



WORK PLAN & BUDGET
FOR
FISCAL YEAR 2022

**MORRO BAY NATIONAL ESTUARY PROGRAM
WORK PROGRAM & BUDGET
FISCAL YEAR 2022**

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1. 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 (CCMP) for Morro Bay, which is currently undergoing an update. 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 Fiscal Year (FY) 2022, which covers the period from October 1, 2021 through September 30, 2022.

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 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. We are incorporating EPA's comments on the updated plan. 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 (CWA). 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 FY22 is \$700,000.

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 many partners in the Morro Bay watershed and beyond.

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 Monitoring, Pikeminnow Management, Estuarine Habitats, and Education and Outreach. These TACs provide advice to staff in many areas: 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. Goals for CCMP Implementation in Fiscal Year 2022

This workplan describes the Morro Bay National Estuary Program’s broad goals, specific projects, and planned budget for FY22, which spans from October 1, 2021 to September 30, 2022. This workplan will guide Estuary Program efforts in FY22 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: Citizens, local government, nonprofits, 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 4.

3. Budget and Staff Elements

Tables 3.1 and 3.2 provide an overview of the budget for FY22. 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.

Table 3.1: Budget Overview for FY22

Category	Subcategory	FY22 Anticipated Request	Match	Total
Personnel	Salaries	\$406,570	\$9,090	\$415,660
	Fringe	\$52,795	\$778	\$53,573
	Management Conference	\$0	\$9,164	\$9,164
	<i>Subtotal</i>	<i>\$459,366</i>	<i>\$19,032</i>	<i>\$478,397</i>
Travel	(category includes local mileage)	\$8,700	\$0	\$8,700
Supplies	Computers, software	\$2,500	\$0	\$2,500
	Monitoring supplies	\$12,500	\$0	\$12,500
	Misc. office supplies	\$8,150	\$0	\$8,150
	<i>Subtotal</i>	<i>\$23,150</i>	<i>\$0</i>	<i>\$23,150</i>
Contractual	Audit/Taxes/Accounting	\$14,791	\$11,870	\$26,661
	Education and Outreach	\$22,800	\$91,910	\$114,710
	Monitoring and Research	\$7,500	\$55,718	\$63,218
	Restoration and Protection	\$78,961	\$489,730	\$568,691
	<i>Subtotal</i>	<i>\$124,052</i>	<i>\$649,228</i>	<i>\$773,280</i>
Other	Rent	\$61,200	\$13,740	\$74,940
	Utilities	\$2,977	\$0	\$2,977
	Postage	\$2,519	\$0	\$2,519
	Copying, Printing	\$2,519	\$0	\$2,519
	Training, Prof. Dev.	\$1,000	\$3,000	\$4,000
	Telephone, Internet	\$4,824	\$0	\$4,824
	Repairs and Maintenance	\$5,000	\$0	\$5,000
	Insurance	\$2,693	\$0	\$2,693
	Vehicle maintenance, fuel	\$2,000	\$0	\$2,000
	Community Projects	\$0	\$15,000	\$15,000
	<i>Subtotal</i>	<i>\$84,732</i>	<i>\$31,740</i>	<i>\$116,472</i>
	TOTAL	\$700,000	\$700,000	\$1,400,000

Note: \$15,000 of Community Projects match and \$20,000 for CCER comes from Restoration Fund. Remaining match is from partners.

Table 3.2: Budget Detail of 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	\$11,000	\$11,500
	Bay Friendly Recreation 3	\$500	\$0	\$11,910	\$12,410
	Clean Boating 4	\$1,000	\$0	\$69,000	\$70,000
	Education and Nature Center 5	\$7,200	\$0	\$0	\$7,200
	Other E&O Tasks 6	\$2,100	\$0	\$0	\$2,100
	<i>Subtotal</i>	<i>\$22,800</i>	<i>\$0</i>	<i>\$91,910</i>	<i>\$114,710</i>
Monitoring and Research B	Benthic Invertebrate Monitoring	\$0	\$0	\$8,400	\$8,400
	Statistical analysis 1	\$3,000	\$0	\$0	\$3,000
	Water Quality Monitoring 2	\$4,500	\$0	\$47,318	\$51,818
	<i>Subtotal</i>	<i>\$7,500</i>	<i>\$0</i>	<i>\$55,718</i>	<i>\$63,218</i>
Habitat Protection and Restoration	Restoration Maintenance and Monitoring	\$5,000	\$0	\$10,573	\$15,573
	Eelgrass Restoration	\$0	\$0	\$2,473	\$2,473
	Chorro Creek Eco Res	\$0	\$20,000	\$20,000	\$40,000
	Other Restoration	\$3,500	\$0	\$426,684	\$430,184
	Conservation & Restoration Proj Dev	\$55,461	\$0	\$0	\$55,461
	Invasive Management	\$15,000	\$0	\$10,000	\$25,000
	<i>Subtotal</i>	<i>\$78,961</i>	<i>\$20,000</i>	<i>\$469,730</i>	<i>\$568,691</i>
TOTAL	\$109,261	\$20,000	\$617,358	\$746,619	

Note: Total for Restoration Fund match is **\$35,000** because it includes \$15,000 for Community Projects (see note for Table 4.1) and \$20,000 for Chorro Creek Ecological Reserve. 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 FY22 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; design and printing of 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. Bay Friendly Recreation includes the Mutts for the Bay program to promote recreation while protecting water quality.
4. Clean boating match includes the city of Morro Bay's Clean Marina program.

5. 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.
6. 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. Statistical analysis includes hiring a statistician to conduct analysis for the 2023 State of the Bay Report.
2. 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).

Table 3.3: Summary of 320 Spending and Match for FY22

FY22 Workplan Task	320 Budget Other Expenses	320 Budget Staff time	Projected match	Total
REST-1: Habitat Protection	\$0	\$4,781	\$0	\$4,781
REST-2: Restoration Maintenance	\$5,000	\$2,037	\$10,573	\$17,610
REST-3: Eelgrass Restoration	\$0	\$30,642	\$2,473	\$33,115
REST-4: Chorro Creek Eco Res	\$0	\$8,164	\$40,000	\$48,164
REST-5: Other Restoration	\$3,500	\$12,453	\$426,684	\$442,637
REST-6: Conservation Proj Dev	\$55,461	\$10,983	\$0	\$66,444
REST-7: State Park Marina Stormwater	\$0	\$10,272	\$0	\$10,272
REST-8: Aquatic Invasives	\$15,000	\$5,610	\$10,000	\$30,610
MONITORING-1: Coordination	\$14,200	\$18,664	\$55,718	\$88,582
MONITORING-2: Reporting & Analysis	\$0	\$18,664	\$0	\$18,664
MONITORING-3: Data Management	\$2,000	\$23,070	\$0	\$25,070
MONITORING-4: Quality Assurance	\$500	\$21,834	\$0	\$22,334
MONITORING-5: Project Effectiveness	\$300	\$9,105	\$0	\$9,405
MONITORING-6: Eelgrass Monitoring	\$0	\$16,073	\$0	\$16,073
MONITORING-7: Partner Research	\$0	\$18,938	\$0	\$18,938
MONITORING-8: State of the Bay Analysis	\$3,000	\$14,815	\$0	\$17,815
E&O-1: Communications	\$11,000	\$51,667	\$0	\$62,667
E&O-2: Education	\$200	\$29,619	\$0	\$29,819
E&O-3: Nature Center Update	\$7,000	\$11,591	\$0	\$18,591
E&O-4: Other E&O	\$3,600	\$5,756	\$80,000	\$89,356
E&O-5: Mutts for the Bay	\$500	\$11,351	\$11,910	\$23,761
E&O-6: State of the Bay Planning	\$500	\$13,881	\$0	\$14,381
PM-1: Manage Committees	\$0	\$16,371	\$9,164	\$25,535
PM-2: Grants & Contracts	\$22,291	\$35,749	\$11,870	\$69,910
PM-3: General Administration	\$96,582	\$36,474	\$26,608	\$159,664
PM-4: Tracking Implementation of CCMP	\$0	\$13,097	\$0	\$13,097
PM-5: Community Projects Program	\$0	\$7,704	\$15,000	\$22,704
TOTAL Budget	\$240,634	\$459,366	\$700,000	\$1,400,000

Program Staffing Anticipated for FY22

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 and regional committees. Oversees Management Plan tracking, annual report, and workplan. Attends Association of NEP (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. Manages match tracking and NEPORT submission. 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. Represents the Estuary Program in outreach settings, including on relevant local and regional committees.
- 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. Submits data to state-wide data exchange network for use by agencies and the public.
- 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.
- 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. Supports human resources functions. Coordinates match tracking and support NEPORT data collection and synthesis.
- E&O Specialist: Responsible for supporting primarily outreach products with online interfaces such as social media, press releases, etc. Support general outreach activities. This is a part-time, temporary position.
- Intern(s) and Technician(s) (as needed): Assists with field work, data management, analysis, and outreach. These are part-time, temporary positions.

Fringe Details: \$51,805

- 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: \$8,000

- 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: \$12,500

- 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.

4. New and Ongoing Project Information

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

Habitat Protection and Restoration Activities

REST-1: 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 FY22, the Estuary Program expects to work with The Land Conservancy of San Luis Obispo County (LCSLO) and other partners to develop conservation easements with interested landowners in the watershed. 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: LCSLO is experienced in working with landowners to develop easements and acquisitions, obtaining funds for these deals, and overseeing the monitoring and management of the protected lands. 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, California Department of Fish & Wildlife (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. Staff time: \$4,781. Match: \$0.

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.

CCMP Action Plans Addressed: LP-1 (Protect Special Habitats/Species), LP-3 (Direct Urban Development)

REST-2: Restoration Maintenance

Project Status: *Ongoing*

Objective: Complete maintenance for conservation easements and restoration projects, as necessary.

Description: The Estuary Program with its partners has implemented multiple complex restoration projects that require ongoing maintenance. This work includes maintenance of riparian fencing and off-creek water systems as well as best management practice (BMP) projects.

Partners and Their Roles: Army National Guard Base Camp San Luis Obispo (Camp SLO), CDFW, California Polytechnic State University San Luis Obispo (Cal Poly), Pacific Gas & Electric, and US Forest Service. Their role is to permit land access and maintain project sites.

Outputs/Deliverables: Activities documented in semi-annual reports.

Estimated Milestones: Work is on an as-needed basis.

Estimated Budget: Staff time: \$2,037. Supplies and gear: \$5,000. Match: \$10,573.

Long-term Outcomes: Work with landowners to maintain restoration work so that it continues to be effective.

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

CCMP Action Plans Addressed: BMP-1 (Agricultural and Grazing BMPs), BMP-2 (Rural Road Erosion), ECR-1 (In-Stream Habitat), ECR-2 (Riparian Corridors), ECR-3 (Wetland Protection and Enhancement)

REST-3: 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, what may have driven 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, and FY19. Successful efforts merited an increase to larger restoration efforts in FY20 and FY21. These results and more updated bathymetric monitoring will allow for eventual development of numeric targets for restoration. Funding for eelgrass restoration efforts in FY22 will come from a grant from the NEP Coastal Watersheds Grant (CWG) program and a grant from the USFWS's Coastal Program. The restoration and research funded by this grant will allow us to better understand eelgrass dynamics and identify eelgrass restoration targets for Morro Bay.

Partners and Their Roles: Partners include Cal Poly (research expertise), Cuesta College (research expertise), NOAA (funding and technical expertise), Restore America's Estuaries (oversight of CWG program), USFWS

(funding), CDFW (permitting, funding, and monitoring), 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 transplant monitoring.

Estimated Budget: Staff time: \$30,642. Match funding: \$2,473. 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.

CCMP Action Plans Addressed: ECR-7 (Eelgrass Data and Research), ECR-8 (Eelgrass Restoration)

REST-4: Chorro Creek Ecological Reserve Restoration Phase 4

Project Status: *Ongoing*

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

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 State Coastal Conservancy (SCC) funding, the project was largely implemented in summer and fall 2019. Two floodplain side channels were constructed, large wood structures and willow baffles were 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. The revegetation efforts are monitored quarterly to track survival for a minimum of three to five years (permit requirements). Vegetation will also be watered on an as needed basis. A California Rapid Assessment Monitoring (CRAM) survey will be conducted to assess habitat health. The side channels were activated by large flows in a January 2021 storm. Fish were monitored within the floodplain to assess possible stranding issues. Additional geomorphic monitoring such as cross-sectional and longitudinal profiles of channels will be conducted. Additionally, floodplain flows will continue to be tracked via cameras and temperature data loggers. If the channel is activated again, monitoring to assess possible stranding issues will be conducted. Due to the large storm in FY21, an additional planting effort is planned for early FY22 to bolster remaining plantings on site.

Partners and Their Roles: Project partners include CDFW as they are both a funder and the landowner. Other partners include the State Coastal Conservancy (SCC), 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 (CCC) who provides technical expertise and project labor.

Outputs/Deliverables: Monitoring report summaries for permit agencies.

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

Estimated Budget: Staff time: \$8,164. Match: \$20,000 from SSC grant, \$20,000 from Restoration Fund.

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.

CCMP Action Plans Addressed: LP-2 (Restore Floodplains), ECR-1 (In-stream Habitat), ECR-2 (Riparian Corridors)

REST-5: 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 San Luis Obispo (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 will work with partners such as United States Geological Survey (USGS) to develop projects to study future sea level rise impacts on the estuary habitats such as the salt marsh, mudflats, eelgrass, sandspit, and transition zones. 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 work with partners to implement the Conservation Planning Initiative.

Partners and Their Roles: Potential partners include SLO County, the city of Morro Bay, the Los Osos Community Services District, CSLRCD, Cal Poly, Camp SLO, the Morro Bay Harbor Advisory Board, CDFW, 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, SLO 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: \$12,453. Support of partner projects: \$3,500. Other expenses depend on opportunities that arise. Match: \$426,684.

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.

CCMP Action Plans Addressed: Depending on project opportunities that arise, work could impact the following Action Plans: BMP-1 (Agricultural and Grazing BMPs), ECR-1 (In-stream Habitat), ECR-2 (Riparian Corridors), ECR-3 (Wetlands Protection and Enhancement), ECR-14 (Support Recovery Plans), ECR-15 (Steelhead Barriers and Habitat), ECR-16 (Invasive Species Action Plan), FWR-5 (Water Conservation)

REST-6: Conservation and Restoration Project Development

Project Status: *Ongoing*

Objective: To develop project plans and initial scoping 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 FY22 include coordination with CSLRCD to implement a project to address nutrient and sediment impacts in the Warden and Los Osos Creek subwatersheds. Estuary Program staff will also support Camp SLO in stormwater management projects. Efforts may also include engaging landowners in implementing BMPs on private property throughout the watershed. Discussions are underway with Caltrans, SLO County, and other partners on a fish passage barrier removal project on San Luisito Creek, with the Estuary Program planning to provide support for preliminary work needed for project development. Another potential effort is a CSLRCD project with 319(h) funding (applied) to implement BMPs on private property in 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 CSLRCD 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 CCC, 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 CDFW with the role of providing technical expertise; CCC who would contribute technical expertise, materials, and field support; Stillwater Sciences who would contribute technical expertise and equipment; and the city of SLO who would provide technical expertise. For conservation planning and invasive species management, primary partners include California 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 the CCC.

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 to be determined depending on funding and permitting.

Estimated Budget: Staff: \$10,983. Funding for partners to collaborate on project planning and studies needed for the Conservation Planning Initiative to establish numeric targets: \$55,461. Match: \$0.

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.

CCMP Action Plans Addressed: Depending on project opportunities that arise, work could impact the following Action Plans: BMP-1 (Agricultural and Grazing BMPs), ECR-1 (In-stream Habitat), ECR-2 (Riparian Corridors), ECR-3 (Wetlands Protection and Enhancement), ECR-14 (Support Recovery Plans), ECR-15 (Steelhead Barriers and Habitat), ECR-16 (Invasive Species Action Plan), FWR-5 (Water Conservation)

REST-7: 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 FY22, project construction will be completed. The Estuary Program will finalize the funding and wrap up the project. 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, bid management, construction oversight, and match.

Output/Deliverables: Repaved parking lot, bioswale installation, and interpretive signage. All monitoring data submitted to CEDEN. Final project report.

Estimated Milestones: Project designs, project implementation, final grant reporting. The timing is to be determined based on the grant contract currently being revised by project partners and California Ocean Protection Council. Project implementation will be completed by March 31, 2022. Final reporting and other OPC grant deliverables will be completed by June 30, 2022.

Estimated Budget: Staff time: \$10,272.

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.

CCMP Action Plans Addressed: MON-3 (Monitor Project Effectiveness), BMP-7 (Support Stormwater BMPs), USE-1 (Recreational Uses), USE-2 (Shellfish Farming)

REST-8: Aquatic Invasive Species Management

Project Status: *Ongoing*

Objective: To implement invasive management efforts for pikeminnow and other opportunities as they arise.

Description: Steelhead recovery in Chorro 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 FY22, the 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. CCC will provide technical input and field support. CDFW will provide technical support. USFWS offers project oversight and issues the permit for the work.

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 in relation to pikeminnow observed in select sampled reaches of Chorro Creek will increase after management.

Estimated Budget: Staff time: \$5,610. Contracting for implementation support: \$15,000. Match: \$10,000.

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.

CCMP Action Plans Addressed: ECR-14 (Support Recovery Plans), ECR-15 (Steelhead Barriers and Habitat), ECR-16 (Invasive Species Action Plan)

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.

MONITORING-1: Monitoring Program Coordination

Project Status: *Ongoing*

Objective: Continue coordination of Monitoring Program and collect data that meets Quality Assurance Project Plan 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 Central Coast Regional Water Quality Control Board (CCRWQCB), whose Central Coast Ambient Monitoring Program (CCAMP) lends technical advice, monitoring equipment, and field support. Landowners such as California State Parks, Cal Poly, Camp SLO, SLO County, the city of Morro Bay, and numerous private landowners are also partners, allowing access on their land for monitoring. Cuesta College provides technical support, access to their property, and lab space. Program coordination follows the approved QAPP (a deliverable under Task MONITORING-4) and data is submitted to the CEDEN database (a deliverable under Task MONITORING-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: \$18,664. Monitoring supplies: \$12,500. Laboratory analysis: \$1,700. Match: \$55,718.

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.

CCMP Action Plans Addressed: MON-1 (Support Development of TMDLs), MON-2 (Monitor Environmental Indicators), MON-3 (Monitor Project Effectiveness), MON-4 (Maintain VMP), MON-5 (Support Partners), MON-6 (Support Research Activities)

MONITORING-2: 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 2022. This includes an analysis of the sediment impacts to macroinvertebrate populations and overviews of bay and creek health. The task also includes responding to data requests from partners, landowners, and others.

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 2022.

Estimated Budget: Staff time: \$18,664. Match: \$0.

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.

CCMP Action Plans Addressed: MON-1 (Support Development of TMDLs), MON-2 (Monitor Environmental Indicators), MON-3 (Monitor Project Effectiveness), MON-4 (Maintain VMP), MON-5 (Support Partners), MON-6 (Support Research Activities)

MONITORING-3: 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 SWRCB 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, including the general public, 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 SWRCB 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 on the [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: \$23,070. Database technical support: \$2,000. Match: \$0.

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).

CCMP Action Plans Addressed: MON-1 (Support Development of TMDLs), MON-2 (Monitor Environmental Indicators), MON-3 (Monitor Project Effectiveness), MON-4 (Maintain VMP), MON-5 (Support Partners), MON-6 (Support Research Activities)

MONITORING-4: 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 Region 9 Office of QA and EPA Headquarters are a primary partners, providing oversight of the QAPP and technical assistance. The SWRCB Quality Assurance (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 Central Coast

Water Quality Preservation, Inc., and others.

Output/Deliverables: The deliverable will be an EPA-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: \$21,834. QA laboratory analysis: \$500. Match: \$0.

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).

CCMP Action Plans Addressed: MON-1 (Support Development of TMDLs), MON-2 (Monitor Environmental Indicators), MON-3 (Monitor Project Effectiveness), MON-4 (Maintain VMP), MON-5 (Support Partners), MON-6 (Support Research Activities)

MONITORING-5: 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 Water Reclamation Facility came online in 2016. Monitoring data will be compiled to support restoration projects, partner data requests, etc. Currently, ongoing restoration monitoring occurs on the Maino Conservation Easement. These activities will continue. As appropriate, compliance monitoring and photo documenting will be conducted.

Partners and Their Roles: Project partners include landowners or responsible entities such as Cal Poly, Camp SLO, and the SLO 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. Maino Easement monitoring to be completed in Spring 2022.

Estimated Milestones: Monitoring and data reports will be compiled as needed.

Estimated Budget: Staff time: \$9,105. Laboratory analysis of seeps samples: \$300. Match: \$0.

Long-term Outcomes: Conduct monitoring and develop analysis that informs future management and restoration efforts. Conservation easement monitoring is completed annually and landowner communications continue.

CWA Core Programs the Project Supports: Identifying polluted waters and developing plans to restore them (TMDLs).

CCMP Action Plans Addressed: MON-1 (Support Development of TMDLs), MON-2 (Monitor Environmental Indicators), MON-3 (Monitor Project Effectiveness), MON-4 (Maintain VMP), MON-5 (Support Partners), MON-6 (Support Research Activities)

MONITORING-6: 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 FY22, 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 MONITORING-7). 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 intertidal estuary-wide light detection and ranging (LIDAR) map will be created in 2022. Analysis will include this data to help determine sediment accumulation and change over time while informing future eelgrass restoration efforts. The information will help assess the role of eelgrass in bay sedimentation, erosion, and circulation. The work will support 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. We are partnered on a CWG project to conduct eelgrass restoration, monitoring, and research in FY22. Cuesta College, the local community college, conducts research related to wasting disease and eelgrass health. Other partners include CDFW, a potential funder 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 SCC, the Pacific Marine and Estuarine Fish Habitat Partnership (PMEP), the city of Morro Bay, State Parks, local oyster farms, the Black Brant Group, 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: \$16,073. Match: \$0.

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.

CCMP Action Plans Addressed: MON-1 (Support Development of TMDLs), MON-2 (Monitor Environmental Indicators), MON-3 (Monitor Project Effectiveness), MON-4 (Maintain VMP), MON-5 (Support Partners), MON-6 (Support Research Activities), ECR-7 (Eelgrass Data and Research), ECR-8 (Eelgrass Restoration)

MONITORING-7: 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 project development, and contributed time. Cal Poly and the Estuary Program were awarded NEP CWG funding for a project focused on building coastal resilience through eelgrass restoration and monitoring. Work will be conducted through 2022 focused on eelgrass restoration, bay water quality, bay erosion and deposition, and eelgrass mapping. Other potential efforts include further planning to address sea level rise around the bay, bay water quality including ocean acidification (OA), bay sediment characteristics, native oyster restoration, microplastics, and others. Reports and results will be compiled in the Estuary Program library.

Partners and Their Roles: Cal Poly is a primary partner in these joint efforts. Cal Poly will conduct monitoring of water quality parameters, eelgrass mapping, and analysis as part of the CWG project. 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 for the CWG project will be completed in early FY23.

Estimated Milestones: Variable, depending on funding sources.

Estimated Budget: Staff time: \$18,938. Match: \$0.

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.
CCMP Action Plans Addressed: MON-1 (Support Development of TMDLs), MON-2 (Monitor Environmental Indicators), MON-3 (Monitor Project Effectiveness), MON-4 (Maintain VMP), MON-5 (Support Partners), MON-6 (Support Research Activities), ECR-7 (Eelgrass Data and Research), ECR-8 (Eelgrass Restoration)

MONITORING-8: State of the Bay Analysis

Project Status: *New*

Objective: Conduct analysis of trend and project effectiveness data for the triennial State of the Bay environmental report card.

Description: Every three years, the Estuary Program hosts a State of the Bay (SOTB) event series to share knowledge about the status of the estuary and watershed in terms of clean water and healthy habitats. In FY22, the Estuary Program will be gathering and reviewing available data, conducting data analysis, and preparing the document for the triennial report card, which will be released a few months prior to the State of the Bay events to take place in FY23. This report provides data and summary information on the state of the estuary and watershed according to a suite of environmental indicators.

Partners and Their Roles: Project partners include the monitoring partners who share their data and expertise with the Estuary Program. These include the California Department of Public Health, CCAMP, the Central Coast Water Quality Preservation, Inc., CDFW, Cal Poly, Audubon, the CCC, USGS, shellfish farmers, environmental consultants, and private citizens.

Outputs/Deliverables: The deliverables include a printed report and an electronic version for the web.

Estimated Milestones: Both the electronic and print versions of the report card will be completed by the Spring 2023.

Estimated Budget: Staff time: \$14,815. Statistical analysis: \$3,000. Match: \$0.

Long-term Outcomes: To share the results of monitoring by the Estuary Program and its partners, with the goal of increasing education on nonpoint source pollution, restoration, etc.

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

CCMP Action Plans Addressed: MON-1 (Support Development of TMDLs), MON-2 (Monitor Environmental Indicators), MON-3 (Monitor Project Effectiveness), MON-4 (Maintain VMP), MON-5 (Support Partners), MON-6 (Support Research Activities), EO-1 (Public Education & Outreach), EO-2 (State of the Bay)

Public Participation, Education and Outreach

E&O-1: 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 FY22 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 (<https://www.instagram.com/morrobaynep/>) 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 2,406 Facebook followers, 2,317 Instagram followers, and 599 Twitter followers. In FY22, 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 program areas (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 FY22, the Estuary Program will continue to 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, SLO County, the Morro Bay Natural History Museum, California State Parks, the San Luis Obispo Marine Protected Area Collaborative (SLOMPAC), 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: \$51,667. Design and printing, website maintenance, hosting and design, translation of materials: \$11,000. Match: \$0.

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.

CCMP Action Plans Addressed: EO-1 (Public Education and Outreach), EO-2 (State of the Bay), EO-3 (Nature Center), EO-4 (Formal Education Programs)

E&O-2: Education

Project Status: *Ongoing*

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

Description: In FY22, the Estuary Program will continue working with partners to integrate estuary-focused activities into existing formal educational programming. Unfortunately, the Central Coast Aquarium, our long-time education partner in estuary education, closed due to a lack of revenue during the pandemic. At this time, we do not know whether or not they will reopen or dissolve entirely. Because of this, we are exploring new partnership opportunities. We have begun reaching out to other local organizations including Camp KEEP and Creek Lands Conservation. In FY22, we plan to finalize at least one and begin working with that partner to deliver educational content in a COVID-safe way. Potential educational activities include watershed model demonstrations in virtual or in-person classrooms, microplastics monitoring with local high school students, hosting estuary fieldtrips for student groups, and supporting other 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 will also continue to provide presentations and talks as requested for K-12 students as well as undergraduate and graduate classes. In addition, the Estuary Program will maintain the Estuary Nature Center. During years in which travel and visitorship is not affected by a pandemic, the Nature Center receives 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 series is expected to be online this year. 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. The San Luis Obispo and Monterey Marine Protected Area Collaboratives are also key partners, helping to produce and distribute estuary and marine-focused stewardship education materials across the state of California.

Outputs/Deliverables: The deliverables will be Nature Center statistics, presentation statistics, Marine Protected Area (MPA) kids' education content statistics. Included in semi-annual reports to EPA.

Estimated Milestones: The Nature Center promotional materials and statistics will be ongoing. The statistics on speaking engagements and fieldtrips will be included in the semi-annual report.

Estimated Budget: Staff time: \$29,619. Supplies: \$200. Match: \$0.

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.

CCMP Action Plans Addressed: EO-1 (Public Education and Outreach), EO-2 (State of the Bay), EO-3 (Nature Center), EO-4 (Formal Education Programs)

E&O-3: 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. This number has been reduced drastically during the COVID-19 pandemic shutdown, since the Nature Center has been closed since March 2020 to the present. 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 FY22, 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 FY22. Additionally, through a USFWS grant, we will be developing exhibits related to eelgrass and to women in science as a component of an eelgrass grant.

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 FY22.

Estimated Budget: Staff time: \$11,591. Exhibit updates and maintenance: \$7,000. Match: \$0.

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.

CCMP Action Plans Addressed: EO-1 (Public Education and Outreach), EO-2 (State of the Bay), EO-3 (Nature Center), EO-4 (Formal Education Programs)

E&O-4: 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 projects with partners will be maximized throughout the year as they arise.

Beyond these new opportunities, standing community partner projects include:

- Participation in the San Luis Obispo Marine Protected Areas Collaborative: The Estuary Program is a key member of the 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 agencies 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 remotely operated vehicle (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. The Estuary Program has received and managed grant funding to implement SLOMPAC projects, as well as collaborative projects between the SLOMPAC and the Monterey Marine Protected Area 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. The pumpout units serviced through this program are owned by the Harbor Department of Morro Bay and the Morro Bay Yacht Club.

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, the Morro Bay Yacht Club, San Francisco Estuary Partnership, Bay Foundation of Santa Monica, and local recreational boating business owners. This effort also includes supporting ECOSLO, a local organization, 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: \$5,756. Miscellaneous expenses: \$3,600. Match: \$80,000.

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.

CCMP Action Plans Addressed: EO-1 (Public Education and Outreach), EO-2 (State of the Bay), EO-3 (Nature Center), EO-4 (Formal Education Programs)

E&O-5: 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. By using the bags, pet owners prevent 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 SLO 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 multiple 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: \$11,315. Miscellaneous items: \$500. Match: \$11,910.

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.

CCMP Action Plans Addressed: EO-1 (Public Education and Outreach), EO-2 (State of the Bay), EO-3 (Nature Center), EO-4 (Formal Education Programs), BMP-6 (Reduce Pet Waste)

E&O-6: State of the Bay Planning

Project Status: *New*

Objective: Planning for the triennial State of the Bay report and events.

Description: Every three years, the Estuary Program hosts a SOTB conference/event series to share knowledge about the status of the estuary and watershed in terms of clean water and healthy habitats. In FY22, the Estuary Program will begin planning for events in FY23. The Estuary Program develops a public-friendly report to share data collected by our program and our partners. The series of events will be held throughout the spring of 2023 to share the data as well as a clean water message.

Partners and Their Roles: Partners include the Central Coast State Parks Association, ECOSLO (a local nonprofit focused on environmental conservation, and other education partners.

Outputs/Deliverables: Program statistics and milestones will be provided in the semi-annual reports.

Estimated Milestones: A SOTB report will be available in early 2022, and events will be held throughout the spring.

Estimated Budget: Staff time: \$13,881. Miscellaneous expenses: \$500. Match: \$0.

Long-term Outcomes: To share the results of monitoring by the Estuary Program and its partners, with the goal of increasing education on nonpoint source pollution, restoration, etc.

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

CCMP Action Plans Addressed: EO-1 (Public Education and Outreach), EO-2 (State of the Bay)

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.
3. Morro Bay National Estuary Program will facilitate effective partnerships and stakeholder engagement in implementation of the Management Plan.

PM-1: Manage Committees and Build Partnerships

Project Status: *Ongoing*

Objective: Hold quarterly committee meetings and support partnerships.

Description: The Estuary Program will continue to coordinate the Executive Committee on a quarterly basis. Staff creates meeting materials and helps facilitate the meetings. The Estuary Program will convene technical advisory committees on an as-needed basis.

Partners and Their Roles: The Management Conference committees are made up of representatives from various governmental, economic, environmental, and educational organizations. The TACs 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: \$16,371. Match: \$9,164.

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.

CCMP Action Plans Addressed: This task supports all Action Plans.

PM-2: Grants and Contracts Administration and Financial Management

Project Status: *Ongoing*

Objective: Develop workplan, administer grants, and complete annual financial management tasks.

Description: Each year, the Estuary Program evaluates the prior year's progress, anticipates the upcoming year's potential, and develops a workplan and budget. The workplan for FY23 is due to EPA Region 9 in May 2022. 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 2021 and spring 2022 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 2022), biannual EPA grant reports (Fall 2021 and Spring 2022), an annual/end of year report (Fall 2021), annual financial statements submitted to the federal clearinghouse (Spring 2022), and annual state and federal tax submissions to the State of California and the IRS (Spring 2022).

Estimated Milestones: See above.

Estimated Budget: Staff time: \$35,749. Accounting/auditing, NEP Tech Transfer meetings and other travel costs: \$22,291. Match: \$11,870.

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.

CCMP Action Plans Addressed: This task supports all Action Plans.

PM-3: 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 human resources tasks include training and professional development, recruitment, managing interns, and keeping all personnel policies and procedures up to date, including those related to emergency preparedness for operations. 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: \$36,474. Professional development: \$1,000. Match: \$3,000.

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.

CCMP Action Plans Addressed: This task supports all Action Plans.

PM-4: Tracking Implementation of the Management Plan and Workplan

Project Status: *Ongoing*

Objective: Track 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. Staff are working to develop a public-friendly version of management plan tracking to be shared on our website.

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 (Fall 2021 and Spring 2022) and NEPORT data (Summer 2022).

Estimated Milestones: See above.

Estimated Budget: Staff time: \$13,097. Match: \$0.

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.

CCMP Action Plans Addressed: This task supports all Action Plans

PM-5: 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 to develop projects, prepare contracts, and monitor and evaluate products. The Estuary Program will continue to oversee current projects and develop new projects in FY22.

Partners and Their Roles: Partners for past Community Projects have include the City of Morro Bay Harbor Department, Cal Poly and Cuesta College researchers, California State Parks, SLO County, and the SLOMPAC.
Outputs/Deliverables: The semi-annual report will detail the projects completed in FY22. 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: \$7,704. Match: \$15,000 in Restoration Fund money to fund projects. Additional match from project partners, to be determined.

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.

CCMP Action Plans Addressed: This task can support all Action Plans, depending on the project type and partners involved.

5. Accomplishments

This section reports on major projects that were completed by December 2020. These accomplishments are also included in the semi-annual reports submitted to the EPA in October 2021 and April 2022.

Monitoring Efforts

Project Objective: Continue the Estuary Program’s robust monitoring effort, despite inability to work with volunteers.

The primary goals of the program are to collect high quality data to support tracking of long-term trends, to help identify potential restoration projects, and to assess the effectiveness of project implementation. The Estuary Program maintains an active volunteer corps to support the effort. With the shutdown due to the pandemic in spring 2020, volunteers could no longer participate in the program.

This required an immediate shift by staff. We assessed the full suite of monitoring efforts and sites and prioritized our efforts. We coordinated with labs to handle analysis that could no longer be conducted by volunteers. We shifted our in-office lab to a staff member’s home as we shifted to a remote work model. We reviewed safety protocols and updated them to address monitoring during COVID.

A particular challenge was bioassessment monitoring. This is work that takes place each spring and typically involves numerous volunteers. Conducting the work without volunteer support and while maintaining social distancing in narrow riparian corridors was challenging. Staff developed revised protocols and methods for the work and were able to successfully monitor seven sites.

Despite the challenges of 2020, through their dedicated efforts program staff was able to minimize the loss of data that might otherwise have occurred.

The Estuary Program also maintained and developed monitoring partnerships during the year. Work continued with Cal Poly on eelgrass mapping, bay water quality, and bay hydrodynamics. The partnership resulted in a [published paper](#) and secured funding for additional research work over the next two years.

The efforts supported the following CCMP Actions: MON-1 (Support Development of TMDLs), MON-2 (Monitor Environmental Indicators), MON-3 (Monitor Project Effectiveness), MON-5 (Support Partners), MON-6 (Support Research Activities)

Eelgrass Restoration and Monitoring

Project Objective: Conduct 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 stabilize the bay bottom. Precipitous declines in eelgrass acreage from 2007 to 2017 were of great concern. The Estuary Program has been working closely with Cal Poly researchers as well as other eelgrass experts to conduct experimental transplanting (2017 to 2019) in different regions of the bay. The transplants were then monitored according to a scientific methodology to determine the optimal season, locations, depths, anchoring methods, etc. for planting eelgrass. Based on information from experimental transplanting efforts in 2017 and 2018, the Estuary Program conducted additional planting efforts in the spring of 2019, 2020, and 2021. Each year, the Estuary Program continues to implement lessons learned.

During this reporting period, the Estuary Program completed three, six, and 12-month post-project monitoring of 2019 restoration sites with a grant from CDFW and conducted additional restoration in spring of 2020 with funding from PMEP and a donation from a local water fowl hunting group. With a grant from CDFW, 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 without anchoring. At another site, we tested three different planting depths. A total of 21 rebar pieces (where eelgrass plants are tied to a piece of rebar rather than being anchored directly in the ground) and 34 plots were planted. Monitoring of the sites at six and 12-months post-planting showed that nine of the 11 sites were successful. Overall, sites at shallow elevations had lower survival. On average, the original one-meter plots expanded by seven times and rebar plantings expanded by fifteen times after 12 months.

Additional restoration was conducted in spring of 2020 with funding from PMEP and a donation from a local water fowl hunting group. Funding for eelgrass restoration efforts in FY20 and partial funding for FY21 was awarded from PMEP. In spring of 2020, staff and volunteers planted 25 plots and 24 rebar/bamboo pieces at nine sites. Eelgrass plantings were expanded to new sites away from the main tidal channel and at prior restoration locations to create larger more stable beds. Thus far, most sites have been monitored at three, six, and 12-months post-planting (additional 12-month monitoring expected in April/May 2021). At six months, all sites were successful with measurements showing the plots at 90 to 744% of their original size. We will continue to monitor transplant success to inform future efforts and we will continue to seek funding and partnerships to further this effort.

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: Shift education and outreach efforts to virtual during COVID.

The Estuary Program strives to reach students, residents, and visitors with estuarine science and stewardship messaging. This is normally accomplished through fieldtrips, lectures, curriculum development, and other efforts. Once the pandemic hit in spring 2020, the Estuary Program recognized the need to shift efforts to a virtual-only model. The Nature Center had to be closed down, and in-person interaction was no longer possible.

Estuary Program staff conducted the following activities to support this transition:

- SOTB events: To accompany our triennial environmental report card, we normally host a series of events to share report card results and to build stewardship. While some in-person events had already been conducted, staff converted the last of the evening science talk events from an in-person to a virtual event. A planned trivia night was also converted to an online Zoom event, and a planned large group paddleboard cleanup was recast as an independent cleanup event with cleanup kits ready for pickup. Through live and Zoom events, over 550 people were reached.
- SOTB report card: To share the report card, staff normally makes presentations at service organization meetings, libraries, classrooms, and other venues. A few in-person events were conducted before the shutdown, but once in-person events were no longer possible, the focus shifted to virtual outreach. Staff created brief videos on each SOTB topic. These were utilized by the local high school in place of in-person lectures. They were also shared via the Estuary Program website. In total, the series of videos were viewed over 400 times. The Estuary Program staff also leveraged the creation of our first expanded-content digital State of the Bay Report Card to deliver additional content to teachers and students around the state. The website was emailed to more than 200 primary and secondary teachers as part of our Annual Poetry Contest inspiration packet and in a digital science education materials packet during spring of 2020.
- Annual Poetry Contest: We conducted our annual poetry contest with an increase in digital marketing and a move to short, individual video readings of each poem rather than an in-person poetry reading event. Approximately 1,500 individuals were reached.

These efforts support the following CCMP Action: EO-1 (Public Education and Outreach), EO-2 (State of the Bay), 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 undertook an effort in FY20 to revise the Community Projects Program. Rather than soliciting projects for review, staff wanted to work with partners to develop projects that directly address our goals and support our Action Plans. The total annual budget for the program was increased from \$10,000 per year to \$15,000 per year, and the maximum dollar amount for a project was increased from \$5,000 to \$10,000. The project development process was redesigned to encourage participation from more partner organizations by simplifying the application and instead increasing communication between staff and the potential partners.

The revised program was launched in the fall of 2020. Through collaboration with partners, the Estuary Program developed two projects that are currently underway with FY21 funding.

Recently completed projects are as follows:

- Wildlife Camera Project: Dr. John Perrine of Cal deployed wildlife cameras and analyzed resulting data at sites throughout the watershed for two years. 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 second year of the project resulted in two deployments, one on Pennington Creek and one on Cal Poly's Chorro Creek and Walters Creek properties. The goal of the effort was to determine the distribution and activity level of medium and large mammals. Due to COVID, there were delays in the work. The project is now considered to be complete.
- Kids Activity Book Translation: The SLO MPA Collaborative had previously designed and distributed a popular kids activity book that highlighted wildlife in the Central Coast MPAs. This Community Project involved

translating the content into Spanish, adjusting the graphic design to accommodate the revised text, and printing the Spanish version of the booklet. This project is now complete, although distribution of the booklet has been delayed due to COVID.

Upcoming Community Projects: Numerous projects are currently underway. These include: 1) 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, 2) a project with the CSLRCD to restore habitat for monarchs and pollinators and conduct public education, and 3) a project with a Cal Poly professor to conduct microplastics monitoring in Morro Bay. The first project will be completed during FY21, and the second and third projects will be completed in FY22.

All projects help implement the CCMP 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.

6. Areas of Special Interest

Reductions in Nutrient Pollution

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 CSLRCD to apply for funding to implement BMPs on private property. These are projects that were developed with a grant from the Resource Legacy Fund. Potential activities include culvert replacement, keyline plowing and other soil management efforts, and irrigation audits.
- Monitoring Data Support for Regulators: The Estuary Program collects nutrient data from throughout the watershed. The data is submitted to the California Environmental Data Exchange Network (CEDEN), where it is then available to the CCRWQCB and SWRCB to support TMDL assessment, 303(d) review, implementation of a new Agricultural Order, etc.
- Los Osos Water Reclamation Facility Effectiveness: The Estuary Program collects nutrient data from the bay shoreline seeps in the community of Los Osos to track changes in nitrate concentrations in the shallow groundwater. The Los Osos Water Reclamation Facility coming online in 2016 should result in reductions in nitrates.

Water Reuse and Conservation

- Water Conservation Efforts: The Los Osos Community Services District (LOCSO) is one of the principal water purveyors for the community of Los Osos. As such, one of their roles is to work with the community to encourage water conservation. In 2020, LOCSO efforts included rebate programs, printing and mailing costs for educational materials, and staff time for social media campaigns to reduce water usage. Although such efforts were not possible in 2020 due to COVID, we have partnered with the LOCSO on conservation campaigns in the past and expect to do so again in the future. Additionally, water conservation outreach is integrated throughout our 2020 State of the Bay interactive online content that focuses on future climate changes and throughout our Bay Friendly Gardening online content.
- Climate Vulnerability Assessment (CVA) update: In the second half of FY20, the Estuary Program reviewed and updated our CVA, which was originally developed in 2016. This involved updating the science as new

tools are now available from Our Coast, Our Future; NOAA; and others. We also reviewed the likely impacts of climate change and the actions to address them. These included the impacts of increased drought and the likelihood of reduced water supplies in the future.

Marine Litter Reduction

- **Microplastics Monitoring:** In FY20, staff worked with Morro Bay High School to integrate a microplastics monitoring effort into the curriculum for freshman biology students. Staff developed a monitoring protocol and lectures, and worked with teachers to incorporate the material. The work is conducted at Coleman Beach and the plan is to have future classes repeat the monitoring to contribute to a long-term dataset. Additionally, the Estuary Program partnered with Dr. Nikki Adams of Cal Poly on a Community Project to develop a microplastics monitoring protocol for sediment in the estuary. Coordination is underway and the project is expected to be completed in early FY22. The plan is for the monitoring to continue after the project is complete, coordinated by the Estuary Program and Cal Poly.
- **Litter Outreach:** We have seen a large increase in litter along the coastline since the advent of COVID, in particular because of the use of takeout containers for all dining. To support a message of marine litter reduction, we developed campaigns using blog posts and social media to address the issue. We also began a partnership with SLO County to join their campaign to address trash issues on the Central Coast.
- **Coastal Cleanup Day:** Each year, a local environmental organization hosts a county-wide cleanup day, with a focus on waterways. The Estuary Program supports the effort in two ways. We often act as a sponsor for the event and contribute some funding. We also serve as coordinators for one or two sites in Morro Bay. We receive training in the protocol and reporting. We advertise and manage the volunteers. We lead volunteers on the day of the event, and we compile and submit data on the trash collected.

Green Infrastructure and Resiliency

Assessment of vulnerabilities in our study area and implementation of efforts to increase coastal environment resiliency are important goals for the Estuary Program.

- **Climate Vulnerability Assessment Update:** As part of the CVA update, we used updated science and models to identify threats to our coastal environment as well as projects to increase resiliency. One such project already underway is a low impact develop (LID) upgrade on the State Park Marina parking lot. This is a large paved area that drains stormwater runoff directly to the estuary. The project involves re-grading to direct runoff to bioswales which will filter the water before it reaches the bay. Increased storminess (more intense storms) result in increased runoff as flows have less time to sink in to the ground. Thus, treatment such as LID helps protect water quality as climate change will likely increase stormwater runoff and the pollutants that it transports.

7. Travel Expenses

No travel was conducted in the first half of FY21, and no travel is planned for the second half of FY21.

8. 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
CRAM	California Rapid Assessment Method
CSLRCD	Coastal San Luis Resource Conservation District
CVA	Climate Vulnerability Assessment
CWA	Clean Water Act, the enabling legislation for the National Estuary Program
CDFW	California Department of Fish and Wildlife
CWG	Coastal Watersheds Grant
EPA	Environmental Protection Agency
FY	Fiscal Year
LCSLO	Land Conservancy of San Luis Obispo County
LID	Low Impact Development
LIDAR	Light Detection And Ranging
LOCSD	Los Osos Community Services District
MBNEP	Morro Bay National Estuary Program
MPA	Marine Protected Area
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
ROV	Remotely Operated Vehicle
SCC	State Coastal Conservancy
SLO	San Luis Obispo
SLOMPAC	San Luis Obispo Marine Protected Area Collaborative
SOTB	State of the Bay
SWAMP	Surface Water Ambient Monitoring Program
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committees
TMDL	Total Maximum Daily Loads

Acronym	Explanation
USFWS	United States Fish & Wildlife Service
USGS	United States Geological Survey
VMP	Volunteer Monitoring Program