8/13/2019	Rotary Club of Morro Bay	Mutts for the Bay	Rotary Club members	45
9/8/2019	Los Osos Rotary Club, Family Day	Watershed, nonpoint source pollution, bioassessment, scientific adaptation of aquatic bugs	Children, grandparents, parents	125
9/12/2019	Santa Lucia Flyfishers	Steelhead monitoring and restoration	Flyfisher club members	40
9/21/2019	Through ECOSLO, International Coastal Cleanup Day	Snowy plover stewardship, problems caused by single use plastic and marine debris.	Public, volunteers	39
9/21/2019	CCSPA, Wild and Scenic Film Festival	Estuary Program--who we are, what we do	Public, filmgoers	15
9/27/2019	Oceanography class with Feride Schroeder	Morro Bay water quality monitoring and field measurement techniques lab	College students	35
9/30/2019	Oceanography class with Debra Stakes	Morro Bay water quality monitoring and field measurement techniques lab	College students	35
10/2/2019	Novelles Developmental Services, for adults with developmental delays	Watershed model	Adults with developmental delays, their teacher, an aide	7
10/5/2019	Harbor Festival Board	Mutts for the Bay	Public, tickets required	24
12/6/2019	Sea Grant	Eelgrass in Morro Bay	Eelgrass researchers and policy makers	24
1/17/2020	Morro Bay Winter Bird Festival	Morro Bay estuary watershed, overview of Morro Bay National Estuary Program	Public, birders	15
1/17/2020	Morro Bay Winter Bird Festival	State of the Bay 2020, focus on eelgrass, creek health, and climate change	Public, birders	35
1/21/2020	Cal Poly Social Sciences (Including GIS)	Estuary Program overview, career and volunteer opportunities	Cal Poly students in Social Sciences	30
1/23/2020	Morro Bay National Estuary Program	Science Explorations: Eelgrass Update	Public	71
3/5/2020	Morro Bay National Estuary Program	Science Explorations: Estuary Health Update	Public	53
3/11/2020	Bay Osos Kiwanis	State of the Bay	Public	12

8.0 Glossary

The following terms and acronyms are used in this workplan:

Acronym	Explanation
ANEP	Association of National Estuary Programs
BMP	Best management practice
Cal Poly	California Polytechnic State University, San Luis Obispo
Camp SLO	Army National Guard Base Camp San Luis Obispo
CCAMP	Central Coast Ambient Monitoring Program
CCC	California Conservation Corps
CCER	Chorro Creek Ecological Reserve
CCMP	Comprehensive Conservation and Management Plan
CCRWQCB	Central Coast Regional Water Quality Control Board
CDFW	California Department of Fish and Wildlife
CEDEN	California Environmental Data Exchange Network
CEQA	California Environmental Quality Act
CRAM	California Rapid Assessment Method
CSLRCD	Coastal San Luis Resource Conservation District
CWA	Clean Water Act, the enabling legislation for the National Estuary Program.
DFW/CDFW	California Department of Fish and Wildlife
EPA	Environmental Protection Agency
GIS	Geospatial Information System
HCP	Habitat Conservation Plan
IS/MND	Initial Study/Mitigated Negative Declaration
LCSLO	Land Conservancy of San Luis Obispo County
LIDAR	Light Detection And Ranging
LOCSD	Los Osos Community Services District
MBNEP	Morro Bay National Estuary Program.
NEP	National Estuary Program
NEPA	National Environmental Protection Act
NEPORT	National Estuary Program Online Report Tool
NOAA	National Oceanic and Atmospheric Administration
NPS	Non-Point Source
OA	Ocean acidification
OPC	Ocean Protection Council
PMEP	Pacific Marine and Estuarine Fish Habitat Partnership
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RWQCB/CCRWQCB	Central Coast Regional Water Quality Control Board
SLO	San Luis Obispo
SLOMPAC	San Luis Obispo Marine Protected Area Collaborative
SWAMP	Surface Water Ambient Monitoring Program
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committees
TMDL	Total Maximum Daily Loads.
USFWS	United States Fish & Wildlife Service
USGS	United States Geological Survey
VMP	Volunteer Monitoring Program