MORRO BAY
NATIONAL ESTUARY PROGRAM

# WORK PLAN & BUDGET
FOR
FISCAL YEAR 2019

# MORRO BAY NATIONAL ESTUARY PROGRAM
# WORK PROGRAM & BUDGET
# FISCAL YEAR 2019

## Contents

# 1.0 Introduction

The Morro Bay National Estuary Program (Estuary Program) works to protect and restore the Morro Bay estuary and its watershed through the implementation of our Comprehensive Conservation and Management Plan for Morro Bay, most recently updated in FY13. 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 Federal Fiscal Year 2019 (FY19), which covers the period from October 1, 2018 through September 30, 2019.

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 over a third 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. Various action plans from the Management Plan are referenced in this Workplan. The Estuary Program works with its many partners to implement these actions in the watershed.

Congress allocates funding for the National Estuary Program (NEP) under Section 320 of the Clean Water Act. EPA provides a portion of those funds to each of the 28 National Estuaries. The expected funding available to the Estuary Program through these Section 320 funds for FY19 is $600,000. This work program serves as the scope of work for those funds.

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 funds that our many partner organizations are spending to help implement the Management Plan.

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

## 1.1 Management Conference Structure and Membership

**Implementation Committee** – The Implementation Committee (IC) advises the Executive Committee on the implementation of the Management Plan. Specific responsibilities include: collaborating and reviewing Community Project applications, 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 IC meets quarterly. Membership on the IC is not limited to a specific number of seats. Organizations and agencies that are involved in the implementation of the Management Plan are invited to become members, or can apply on their own. After such organizations and agencies are appointed to the IC through a majority vote, they may appoint a member and alternate to attend Committee meetings. Appointees

serve at the pleasure of the governing boards of their organizations or agencies. The IC can have a number of subcommittees that the program calls "technical working groups." Currently, there are three such groups addressing the three programmatic focus areas. These groups lend specific expertise to sections of the Estuary Program.

**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, resolving disputes that may arise between committees and working groups, 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.

## 2.0 Previous Year's Program Accomplishments

This section reports on accomplishments from the second half of FY17 (April to September 2017) and the first half of FY18 (October 2017 to March 2018). During this reporting period, the Estuary Program completed a number of substantial Workplan tasks. These accomplishments are also included in the semi-annual reports submitted to the EPA in May and November.

**Highlighted Success Stories:**

**Pikeminnow Management**

Project Objective: Create a plan and implement management of invasive fish that are impacting threatened Southern Steelhead.

Upon completion of the Chorro Creek Pikeminnow Management Plan in March 2017, the Estuary Program worked with project partners including Central Coast Salmon Enhancement (CCSE), the California Department of Fish and Wildlife (CDFW), California Conservation Corps (CCCs), city of San Luis Obispo, and others to implement the plan. A priority effort was to remove the invasive Sacramento pikeminnow (*Ptychocheilus grandis*) from Chorro Creek, a creek that supports southern steelhead (*Oncorhynchus mykiss)*. In September 2017, pikeminnow were removed from Chorro Creek using electrofishing and angling. The gut contents of fish were collected, and the samples preserved. Fish were identified to species level and measured. Over a four-day period, 293 pikeminnow and 23 steelhead were captured and inventoried. The surveying was conducted on the Chorro Creek Ecological Reserve (CCER) and on Cal Poly property.

The next step in the project involves collection of additional gut content samples for analysis for environmental DNA (eDNA) to determine the level of pikeminnow predation on steelhead. Water samples will also be collected for eDNA analysis to determine if pikeminnow are making use of the tributaries to Chorro Creek. Depending on the results, our efforts can be focused on fish barrier removal or additional pikeminnow removal efforts.

The effort supports the following CCMP Actions: LP-1 (protect special habitats/species), ECR-13 (population dynamics), ECR-14 (support recovery plans), ECR-15 (steelhead barriers and habitat), and ECR-16 (invasive species action plan).

**Eelgrass Restoration**

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

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

During this reporting period, the Estuary Program implemented grants from the National Oceanic and Atmospheric Administration (NOAA) and the California Department of Fish and Wildlife (CDFW) to fund eelgrass monitoring and restoration efforts. The Estuary Program worked with Cal Poly to develop a restoration approach and detailed monitoring protocols, and the two organizations closely coordinated monitoring and data management efforts. We 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).

**Chorro Creek Ecological Reserve**

Project Objective: Restore riparian and special status species habitat in the watershed, while reducing sediment loading to the estuary.

The Chorro Creek Ecological Reserve (CCER) is 580 acres acquired by the Estuary Program and CDFW in 2003. The proposed project area within the reserve is approximately 333 acres. The goals of the project are to address degraded floodplain conditions through grading secondary channels to avoid further erosion, breech an existing levee to reconnect the creek to the floodplain, expand riparian vegetation, and improve an existing road crossing.

During Spring 2017, 100% designs for the project were completed. Staff applied for a CDFW Fisheries Restoration Grant Program (FRGP) award, and won a just over a million dollars for project implementation over the next two years. The property is visible within the watershed, and thus provides an excellent opportunity to demonstrate the impacts of floodplain and riparian restoration. The project restores floodplains, which is one of the actions laid out in the Morro Bay Climate Vulnerability Assessment report.

The Estuary Program is currently working with the California Coastal Conservancy to obtain additional funding for project implementation.

The effort supports the following CCMP Actions: LP-2 (restore floodplains), ECR-1 (in-stream habitat), ECR-2 (riparian corridors), ECR-5 (sediment traps), and CLIM-2 (implementation of climate action plans).

**Increased Communication**

Project Objective: Increase and improve communication with our various audiences to increase the impact of our clean water message.

The Estuary Program strives to have meaningful messaging with numerous audiences. This includes formal education programs for all ages, as well as interactions with specific communities including pet owners, boat owners, and others. We partner with other organizations and individuals in the community to optimize these interactions. In the past year, our program increased our communication efforts, including the following:

- Sought guest bloggers, who provide insightful pieces on topics of particular interest to our audiences. These included Dr. Jennifer Ruesink, an eelgrass researcher from University of Washington, and John Roser, a local biologist who studies brant geese.
- Began a science speaker series called Morro Bay Science Explorations with the Estuary Program, where speakers were invited to present on a topic of interest. This event series grew out of the popular science

talks hosted during our 2017 State of the Bay events. Topics thus far have included eelgrass and climate change, with an event planned for later this spring focused on fisheries.
- Increased social media followers on all platforms. Facebook likes increased from 1,200 to 1,400, Instagram followers increased from 1,250 to 1,604, and Twitter followers increased from 480 to 560.
- Had a strong presence in local media, with five articles appearing as well as two segments on local news.

In the upcoming year, we plan to repeat the science speaker series and continue to expand the blog and contacts through social media.

The effort supports the following CCMP Actions: EO-1 (Public Education and Outreach).

**Comprehensive Conservation and Management Plan Update**

Project Objective: Review the CCMP to update the document so that it continues to be a relevant management tool for the Estuary Program and its partners.

The Estuary Program's CCMP was approved in 2001 by the USEPA and governor of California. In 2012, the document was updated through a processes involving community input, stakeholder feedback, and staff coordination. Although the reorganization of the document greatly improved its usability, it is nearing time for an update.

To facilitate this update process, the Estuary Program hired a planning intern from Cal Poly's Department of City and Regional Planning to assist with the effort. He is reviewing the CCMP Action Plans and creating a database to track the progress of individual Action Plans. He is also reviewing them to determine how they have integrated information from our climate vulnerability assessment, which was completed in 2015. Upon completion of these tasks later this year, the next step will be to review the Action Plans to determine which remain relevant and which require updating. This update process is expected to be completed in FY20.

The effort supports all of the CCMP Actions.

**Community Projects**

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

The Estuary Program maintains an active Community Projects Program, with two opportunities each year for partners to apply for support for local projects. Three projects were recently completed or are underway.

- California State Parks Snowy Plover Nesting Signage: California State Parks (CSP) manages one of the largest nesting populations of the federally0threatened Western Snowy Plover. Each year during nesting season, CSP personnel install symbolic fencing in March and remove it in September. The fencing also clearly indicates corridors for the public to access the ocean side of the sandspit. This project involved the design and printing of signs to be installed as part of the fencing indicating the presence of the plover. This project is now completed. Two hundred high grade nesting area signs were purchased, and 50 were installed by State Parks staff for the 2018 nesting season. These efforts supported implementation of a species recovery plan (CCMP Action Plan ECR-14), promoted environmentally responsible and sustainable recreational activity (USE-1), conducted general public education and outreach on plover nesting habits, while also protecting the area (EO-1), and promoted native vegetation expansion in fenced areas by minimizing erosion from people accessing the area (ECR-5).
- Sea Otter Savvy SCUBA Diver Education: Sea Otter Savvy is a local organization that uses a science-based approach to reduce human-caused disturbance to sea otters in California. This project involves working with local dive shops, otter experts, and others to develop content for a brochure aimed at divers. The brochure will provide information on the unique features of Morro Bay, as well as information on how to view wildlife without disturbing it. The project also includes a campaign of outreach and

education to share the brochure and its content. Estuary Program staff met with the project team to discuss the potential messaging for the effort. The project is expected to be completed by fall 2018. The project supports the following Action Plans: support the implementation of species recovery plans (ECR-14), encourage enjoyment of Morro Bay through environmentally responsible and sustainable recreational activities (USE-1), and conduct general public education and outreach (EO-1).

- Celebrate Los Osos Invasive Education: Celebrate Los Osos is a local community organization that conducts projects around Los Osos for environmental sustainability and beautification. The project involved developing flyers, postcards, and mailers containing educational information on the value of native plants and tips on identifying and removing two invasive plants. As part of the project, 250 flyers were distributed through the community, 6,300 households received a postcard in the mail, 1,000 countertop postcards were distributed to local businesses, social media posts were issued, and press releases were issued. CLO felt that it received positive response on the project and hopes to continue its eradication efforts in the future. The project supported the invasive species action plan (ECR-16).

## 3.0 Goals for CCMP Implementation in Fiscal Year 2019

This work plan describes the Morro Bay National Estuary Program's broad goals, specific projects, and planned budget for FY19, which spans from October 1, 2018 to September 30, 2019. This work plan will guide Estuary Program efforts in FY19 and provide a mechanism to measure our success over the coming year. It is important to recognize that the nature of a collaborative, non-regulatory program such as the Estuary Program demands flexibility; just as some planned projects may be delayed, other unforeseen opportunities and partnerships to further implementation of the Management Plan will present themselves. The program goals are summarized below.

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

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

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

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

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

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

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

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

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

# 4.0 Budget and Staff Elements

## 4.1 Budget Discussion

Tables 4.1 and 4.2 provide an overview of the budget for FY19. The Estuary Program meets a portion of the EPA's fifty percent match requirement using the Estuary Program-controlled Morro Bay Restoration Fund. These funds are private, locally-controlled, and already committed and available for these projects. Other sources of match funds include local and state funds and private donations, volunteer time, and contributed services and facilities.

## 4.2 Budget Overview

**Table 4.1:** Budget Overview for FY19

| Category | Subcategory | FY19 Anticipated Request | Match | Total |
|---|---|---|---|---|
| Personnel | Salaries | $379,164 | $6,375 | $385,539 |
| | Fringe | $49,581 | $0 | $49,581 |
| | Management Conference | 0 | $17,500 | $17,500 |
| | ***Subtotal*** | ***$428,745*** | **$23,875** | ***$452,620*** |
| Travel | (category includes local mileage) | $7,100 | $4,000 | $11,100 |
| Supplies | Computers, software | $2,000 | $0 | $2,000 |
| | Monitoring supplies | $9,390 | $0 | $9,390 |
| | Misc. office supplies | $7,500 | $0 | $7,500 |
| | ***Subtotal*** | ***$18,890*** | ***$0*** | ***$18,890*** |
| Contractual | Audit/Taxes/Accounting | $16,115 | $13,395 | $29,510 |
| | Education and Outreach | $14,500 | $182,863 | $197,363 |
| | Monitoring and Research | $45,300~~17,300~~ | $127,500~~99,500~~ | $172,800~~116,800~~ |
| | Restoration and Protection | $13,500 | $242,154 | $255,654 |
| | ***Subtotal*** | ***$89,415~~61,415~~*** | ***$565, 912~~237,912~~*** | ***$655,327~~599,327~~*** |
| Other | Rent | $56,638 | $14,448 | $71,086 |
| | Utilities | $3,386 | $0 | $3,386 |
| | Postage | $1,806 | $0 | $1,806 |
| | Copying, Printing | $3,375 | $0 | $3,375 |
| | Training, Prof. Dev. | $1,000 | $1,000 | $2,000 |
| | Telephone, Internet | $5,450 | $0 | $5,450 |
| | Repairs and Maintenance | $7,866 | $0 | $7,866 |
| | Insurance | $2,829 | $0 | $2,829 |
| | Vehicle maintenance, fuel | $1,500 | $0 | $1,500 |
| | Community Project awards | $0 | $18,765 | $18,765 |
| | ***Subtotal*** | ***$83,850*** | ***$34,213*** | ***$118,063*** |
| | TOTAL | $6280~~0~~,000 | $600~~0~~28,000 | $1,256~~0~~0,000 |

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

## 4.3 Detailed Budget

**Table 4.2:** Direct Expenses by Program Area

| Program Area | Project | 320 Grant Request | Match (non-federal) | | Total |
|---|---|---|---|---|---|
| | | | MB Restoration Fund | Other | |
| Education and Outreach A | Communications 1 | $7,500 | $0 | $0 | $7,500 |
| | Community Partners 2 | $500 | $0 | $18,262 | $18,762 |
| | Bay Friendly Recreation | $0 | $0 | $46,614 | $46,614 |
| | Clean Boating 3 | $0 | $0 | $50,000 | $50,000 |
| | State of the Bay | $4,500 | $0 | $0 | $4,500 |
| | Education and Nature Center 4 | $0 | $0 | $67,986 | $67,986 |
| | Other E&O Tasks 5 | $2,000 | $0 | $0 | $2,000 |
| | ***Subtotal*** | ***$14,500*** | ***$0*** | ***$182,863*** | ***$197,363*** |
| Monitoring and Research B | Benthic Invertebrate Monitoring | $0 | $0 | $6,500 | $6,500 |
| | Eelgrass Monitoring 1 | $4012,000 | $10,000 | $3810,000 | $8832,000 |
| | Stats | $0 | $2,000 | $0 | $2,000 |
| | Water Quality Monitoring 2 | $5,300 | $0 | $71,000 | $76,300 |
| | ***Subtotal*** | ***$4517,300*** | ***$12,000*** | ***$87115,500*** | ***$11672,800*** |
| Habitat Protection and Restoration | CCER Planning | $0 | $0 | $0 | $0 |
| | Land Conservation | $0 | $0 | $0 | $0 |
| | Freshwater Flow | $0 | $0 | $0 | $0 |
| | Restoration Maintenance and Monitoring | $2,000 | $0 | $72,983 | $74,983 |
| | Eelgrass Restoration | $3,500 | $0 | $34,042 | $37,542 |
| | Other Restoration | $8,000 | $10,000 | $125,129 | $143,129 |
| | ***Subtotal*** | ***$13,500*** | ***$10,000*** | ***$232,154*** | ***$255,654*** |
| | TOTAL | ***$7345,300*** | ***$22,000*** | ***$53002,517*** | ***$569625,817*** |

Note: Total for Restoration Fund match is **$32,000** because it includes $10,000 for Community Projects (see note for Table 4.1).

Expenses shown combined contractual, supplies, and equipment expenses by Program Area to more clearly represent the resources devoted to these aspects of the Estuary Program FY19 Work Program. This table does not include Estuary Program staff time or overhead.

Education and Outreach Expenses (section A):

1. Communications expenses include graphic design work and printing for the annual report; pamphlets and publications; and ongoing maintenance expenses for our electronic newsletter, blog, and website.
2. Community Partners includes support for partner education events such as Coastal Cleanup Day and Harbor Fest.
3. Clean boating match includes the city of Morro Bay's Clean Marina program.

4. Education and Nature Center includes expenses such as aquarium maintenance, binoculars, display repairs and upgrades, watershed model demonstration supplies, handouts, microscopes, educational activity supplies, and coloring supplies.
5. Other E&O Tasks includes work on various community efforts as opportunities arise. Includes costs such as printing, development of education materials, and conducting surveys of the public to determine changes in behavior and attitude.

Monitoring and Research Expenses (section B):

1. Eelgrass Monitoring expenses include supplies, contracts, analysis, and coordination with partner efforts to track eelgrass conditions in the bay.
2. Water Quality Monitoring expenses include analytical laboratory services (couriers, sample analysis, and data reporting), equipment servicing and repairs, small equipment purchases, and database support (technical support for maintaining our data management system).

**Program Staffing Anticipated for FY19**

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

- Executive Director: Leads the organization and Management Plan implementation. Responsible for Management Plan update. Manages CWA 320 grant, staffs committees, and non-profit board. Oversees general operations – budgeting, accounting, records management, and human resources. Supervises Estuary Program staff. Principal liaison to other agencies and organizations. Principal liaison to EPA. Serves as the public face of the organization. Represents the Estuary Program on local committees. Oversees Management Plan tracking, annual report, and workplan. Attends ANEP/EPA meetings.
- Assistant Director: Responsible for assisting the Executive Director with Management Plan implementation, managing CWA 320 and other grants, and staffing committees and non-profit board. Supports budgeting, accounting, records management, and managing NEP staff. Assists with Management Plan tracking, annual reports, and workplan. Coordinates project development and grant writing across the organization. Manages monitoring program strategy and other special projects, such as State of the Bay. Attends ANEP/EPA meetings.
- Restoration Projects Manager: Develops and implements restoration efforts. Oversees restoration projects, including coordinating with partner agencies as appropriate, securing grant funding, obtaining permits, and procuring outside services. Manages monitoring and maintenance of restoration projects. Coordinates a diverse set of external experts to assist with technical aspects of specific projects.
- Communications and Outreach Coordinator: Responsible for public relations and marketing work to engage community, targeted outreach campaigns geared towards increasing environmental stewardship, weekly blog posts, website updates, and representing the Estuary Program at public events. Implements the Finance Plan with Executive Director and non-profit board. Other projects include field trips and tours, educational brochures, press releases, planning outreach efforts, and various other public outreach projects.
- Monitoring Coordinators: Two coordinators conduct Estuary Program monitoring efforts. Under direction of Assistant Director, complete data analysis, reports, and protocols. Assist with volunteer recruitment, training, and fieldwork. Review and update QAPP, monitoring protocols, and indicators/baselines work. Manage QA/QC functions. Manage data and share with partners. Submit data to state-wide data exchange network for use by agencies and the public.
- Office Manager: Responsible for records management, bookkeeping, general office functions, front desk liaison to the public, and general administrative assistance. Handles payroll, insurance, and payables.

- Intern(s) (as needed): Assists with field work, data management, analysis, and outreach. These are part-time positions.

**Fringe Details:** $49,581

- 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:** $7,500~~6,700~~

- 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
  - Library supplies, such as shelving, boxes, bookshelves, and binders

**Monitoring Program Supplies:** $9,390

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

# 5.0 New and Ongoing Project Information

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

## 5.1 Habitat Protection and Restoration Activities

### 5.1.1 Project Name: Land Conservation and Planning

**Project Status:** ***Ongoing***

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

**Description:** The Management Plan calls for protection of ecologically-valuable habitats in part to help minimize nonpoint sources of pollution entering the estuary and to promote clean water in the bay. Over 4,000 acres of land have been protected through conservation easements and fee title acquisitions by the Estuary Program and partners. In FY19, the Estuary Program expects to work with the Land Conservancy of San Luis Obispo County to develop conservation easements with interested

landowners in the watershed. Some easements may qualify for funding from Camp SLO to limit development encroachment on the base. In addition, the Estuary Program is participating in a community effort within Morro Bay to support open space preservation around the city. This task represents an anticipated share of staff time to develop these opportunities and support partner efforts.
**Partners and Their Roles:** The Land Conservancy is the recipient of funding to develop a buffer surrounding Camp SLO. Their role is to interface with landowners and the funders to develop easements and acquisitions. Other partners with interest in land conservation in Los Osos and Morro Bay include Morro Bay Open Space Alliance, California Department of Fish & Wildlife, California Coastal Conservancy, Wildlife Conservation Board, Morro Coast Audubon Society, California State Parks, and private landowners.
**Output/Deliverables**: The deliverable will be a map or similar documentation of acquisitions or easements.
**Estimated Milestones:** Easement timelines are dependent on landowner and funding timelines.
**Estimated Budget**: Depends on acquisition and easement opportunities.
**Long-Term Outcomes**: Achieve land conservation projects as opportunities arise, with a focus on the Los Osos Valley.
**CWA Implementation:** Addressing diffuse nonpoint sources of pollution. Protecting wetlands. Protecting coastal waters through the National Estuary Program.

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

**Description:** The Estuary Program with its partners has implemented multiple complex restoration projects that require ongoing monitoring and maintenance. This work includes monitoring of conservation easement compliance, riparian fencing maintenance and effectiveness, best management practice (BMP) effectiveness, and pre- and post-project restoration effectiveness. These efforts will continue as necessary. Currently, ongoing monitoring occurs on the Maino Conservation Easement, the Walters Creek Restoration Project, and the Roads Erosion Prevention Project. These will continue along with monitoring on the Chorro Creek Ecological Reserve Project. As appropriate, compliance monitoring and photo documenting will be conducted. The Estuary Program and its partners continue to monitor eelgrass restoration beds to track their success.
**Partners and Their Roles:** Landowner partners include private landowners, Camp San Luis Obispo, CDFW, Cal Poly, PG&E, and US Forest Service. Their role is to permit land access and maintain project sites.
**Outputs/Deliverables:** Project data submitted into NEPORT database.
**Estimated Milestones:** Maino Easement monitoring completed in Spring 2019. Road Erosion Prevention Project monitoring completed in Summer 2019. NEPORT submission completed by deadline provided by EPA, usually Summer 2019.
**Estimated Budget:** $2,000 for supplies and gear.
**Long-term Outcomes:** Conservation easement monitoring is completed annually and landowner communications continue. Eelgrass restoration monitoring continues annually and informs restoration decisions.
**CWA Core Program Project Supports:** Addressing diffuse, nonpoint sources of pollution. Protecting coastal waters through the National Estuary Program.

**5.1.3 Project Name: Eelgrass Restoration**
**Project Status: *Ongoing***
**Objective:** Identify eelgrass restoration goals based on ongoing monitoring and research activities with various partners.

**Description:** Eelgrass in Morro Bay has experienced a precipitous decline in acreage since 2007.

Large-scale restoration efforts in 2012 through 2014 did not yield successful eelgrass growth, despite using well-tested method that had demonstrated success in the bay and many other California locations. The Estuary Program has increased engagement with federal agencies, researchers, and local scientists to help develop a systematic approach to understanding the stressors to eelgrass and what may be driving the decline and limited restoration success. The Estuary Program and partners conducted experimental restoration projects in FY2017 and FY2018. These results will inform efforts in FY2019 (depending on funding available) and allow for eventual development of numeric targets for restoration. Estuary Program staff are actively pursuing multi-year funding opportunities to better understand eelgrass dynamics and identify a strategy for successful recovery of eelgrass in Morro Bay.
**Partners and Their Roles:** Partners include Cal Poly and California Sea Grant (research expertise and field support), NOAA (funding and technical expertise), CDFW (permitting, funding, and monitoring), the Black Grant Group (funding and field support), and the oyster farmers (monitoring support).
**Outputs/Deliverables:** If the opportunity arises, work conducted for this item will be summarized in a semi-annual report.
**Estimated Milestones:** As opportunities arise.
**Estimated Budget:** Staff time and $3,500 towards restoration. Additional efforts depend on funding opportunities available.
**Long-term Outcomes:** Monitoring results inform future recovery actions and are comparable across years. Develop numeric targets for eelgrass restoration.
**CWA Core Programs the Project Supports:** Protecting coastal waters through the National Estuary Program.

### 5.1.4 Project Name: Chorro Creek Ecological Reserve Restoration Implementation

**Project Status:** ***Ongoing***
**Objective:** Implement the Chorro Creek Ecological Reserve Restoration Project.

**Description:** In 2003, the Chorro Creek Ecological Reserve, a580-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 the CA Department of Fish and Wildlife (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 implementation costs could have prevented project 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. Additional CDFW funding has been secured for implementation and efforts are underway to secure additional funding. The next phase of the project involves completing required surveys and permits and commencing implementation.
**Partners and Their Roles:** Project partners include CDFW as they are both a funder and the landowner. Other partners include the State Coastal Conservancy, who provides review and feedback as a potential funder, and EPA, who offers technical assistance and is a funder through the Climate Ready Estuaries program.
**Outputs/Deliverables:** Checklist of permits, including type and completion date.
**Estimated Milestones:** Completed project permitting in Spring 2019. Implementation in Fall 2019.
**Estimated Budget:** Staff time and $50,000 grant from Climate Ready Estuaries program to implement Climate Vulnerability Assessments.
**Long-term Outcomes:** Project implementation supports climate ready estuary goals including floodplain restoration.
**CWA Core Programs the Project Supports**: Addressing diffuse, nonpoint sources of pollution. Protecting wetlands. Protecting coastal waters through the National Estuary Program.

### 5.1.5 Project Name: Other Restoration Efforts

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

**Description:** Additional water quality and habitat restoration opportunities often arise in the course of the year that are worthy of immediate attention. This task reserves some staff time for these opportunities. Some examples include the boat haul out facility for Morro Bay, the Local Coastal Plan update for Morro Bay, the Los Osos Community Plan update, the Morro Bay Harbor master plan, riparian fencing, and the SLO County Integrated Regional Water Management Group. The Estuary Program will act as a partner on water conservation, habitat restoration, and steelhead projects as needed. Invasives species management will continue in the watershed, and the Estuary Program will continue to work with partners on these efforts. The Estuary Program is working with partners to create a habitat Conservation Planning Initiative. The plan will identify the indicators, projects, and partners involved in protecting and preserving each habitat type.
**Partners and Their Roles:** Potential partners include San Luis Obispo County, the city of Morro Bay, the Los Osos Community Services District, Coastal San Luis Resource Conservation District, Cal Poly, Camp SLO, the Morro Bay Harbor Advisory Board, and others. These are partners in funding, planning, and implementation. Partners for the habitat conservation planning effort are numerous and include the city of Morro Bay, California State Parks, San Luis Obispo County, local consultants, and local experts.
**Output/Deliverables:** If the opportunity arises and work is conducted for this item, then a description will be provided in the semi-annual progress report provided to the EPA Project Officer (semi-annual report). The draft Habitat Conservation Plan is expected in Fall 2018 with feedback from partners on draft in Winter 2019, and finalization of the plan in Spring 2019.
**Estimated Milestones:** As opportunities arise.
**Estimated Budget:** Staff time for partnership support and participation on committees. Current year budget includes $8,000 to support partner projects. Other expenses depend on opportunities that arise.
**Long-term Outcomes:** Restoration efforts support CCMP implementation and partner projects.
**CWA Core Programs the Project Supports:** Addressing diffuse, nonpoint sources of pollution, protecting wetlands. Protecting coastal waters through the National Estuary Program.

### 5.1.6 Project Name: Conservation and Restoration Project Development

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

**Description:** Often plans, permits, and initial monitoring must be conducted before a project is eligible for funding. This task reserves some staff time to work with partners to conduct these initial efforts. Efforts anticipated for FY19 include projects related to instream flow and improving steelhead habitat through invasive management. The steelhead habitat project may include seeking funding for a pikeminnow management component. The Estuary Program is participating in a CCRWQCB-led working group to look at developing bioreactor projects, which could lead to projects that address nitrogen pollution in the watershed.
**Partners and Their Roles:** The primary partners for instream flow projects could potentially include Central Coast Salmon Enhancement with the role of winning and managing funding and providing technical expertise; the California Conservation Corps, who would contribute technical expertise, materials and field support; and potential landowners. The primary partners for the steelhead habitat effort are Central Coast Salmon Enhancement with the role of providing technical expertise, California Conservation Corps who would contribute technical expertise, materials, and field support; Stillwater Sciences who would contribute technical expertise and equipment; and the city of San Luis Obispo who would provide technical expertise. For conservation planning and invasive species management, primary partners include California Department of State Parks and SLO County, who provide technical expertise and field support.
**Output/Deliverables:** If this condition arises (need before funding) and work is conducted for this item, then a description will be provided in the semi-annual report.

**Estimated Milestones:** Depends on funding deadlines. For conservation and steelhead projects, the milestones are TBD depending on funding and permitting.
**Estimated Budget:** TBD, depending on project opportunities.
**Long-term Outcomes:** Expand steelhead access to areas in the watershed with the habitat and water quality to support sensitive species. Expand water conservation efforts to protect surface flows.
**CWA Core Programs the Project Supports:** Addressing diffuse, nonpoint sources of pollution.

## 5.2 Environmental Monitoring and Research

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

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

### 5.2.1 Project Name: Monitoring Program Coordination

**Project Status:** ***Ongoing***
**Objective:** Continue coordination of Monitoring Program and collect data that meets QAPP guidelines.

**Description:** The Estuary Program has an extensive and rigorous volunteer monitoring program. The Volunteer Monitoring Program (VMP) plays a lead role in the program's monitoring efforts. Without volunteers, the program could not collect as extensive a data set. 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 lends technical advice, monitoring equipment, and field support. Landowners such as State Parks, Cal Poly, Camp SLO, San Luis Obispo County, the city of Morro Bay, and numerous private landowners are also partners, allowing access on their land for monitoring. Program coordination follows the approved QAPP (a deliverable under task 5.2.4) and data is submitted to the CEDEN database (a deliverable under task 5.2.3).
**Outputs/Deliverables:** A summary of work conducted for this item will be provided in the semi-annual report.
**Estimated Milestones:** As appropriate, monitoring protocols are updated to reflect changes to sites, monitoring methodologies, etc.
**Estimated Budget:** Total budget is estimated to be $9,000 for monitoring supplies, $1,000 for laboratory analysis, and $1,300 for small equipment, for a total of $11,300.
**Long-Term Outcomes:** An increase in understanding of the long-term trends in ambient water quality in the watershed and estuary. Identification of potential projects and assessment of existing projects.
**CWA Core Programs the Project Supports:** Identifying polluted waters and developing plans to restore them (TMDLs). Addressing diffuse, nonpoint sources of pollution. Protecting coastal waters

through the National Estuary Program.

### 5.2.2 Project Name: Monitoring Program Reporting and Analysis

**Project Status:** ***Ongoing***

**Objectives:** Analyze data and share results with grantors, partners, local land owners, 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 2019. This includes an analysis of the sediment impacts to macroinvertebrate populations.
**Partners and Their Roles:** Primary partners in the reporting and analysis of monitoring data include the CCRWQCB, whose Central Coast Ambient Monitoring Program lend 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:** A sediment monitoring update and a bioassessment monitoring update are expected in Winter 2019.
**Estimated Budget:** Staff time.
**Long-Term Outcomes:** Outcomes include making analysis available for agencies, project partners, and others throughout the state to inform and improve their own efforts to protect and restore.
**CWA Core Programs the Project Supports:** Identifying polluted waters and developing plans to restore them (TMDLs). Addressing diffuse, nonpoint sources of pollution. Protecting coastal waters through the National Estuary Program.

### 5.2.3 Project Name: Monitoring Program Data Management

**Project Status:** ***Ongoing***

**Objectives:** Maintain data in SWAMP-compatible format.

**Description:** This task includes the on-going maintenance of program-generated data in a SWAMP-compatible data format. SWAMP (Surface Water Ambient Monitoring Program) is a California State Water Resources Control Board program to increase usability and compatibility of water quality data from various sources. Data is quality controlled and entered into a SWAMP-compatible database to increase access for groups throughout the state.
**Partners and Their Roles:** Primary partners in the Estuary Program monitoring effort include the CCRWQCB, whose Central Coast Ambient Monitoring Program lend technical advice and data management support to the program. The State Water Resources Control Board is a partner, providing support for the state's California Environmental Data Exchange Network (CEDEN). The Moss Landing Marine Lab is a partner in the project as they serve as the Regional Data Center for Region 3. They provide direct assistance in loading program data to the CEDEN system.
**Outputs/Deliverables:** When work is conducted for this item, a summary will be provided in the semi-annual report.
**Estimated Milestones:** Continual input of data into SWAMP-compatible database. Semi-annual submittals of data to the CEDEN and/or SWAMP system.
**Estimated Budget:** $1,000 for contractor support of data management system.
**Long-term Outcomes:** A high quality dataset available to the public and the state for use in TMDL analysis, 303(d) assessment, land management, etc.
**CWA Core Programs the Project Supports:** Identifying polluted waters and developing plans to restore them (TMDLs).

### 5.2.4 Project Name: Monitoring Program Quality Assurance

**Project Status:** ***Ongoing***

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

**Description:** The monitoring program maintains a Quality Assurance Project Plan (QAPP), approved by EPA, which documents the program's monitoring methodologies, sites, and equipment. This task includes laboratory sample analysis to aid in assessment of quality assurance. In addition, some staff time is necessary to keep the QAPP up-to-date. The monitoring program collects scientifically rigorous data valued by many of our partners, and the QAPP ensures that the data collection and analysis methods maintain this high level of scientific quality.

**Partners and Their Roles:** The EPA Office of QA is a primary partner, providing oversight of the QAPP and technical assistance. The CCRWQCB QA Officer also provides review and oversight of the QAPP. Other partners include laboratories that analyze Estuary Program samples, and partners conducting monitoring in the area such as the CCRWQCB's CCAMP, the Cooperative Ag Monitoring Program, and others.

**Output/Deliverables:** The deliverable will be an EPA and Water Board-approved QAPP document.

**Estimated Milestones:** The updated document is submitted on an annual basis. This is dependent upon the EPA approval schedule.

**Estimated Budget:** Total budget is estimated at $1,000 for QA laboratory analysis.

**Long-term Outcomes:** A high quality data set with data supporting efforts throughout the watershed including 303(d) and TMDL assessment.

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

### 5.2.5 Project Name: Project Effectiveness Monitoring

**Project Status:** ***Ongoing***

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

**Description:** Many monitoring efforts to demonstrate effectiveness of restoration or other projects are conducted by program staff (rather than volunteers) due to safety concerns, technical challenges, or a landowner's request. This task encompasses protocol development and monitoring work that falls into this category. This task will include monitoring of restoration projects and monitoring the freshwater seeps in Los Osos. The seeps are expected to demonstrate reduced nitrate contamination of groundwater by septic systems since the Los Osos sewer system came online in 2016. A fish ladder and improved water diversion on Pennington Creek will also be monitored. Monitoring data will be compiled to support restoration projects, partner data requests, etc.

**Partners and Their Roles:** Project partners include landowners or responsible entities such as Cal Poly, Camp SLO, and San Luis Obispo County Office of Education. Project partners lending expertise and funding include Trout Unlimited, Central Coast Salmon Enhancement, the California Department of Public Health, and others.

**Output/Deliverables:** When work is conducted for this item, a summary will be provided in the semi-annual report.

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

**Estimated Budget:** $1,000 for laboratory analysis of seeps samples.

**Long-term Outcomes:** Conduct monitoring and develop analysis that informs future management and restoration efforts.

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

### 5.2.6. Project Name: Eelgrass Monitoring and Research

**Project Status:** ***Ongoing***

**Objective:** Conduct research and monitoring efforts for eelgrass to determine distribution in the bay

as well as bed health.

**Description:** Seasonal eelgrass monitoring is conducted to aid efforts to protect and restore eelgrass habitat. In FY19, the Estuary Program will continue to monitor according to the robust approach designed to maximize data quality. The effort is engaging experts and agency participants to help inform the monitoring approach and to seek funding to support research and monitoring (see more information under Task 5.1.3). This task also involves a component of research collaboration with partners to understand eelgrass stressors and gain insights needed for successful restoration efforts. While eelgrass survival depends on many factors, sediment is a primary driver for eelgrass health because of its impacts on elevation, light limitation. Completion of an updated estuary-wide bathymetry map for comparison to historical data available will help determine sediment accumulation and change overtime. The updated bathymetry map will be used to develop a suitability map for potential eelgrass restoration, which will drive our acreage goals for eelgrass establishment. In addition, bathymetry data has long been one of the most requested data sets by researchers and partner organizations in our watershed. This data will also inform a number of other projects beyond eelgrass restoration, including more informed studies of bay circulation and water quality trends. Subtidal bathymetry will be captured with a sonar survey and an aerial method will be used for intertidal areas. The additional funds from EPA will cover either the subtidal or intertidal portion of the project, which can be completed separately. The Estuary Program anticipates being able to raise funds for the remaining portion within the next year. This phased approach to the project does not impact the value of the data because each portion individually can be incorporated into modeling and decision making. Support from project partners that will meet the match requirement. Monitoring efforts will be summarized in an eelgrass report.

**Formatted:** Font: 11 pt

**Formatted:** Font: 11 pt

**Formatted:** Font: 11 pt

**Formatted:** Font: 11 pt

**Formatted:** Font: 11 pt

**Partners and Their Roles:** Project partners include Cal Poly, whose expertise is supporting expanded monitoring and research efforts, including the Sea Grant project to study sedimentation and circulation. They are actively seeking funding to conduct research to understand eelgrass genetics, bay hydrodynamics as it relates to eelgrass beds, sediment impacts, light limitations, etc. Other partners include CDFW, who is are also conducting eelgrass monitoring and are potential funders for the effort. NOAA, USFWS, and others have provided funding and technical support for the effort. EPA provides both funding and technical support. Sea Grant provides funding and technical support. Secondary partners with an interest in eelgrass in Morro Bay include the California Coastal Conservancy, the city of Morro Bay, State Parks, local oyster farms, and other local businesses.
**Output/Deliverables:** The deliverables include an eelgrass monitoring report, ~~as well as~~ reporting required by funders for research efforts, and a GIS-based bathymetry map of the Morro Bay estuary.
**Estimated Milestones:** Provide a summary in the semi-annual report when work is conducted for this item. Bathymetry work expected to be conducted in the Fall of 2018.
**Estimated Budget:** Staff time and $40~~12~~,000 for supplies, contracts, analysis, and coordination with partner efforts.
**Long-term Outcomes:** To better understand eelgrass dynamics and stressors, thus enabling the Estuary Program to develop restoration strategies and numeric goals for acres restored.
**CWA Core Programs the Project Supports:** Protecting coastal waters through the National Estuary Program.

### 5.2.7 Project Name: Partner Research Efforts

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

**Description:** The Estuary Program has begun collaborative efforts with partners such as Cal Poly. This task captures staff support to help facilitate research projects through data sharing, the pursuit of funding, and contributed time. Anticipated projects include research into causes of eelgrass decline (biological and physical factors) and related water quality issues and impacts to the biota using

eelgrass habitat. Other potential efforts include sea level rise around the bay, bay sediment characteristics, and others. Reports and results will be compiled in the Estuary Program library.
**Partners and Their Roles:** Cal Poly, due to its nearby location, is a primary partner in these joint efforts. Other research collaboration partners have included University of San Francisco, Southern California Coastal Water Research Program, USGS, 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.
**Estimated Milestones:** Variable, depending on funding sources.
**Estimated Budget:** Staff time.
**Long-term Outcomes:** Improve understanding of resources in order to better target efforts such as monitoring and restoration.
**CWA Core Programs the Project Supports:** Protecting coastal waters through the National Estuary Program.

#### 5.2.8 Project Name: 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) conference/event series to share knowledge about the status of the estuary and watershed in terms of clean water and healthy habitats. In FY19, the Estuary Program will be gathering and reviewing available data, conducting data analysis, and preparing the document for the triennial report card, which is generally released a few months prior to the State of the Bay events. 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, the Central Coast Ambient Monitoring Program, the Cooperative Agricultural Monitoring Program, the California Department of Fish and Wildlife, Cal Poly, Audubon, the California Conservation Corps, USGS, 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 2020.
**Estimated Budget:** Staff time.
**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.

### 5.3 Public Participation, Education and Outreach

#### 5.3.1 Project Name: Communications

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

**Description:** The Estuary Program's Education and Outreach program conducts regular communication with a variety of audiences. Several channels will be employed during FY19 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 about 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 multiple times a week (https://www.facebook.com/mbestuary). Posts are strategic and integrated with messages posted on our website and in the blog. Messages cover a variety of topics, such as project and field work 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 1,400 Facebook fans, 1,600 Instagram followers, and more than 560 Twitter followers. In FY19, the Estuary Program will continue to increase two-way communication using social media tools.
- **Annual Report** – The annual report summarizes the reach and impact made by the Estuary Program across all programs (Education and Outreach, Restoration and Conservation, and Research and Monitoring). The report is created annually and is available online and in limited print.
- **Speaking and Exhibit Engagements** – Estuary Program staff present watershed and estuarine information for interested groups throughout the area.
- **News Releases** – News releases will be distributed for news-worthy activities or milestones, such as the State of the Bay, annual bioassessment monitoring, and others. Key messages will be drafted and incorporated into the news releases. These key messages will be integrated to other communication channels.
- **Brochures** – Brochures about the Estuary Program, volunteer opportunities, and formal educational opportunities will be distributed at the Estuary Nature Center, community events, and presentations in which Estuary Program staff participate. They will also be made available online when possible.

**Partners and Their Roles:** Partners in Estuary Program communication efforts include the city of Morro Bay, the county of San Luis Obispo, the Morro Bay Natural History Museum, State Parks, and others. These partners provide resources and expertise, promote Estuary Program events, and share our materials and message with the public.
**Output/Deliverables:** A summary of work conducted for this item will be included in the semi-annual report.
**Estimated Milestones:** The Estuary Program maintains a social media and blog schedule that addresses current events and other topics and is updated in real time.
**Estimated Budget:** $4,100 for design and printing of annual report, $1,400 for website maintenance, hosting and design, $2,000 for brochure and other outreach material printing. Total: $7,500.
**Long-term Outcomes**: Residents and visitors better understand their roles as stewards of the Morro Bay estuary. They practice behaviors that help keep our waters clean.
**CWA Core Programs the Project Supports:** Protecting coastal waters through the National Estuary Programs.

### 5.3.2 Project Name: Education

**Project Status:** ***Ongoing***

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

**Description:** In FY19, the Estuary Program will continue working with partners to integrate estuary-focused activities into existing formal educational programming. Activities include watershed model demonstrations in classrooms and supporting watershed education by partners. The Estuary Program staff and docents will also continue to provide field trips as requested, for K-12 students as well as undergraduate and graduate classes. In addition, the Estuary Program will maintain the Estuary Nature Center, which is visited by approximately 5,200 individuals monthly during the high season.
**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 faculty are also partners, bringing classes to the estuary to conduct research and fieldtrips. Staff also visit classrooms from primary through college-level to present the results of our work. Central Coast Aquarium has been a key partner, providing their Floating Lab fieldtrips to students from outside of the area.
**Outputs/Deliverables:** The deliverable will be Nature Center statistics, watershed model demonstration statistics, and fieldtrip and presentation statistics, included in semi-annual reports to EPA.
**Estimated Milestones:** The Nature Center promotional materials and statistics will be ongoing. The statistics on watershed model demos and fieldtrips will be included in the semi-annual report.
**Estimated Budget:** Staff time.
**Long-term Outcomes:** Formal educational partnerships disseminate estuary-related messages to local students. The Estuary Nature Center serves as a learning center about the estuary with updated and engaging exhibits.
**CWA Core Programs the Project Supports:** Addressing diffuse, nonpoint sources of pollution. Protecting coastal waters through the National Estuary Program.

5.3.3 **Project Name: Nature Center Update**
**Project Status:** ***Ongoing***
**Objective:** Update the content and displays in the Nature Center.

**Description:** About 25,000 visitors have stopped by the Estuary Program's Nature Center each year since it was established in 2005. A fish tank, a watershed mural, 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 FY19, 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 application and reports and deliverables for funders.
**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:** The update is expected to be finished at the end of FY20.
**Estimated Budget:** Staff time, as well as additional grants that are still to be determined.
**Long-term Outcomes:** The Estuary Nature Center serves as a learning center about the Estuary, with updated and engaging exhibits.
**CWA Core Programs the Project Supports:** Addressing diffuse, nonpoint sources of pollution. Protecting coastal waters through the National Estuary Program.

5.3.4 **Project Name: Community Projects**
**Project Status:** ***Ongoing***

**Objective:** Provide support for community projects that further the goals of the Management Plan and engage the community. Community Projects allow community members to be active participants in conservation efforts by generating their own project ideas that help implement the Management Plan. The Community Projects program has a special focus on projects that engage the community, and award requests up to $5,000. The Estuary Program staff publicizes the availability of funds, meets with applicants, reviews applications, prepares contracts, and monitors and evaluates products. The Estuary Program will continue to oversee current projects and accept new applications in FY19. The Estuary Program will develop agreements with recipients and review final reports.
**Partners and Their Roles:** Partners are past applicants, including California State Parks, Sea Otter Savvy (a non-profit dedicated to public education to protect wildlife), and Celebrate Los Osos (a non-profit dedicated to protecting and beautifying the community of Los Osos).
**Outputs/Deliverables:** The semi-annual report will detail the projects completed in FY19. Final reports from Community Projects.
**Estimated Milestones:** Project applications are due in March and September and will be listed in the semi-annual reports.
**Estimated Budget:** Staff time.
**Long-term Outcomes:** All projects funded meet grant 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.

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

**Project Status:** ***Ongoing***
**Objective:** Support outreach projects in the community that further the Management Plan goals.

**Description:** Opportunities for various community projects will be maximized throughout the year as they arise. Some of these projects will be pursued as a result of community partner projects. Other activities include supporting a SWRCB Drought Response Outreach Program for Schools (DROPS) project with Rancho El Chorro Outdoor School and Trout Unlimited, for which funding was awarded in FY16. E&O materials and curriculum will be developed.
**Partners and Their Roles:** Partners include California State Parks through their SeaLife Stewards program, the city of Morro Bay's Harbor Department, and local recreational boating business owners. Partners for the E&O tasks for the DROPS project include the Rancho El Chorro Outdoor School, who is the landowner and the entity receiving the funding. Trout Unlimited's role is to offer technical expertise and legal advice for the effort. The California Conservation Corps are responsible for project construction.
**Outputs/Deliverables:** Materials completed as projects develop.
**Estimated Milestones:** Materials are completed as projects develop.
**Estimated Budget:** $2,500 is allocated for partner projects and other opportunities as they arise.
**Long-term Outcomes:** Coordinate with partner organizations about key messages associated with each community project. Rollout of the messages and education and outreach material will be closely tied to the project implementation.
**CWA Core Programs the Project Supports:** Addressing diffuse, nonpoint sources of pollution.

### 5.3.6 Project Name: Mutts for the Bay

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

**Description:** The Estuary Program has managed a Mutts for the Bay Program since 2008. The effort involves accepting donations, installing dispensers, coordinating volunteers, and working with partners to install and maintain pet waste bag dispensers throughout the watershed. Use of the bags

prevents bacteria from pet waste from reaching the estuary, where shellfish farms and recreational bay users require clean water.
**Partners and Their Roles:** Partners include the city of Morro Bay and San Luis Obispo County, the two entities responsible for stormwater management efforts in the urban areas surrounding the estuary. A portion of the effort involves public education to share a clean water message and encourage responsible pet owner behavior.
**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, and applying for funding as opportunities become available.
**Long-term Outcomes:** Responsible behavior by pet owners reduces bacterial loading to the estuary, protecting beneficial uses such as shellfish farming and recreation.
**CWA Core Programs the Project Supports:** Addressing diffuse, nonpoint sources of pollution. Protecting wetlands. Protecting coastal waters through the National Estuary Program.

### 5.3.7 Project Name: 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 State of the Bay (SOTB) conference/event series to share knowledge about the status of the estuary and watershed in terms of clean water and healthy habits. In FY19, the Estuary Program will begin planning for events in FY20. 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 2020 to share the data as well as a clean water message.
**Partners and Their Roles:** Project partners include the Central Coast State Parks Association docents, ECOSLO (a local non-profit focused on environmental conservation), and other education partners.
**Outputs/Deliverables:** The deliverables will include the content for a report card to be printed and distributed in 2020.
**Estimated Budget:** Staff time and $4,500 to design and print the report card.
**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.

## 5.4 Program Management

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

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

### 5.4.1 Project Name: Manage Committees and Build Partnerships

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

**Description:** The Estuary Program will continue to staff and coordinate the Executive Committee on

a quarterly basis. Staff provides notice, meeting materials, and helps facilitate the meetings. During the second half of FY18, the Estuary Program's Management Conference is considering options to adjust the committee structure to improve stakeholder engagement and advance the rigor of our work. Based on the options considered and developed, the Implementation Committee and working groups traditionally managed by the Estuary Program may change. The EPA Project Manager is actively participating in this process. The resulting committee structure will still require staff support, meeting materials, and stakeholder engagement.
**Partners and Their Roles:** The Management Conference committees are made up of representatives from various economic, environmental, and educational organizations. The advisory committees that support monitoring, restoration, and education are made up of local experts who can advise the Estuary Program in these various programmatic areas.
**Outputs/Deliverables:** Deliverables include meeting minutes, agendas, staff reports, and other materials for meetings.
**Estimated Milestones:** These deliverables are produced quarterly.
**Estimated Budget:** Staff time.
**Long-term Outcomes:** Committees meet as needed to provide input and direction for the Estuary Program and to ensure that other partnerships are well supported.
**CWA Core Programs the Project Supports:** Support contribution toward all CWA core programs.

**5.4.2 Project Name: Grants and Contracts Administration and Financial Management**
**Project Status:** ***Ongoing***
**Objective:** Develop workplan, administer grants, and complete annual financial management tasks.

**Description:** Each year we must evaluate our prior year's progress, anticipate the upcoming year's potential, and develop a work program and budget. The workplan for FY20 is due to EPA Region IX in April 2019. 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 and spring 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 2019), biannual EPA grant reports (Spring 2019 and Fall 2019), annual financial statements submitted to the federal clearinghouse (Spring 2019), and annual state and federal tax submission submitted to the State of California and the IRS (Spring 2019).
**Estimated Milestones:** See above.
**Estimated Budget:** Staff time; accounting/auditing costs of $16,115; NEP Tech Transfer meetings and other travel costs of $5,000. Total cost of $21,115.
**Long-term Outcomes:** Grant administration and financial management tasks are completed in a timely and accurate manner.
**CWA Core Programs the Project Supports:** Support contribution toward all CWA core programs.

**5.4.3 Project Name: General Administration and Human Resources Management**
**Project Status:** ***Ongoing***
**Objective:** Maintain accurate financial and human resource records and manage personnel.

**Description:** The Estuary Program requires ongoing financial and administrative functions, including recordkeeping and filing, bookkeeping, preparing audited financial statements, equipment and office space upkeep, as well as interacting with the general public. In addition, the Director spends time managing staff performance and workplan progress. Other HR tasks include training and professional development, recruitment when applicable, managing interns, and keeping all personnel policies and procedures up to date. Staff maintains up-to-date bookkeeping records, public-friendly office space, orderly and properly operating office and field equipment, annual staff

performance reviews, and updated policies and procedures. Bi-weekly staff meetings will be conducted.
**Partners and Their Roles:** The primary partner for this task is the Bay Foundation board. As the employer of Estuary Program staff, they set the policies and procedures for the organization.
**Outputs/Deliverables:** The Estuary Program provides program management updates in the EPA semi-annual reports.
**Estimated Milestones:** See above.
**Estimated Budget:** Staff time, and professional development costs of $1,000.
**Long-term Outcomes:** Policies and procedures must remain up to date so that the organization can function smoothly, allowing staff to focus on attaining the goals of the organization.
**CWA Core Programs the Project Supports:** Support contribution toward all CWA core programs.

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

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

**Description:** The Estuary Program tracks progress on the Management Plan Action Plans on a biannual basis. Workplan implementation is tracked with biannual reports on deliverables. Tracking project and program effectiveness is ongoing and includes biannual reports, NEPORT reporting, grant reporting, monitoring, and general project management.
**Partners and Their Roles:** The primary partner is the Bay Foundation board who oversees the organization's finances.
**Outputs/Deliverables:** The deliverables include semi-annual reports to EPA (Spring 2019 and Fall 2019), and NEPORT data (Summer 2019).
**Estimated Milestones:** See above.
**Estimated Budget:** Staff time.
**Long-term Outcomes:** Management Plan and workplan tracking occurs to ensure that tasks are completed in a timely and accurate manner.
**CWA Core Programs the Project Supports:** Support contribution toward all CWA core programs.

### 5.4.5 Project Name: Management Plan Update/Revision

**Project Status:** ***Ongoing***
**Objective:** Update the Comprehensive Conservation and Management Plan (CCMP) per EPA guidance.

**Description:** Convene committees to prioritize actions and areas of focus. In FY19, review assessment of CCMP Action Plans to create updates. This includes the five-year focus areas and working toward measurable objectives.
**Partners and Their Roles:** The primary partners are the Bay Foundation board, the EC, the IC, advisory committees, and other project partners. All will contribute input and guidance throughout this process.
**Outputs/Deliverables:** The assessment of necessary updates will result in a plan for completing a CCMP update before the end of 2020. A summary of this plan will be included and updated regularly in the semi-annual reports submitted to the EPA.
**Estimated Milestones:** See above.
**Estimated Budget:** Staff time.
**Long-term Outcomes:** Working toward a Management Plan that is up-to-date and relevant, per EPA's guidance.
**CWA Core Programs the Project Supports:** Support contribution toward all CWA core programs.

# 6 Completed Major Projects

This section reports on major projects that were completed or expected to be completed in FY18. These accomplishments are also included in the biannual reports submitted to the EPA in April and October.

**Project Name: Eelgrass Mapping**

**Project Objective:** Conduct bay-wide eelgrass mapping to determine the current state of eelgrass and provide information to guide restoration efforts.

**Project Description:** Morro Bay eelgrass has experienced a steep decline in acreage over the past ten years. Large scale restoration efforts (using methods previously successful in the bay) in 2012, 2013, and 2014 did not result in widespread eelgrass resurgence in the mid and back bay, where most of the eelgrass loss occurred. With funding from CDFW and NOAA, small experimental outplanting efforts were conducted in 2017 and 2018. Various locations, timing, and planting methods were explored, and the plantings are being intensively monitored. Part of this monitoring includes creation of a bay-wide eelgrass map to determine whether stable beds toward the forebay are remaining stable and identify locations in the bay where eelgrass recruitment is taking place.

The Estuary Program selected and contracted with a consultant to conduct aerial imagery acquisition at a low tide and conduct a classification to identify eelgrass and other submerged aquatic vegetation types in the bay. The flight took place in early December during a negative tide. The Estuary Program conducted fieldwork to assist in groundtruthing the classification process. The map is being finalized and will be ready for distribution this spring.

This effort was undertaken with the support of additional funding from EPA, awarded in FY17. Due to the level of planning involved and the time of year at which data acquisition was desired, the project could not be implemented until FY18.

**Lead Implementer, Partners and Their Roles:** The Estuary Program was the lead implementer and recipient of the grant funds. The Estuary Program is responsible for grant management, project planning, permitting, and reporting. Cal Poly was an active partner in project planning and experimental design for monitoring and restoration. NOAA and the California Department of Fish and Wildlife were funders of eelgrass monitoring efforts.

**Accomplishments and Deliverables:** As a result of the mapping, the Estuary Program will have additional information on location and condition of bay-wide eelgrass. This information informs restoration planning because it indicates locations where eelgrass either remains stable or is beginning to recover, which would help pinpoint locations for future restoration. The Estuary Program is meeting our deliverable and milestone goals at this time. Eelgrass monitoring and restoration addresses climate adaptability and vulnerability by protecting biodiversity to maintain habitat and ecosystem function.

**Amount of 320 Grant/Cooperative Agreement Funds Spent:** Staff time. $23,000 for contract for imagery acquisition and analysis.

**Expected Long-term Outcomes:** The expected outcome is a better understanding of the current condition of eelgrass bay-wide, which in turns informs eelgrass restoration success.

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

**External Constraints:** Eelgrass loss is likely due to a combination of factors, including changing water quality, changing bay substrate conditions, and predation. Many of these factors are technically difficult or infeasible to address. Restored eelgrass may survive only to be lost if conditions shift. At this time, Estuary Program efforts are implementing the workplan and attaining objectives, and all milestones and deliverables are on schedule.

Project Name: State of the Bay Report Card and Events

**Project Objective:** Assess the state of the Morro Bay estuary and its watershed, and share those results with the public through a report card and a series of events.

**Project Description:** The Estuary Program updates its environmental report card every three years. The report was completed in late 2016, printed in early 2017, and distributed throughout 2017. It addressed common questions regarding the health of the bay and estuary using data collected by the Estuary Program and its partners. 980 copies of the printed copies of the report have been distributed to date. The report is also available on our website's State of the Bay page, which has received more than 1,600 visitors since the 2017 State of the Bay report was published.

The report was distributed in conjunction with a series of events targeting different portions of the public to spread a clean water message. Events included three science talks, a trash pick-up and paddle event, a Dogfest event aimed at pet owners, docent-led hikes and talks, a botanical garden event, and others. In total, 1,184 individuals were reached, with an estimated 4,900 additional individuals reached through television and radio.

In addition to these events, Estuary Program staff brought the results of the report card out into the community through a series of presentations at public meetings, community organization meetings, libraries, senior centers, and others. These efforts reached a total of 211 individuals in person and an estimated 1,100 via television.

**Lead Implementer, Partners and Their Roles:** The Estuary Program was the lead implementer. Estuary Program staff planned and coordinated events throughout the month of April 2017 to share the results of the report card. Estuary Program staff presented report card results to community groups, public meetings, etc. from April through November. Partners included the Morro Bay Natural History Museum, ECOSLO, SWAP, the SLO Botanical Garden, and CCSTEM, which are organizations focused on environmental and educational missions. The Libertine Brewery, a local brewer, collaborated with us on creating an estuary-themed beer and donated funds to the Estuary Program.

**Accomplishments and Deliverables:** Deliverables include a State of the Bay 2017 report, a summary State of the Bay 2017 brochure, and a series of talks, field trips, hikes, and other activities that share the results of the report. Accomplishments include the creation of a public-friendly environmental report card that supports a clean water message and is available in print and on-line.

**Amount of 320 grant/cooperative agreement funds:** Staff time. Costs for the State of the Bay events are minimal and include space rental fees and honorariums for invited speakers.

**Expected Long-term Outcomes:** The expected long-term outcomes include a public-friendly publication to share with residents, visitors, partners, and others. The public-friendly events and presentations directly shared a clean water message and education on the importance of the health of the estuary and watershed. Communication messaging also informed individuals as to how they can make a difference, in particular as it relates to nonpoint source pollution.

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

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

Project Name: Monitoring Plan Completion

**Project Objective:** Complete a Monitoring Plan that documents the monitoring efforts conducted by the Estuary Program.

**Project Description:** The Estuary Program maintains an active monitoring effort, working with volunteers and partners to create a robust data set to allow for trend analysis and assessment of project effectiveness. Monitoring protocols, sites, methods, and other information are detailed in the program's Quality Assurance

Project Plan (QAPP) which is updated each year and approved by the EPA's Office of QA and the QA Officer of the Central Coast Regional Water Quality Control Board. In addition to the QAPP, EPA requires the maintenance of a Monitoring Plan. This plan includes the following components: 1) objectives of the monitoring, 2) parameters monitored, 3) parties responsible for monitoring, 4) frequency of collecting and reporting, 5) how data is shared, reported, and used, 6) data gaps, 7) additional funding needed for monitoring and filling data gaps, 8) how monitoring will change as a result of new/modified actions and priorities, 9) any new environmental indicators, and 10) how the data ties into the State of the Bay Report. The Estuary Program compiled this information, and the document was submitted to the Estuary Program's Program Officer at the regional EPA office in October 2017, and it was forwarded on to EPA Headquarters later that same month.

**Lead Implementer, Partners and Their Roles:** The Estuary Program is the lead implementer. Estuary Program staff implement monitoring and coordinate with partners to share data that they collect that support Estuary Program efforts. Partners in developing the plan were monitoring partners that included the CCRWQCB, CDFW, USGS, the local Resource Conservation District, Cal Poly, the city of Morro Bay, San Luis Obispo County, the Los Osos Community District, and others.

**Accomplishments and Deliverables:** Deliverables include a completed Monitoring Plan, reviewed by our Program Officer and submitted to EPA Headquarters in October 2017.

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

**Expected Long-term Outcomes:** The expected long-term outcomes include well-documented monitoring data, which increases its usability.

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

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

**Project Name: Nature Center Kiosk Update**

**Project Objective:** Update the interactive kiosk in the Nature Center to provide updated content for users, including visitors, students, and others.

**Project Description:** The Estuary Program maintains a Nature Center, which welcomes approximately 25,000 visitors each year since it was established in 2005. The Nature Center contains two tanks, a watershed mural, and stereoscopic photo images. The Estuary Center is in need of some updates as displays become worn and out-of-date. To update the content on the interactive kiosk, the Estuary Program won a grant from the Harold J. Miossi Charitable Trust. Program staff worked with a Cal Poly computer science class to create an interactive steelhead game to teach users about clean water and habitat protection. Other content includes a water usage calculator, a bay web cam, and a rain gauge tracking network. The content also contains information about climate change and sea level rise and provides a glimpse of what changes may be in store for Morro Bay.

The efforts to update the Nature Center continue, and staff have already applied for additional funding for further work.

**Lead Implementer, Partners and Their Roles:** The Estuary Program is the lead implementer. Staff apply for funding, create the updated content, and implement the updates. Partners assist in content development and include Morro Bay Natural History Museum docents, California State Parks naturalists, Cal Poly, and other education partners throughout the region and beyond.

**Accomplishments and Deliverables:** Deliverables include completed Nature Center Kiosk content.

**Amount of 320 grant/cooperative agreement funds:** Staff time. $2,000 on video production. $1,000 on Capstone student project to create video game. $3,160 on web development. Total Cost: $6,160.

**Expected Long-term Outcomes:** The expected long-term outcomes include sharing updated content with the approximately 25,000 visitors that stop by the Nature Center each year.

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

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

# 7 Areas of Special Interest

**Nutrient Management and Control Activities**

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

**Bioreactor Working Group:** The CCRWQCB is concerned about elevated nutrient levels in the surface waters of the region. As a result, they have created a bioreactor working group to share information on implementation of this tool to help spread its use throughout the region. As part of a CWA Section 319(h) grant, the Coastal San Luis Resource Conservation District (CSLRCD) partnered with a local landowner to design and install a denitrifying woodchip bioreactor to treat runoff from tile drains before discharging the water to a local creek. Monitoring demonstrated the efficacy of the system at reducing nitrate loading to the nearby surface waters. This project demonstrated that with the appropriate design, very little land goes out of production, and due to the gravity-fed system, little energy is required. The system demonstrates the potential to reduce nitrate levels in highly contaminated water to levels below the drinking water standard. This project serves as a pilot project and was prominently highlighted in the CCRWQCB working group. Estuary Program staff participates in this group and hopes to work with partners to implement bioreactor technology in the watershed.

**Los Osos Wastewater Treatment Project:** Construction was completed in Spring FY16 and the final phase of sewer lateral connections was completed in March 2017. The county continues to work with the few households which have not yet connected to the system. San Luis Obispo County has contracted for on-going monitoring of groundwater nitrate levels. Monitoring conducted in December 2017 of groundwater wells detected nitrate as nitrogen concentrations varying from 1.3 mg/L to 48 mg/L, with large increases detected in some of the wells. Of the 14 wells where nitrates were measured, 10 of them had concentrations above the safe drinking water standard. These concentrations are in line with historic concentrations.

The Estuary Program is conducting monitoring of freshwater seeps along the Los Osos shoreline that empty into the bay. Sampling began in April 2014. To date, nitrate data is essentially unchanged from before the plant came online. The average nitrate as nitrogen concentration before connections to the plant were completed in March 2017 was 9.1 mg/L, and after March 2017 the average concentration was 10.9 mg/L The Estuary Program will continue seeps monitoring to document reductions in nitrate concentrations following the wastewater treatment project coming online. The Estuary Program has a long history of involvement in the effort, serving on the Technical Advisory Committee that made project-related decisions when the effort began in 2007. Since then, the Estuary Program provided $100,000 from non-EPA sources to a community fund designed to help low-income Los Osos residents defray the cost of connecting their homes to the treatment plant distribution system.

**Restoration Efforts to Address Nutrients:** The Estuary Program is involved in numerous restoration efforts to address nutrients. These include the Los Osos Wetland acquisition by the CSLRCD and the subsequent planning for restoration. The Estuary Program provided funding for the appraisal required for the acquisition and also assisted with review of the restoration plans. The Estuary Program continues its restoration work on the Chorro Creek Ecological Reserve. The planned implementation project will restore the floodplain, which will in turn reduce nutrient loading to the bay.

**Coastal Community Resiliency**

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

**Climate Vulnerability Assessment Implementation:** To identify potential risks and adaptations, the Estuary Program developed a Climate Vulnerability Assessment according to the protocol developed by EPA. The effort included climate modeling, analysis of historic data, and analysis of associated risks. It also identified future actions to improve resiliency. Floodplain restoration is one of these identified actions, and the Estuary Program is moving forward with efforts to restore the Chorro Creek Ecological Reserve. The Estuary Program received a Climate Ready Estuary grant from EPA to assist with implementation.

**CCMP Update with Climate Analysis:** As part of the CCMP update process to be completed in 2020, the Estuary Program is assessing the status of CCMP Action Plans with an eye toward actions, threats, and outcomes outlined in the climate vulnerability assessment. Staff will update Action Plans and wherever relevant, the plans will contain a climate assessment component.

**Climate and Adaptation Education:** As part of our education & outreach efforts, the Estuary Program has integrated climate change and adaptation into our curriculum and our messaging. One of the modules on the updated kiosk in the Nature Center addresses climate change and the expected impacts, including warming temperatures and rising seas. We have published blog posts which highlighted the findings from our climate vulnerability assessment. We shared climate-related data in the SOTB report card. We hosted a science speaker series in FY18, and one of the events focused on climate change. Speakers presented the results of a study by USGS on impacts of sea level rise on tidal marshes, the results of Audubon's work on the changing bird habitats and which species will be able to adapt, and the results of Cal Poly's City and Regional Planning Department on approaches for climate change management. The Estuary Program also participates in the Central Coast Climate Collaborative, which brings together local municipalities and non-profits to develop the tools the central coast needs to help understand climate change and its impacts. These tools include the CosMoS, which is localized coastal storm monitoring, and the city of Morro Bay's sea level rise analysis.

## 7.1 Community Projects Awarded in prior year

**Table 7.1:** Community project awards (Spring 2017 - Spring 2018):

| FY Year | Applicant | Project Title | Purpose and Deliverables | Amount Expended |
|---|---|---|---|---|
| 2017 | California State Parks | Snowy Plover Nesting Signage for California State Parks | Produce durable signs for symbolic fencing which is installed each year to protect Western Snovy Plover nesting areas. | $3,500 |
| 2017 | Sea Otter Savvy, California State Parks, and the California Dept of Fish & Wildlife | Promoting Sea Otter Stewardship in SCUBA Divers in Morro Harbor | Create and produce a brochure for distribution to divers to educate them on how to safely observe otters without creating disturbance. | $0 |
| 2018 | Celebrate Los Osos | Education for the Eradication of Sahara Mustard and Spiny Three-Corner Jack | Design, print, and distribute posters, flyers, and mailers that educate the public on the benefit of native plants and inform them of a few common invasives plants. | $2108 |
| **Total Amount Expended:** | | | | **$5,608** |

Table 7.1 summarizes the Community Project awards that received funding over the last year (Spring 2017 – Spring 2018). All grants help implement the Comprehensive Conservation and Management Plan with an

emphasis on engaging the community in the project. All grants are funded through the Morro Bay Restoration Fund, a match source to the EPA 320 funding.

## 7.2 Travel Expenses

**Table 7.2:** Travel expenses charged to 320 funds (October 1, 2017 – March 31, 2018)

| Event | Location | Trip Purpose | Dates | Staff attended | Costs Included | Total Amount |
|---|---|---|---|---|---|---|
| Bioassessment Training | Davis, CA | Bioassessment monitoring training to discuss field protocols, data analysis, and research | 10/23/17 to 10/26/17 | Karissa Willits | Mileage, meals, lodging, incidentals | $462 |
| NEP Tech Transfer Conference | Boston, MA | Information sharing and technology transfer between NEPs and partners | 11/2/17 to 11/5/17 | Lexie Bell | Mileage, meals, incidentals, lodging, airfare | $1,146 |
| NEP Tech Transfer Conference | Boston, MA | Information sharing and technology transfer between NEPs and partners | 11/2/17 to 11/5/17 | Carolyn Geraghty | Mileage, meals, incidentals, lodging, airfare | $1,040 |
| CERF Conference | Providence, RI | Information sharing on coastal monitoring and restoration | 11/5/17 to 11/9/17 | Carolyn Geraghty | Lodging | $452 |
| West Coast NEP Tech Transfer meeting | San Francisco, CA | Coordination meeting for West Coast NEP directors | 10/25/17 to 10/27/17 | Lexie Bell | Meals, incidentals | $108 |
| NEP Tech Transfer Conference | Washington, DC | Information sharing and technology transfer between NEPs, EPA, and other groups | 3/12/17 to 3/16/17 | Lexie Bell | Airfare, lodging, per diem, incidentals | $2,030 |
| NEP Tech Transfer Conference | Washington, DC | Information sharing and technology transfer between NEPs, EPA, and other groups | 3/12/17 to 3/16/17 | Ann Kitajima | Airfare, lodging, per diem, incidentals | $1,933 |
| **TOTAL** | | | | | | **$7,262** |

Table 7.2 details travel expenses incurred so far during FY18, including attendance at the biannual NEP meetings, professional development trainings, and conferences.

No travel is planned for the second half of FY18.

## 7.3 Outreach Events and Field Trips

**Table 7.3:** Outreach Events and Field Trips for April 2017 through March 2018

| Date | Organization | Presentation Topic | Audience Size | Audience Type |
|---|---|---|---|---|
| 4/1/2017 | Public | Water quality, stewardship (State of the Bay) | 30 | Public |
| 4/2/2017 | Public/ECOSLO | Watershed and stewardship (State of the Bay) | 6 | Public |
| 4/3/2017 | Public/State Parks Docents | Mud flats, biodiversity (State of the Bay) | 7 | Public and state park docents |
| 4/6/2017 | Public/State Parks Docents | Salt marsh and mudflats habitat, stewardship (State of the Bay) | 12 | Public and state park docents |
| 4/8/2017 | Botanical Gardens, SLO Master Gardeners, Public | Bay-Friendly Gardening (State of the Bay) | 14 | Public |
| 4/9/2017 | Public/ECOSLO | Watershed habitats and biodiversity (State of the Bay) | 2 | Public |

| Date | Organization | Presentation Topic | Audience Size | Audience Type |
|---|---|---|---|---|
| 4/11/2017 | Public/State Parks Docents | Salt marsh and mudflats habitat, stewardship (State of the Bay) | 15 | Public |
| 4/12/2017 | Graduate City and Regional Planning Class with Michael Multari | Morro Bay National Estuary Program structure, function, operating a nonprofit | 25 | Students |
| 4/13/2017 | Public/State Parks Docents | Watershed, natural history and geography, stewardship (State of the Bay) | 20 | Public |
| 4/14/2017 | Undergraduate planning class | Morro Bay National Estuary Program what we do and how we work | 20 | Students |
| 4/14/2017 | Gallery at Marina Square | State of the Bay presentation (art and questions) | 70 | Public |
| 4/15/2017 | Simo Nylander, filmmaker | Of Marshes and Morros Screening plus Q&A (State of the Bay) | 80 | Public |
| 4/15/2017 | State Parks Docents/State Parks | Aquatic bugs and bioassessment (State of the Bay) | 34 | Public |
| 4/16/2017 | Public/ECOSLO | State of the Bay and stewardship (State of the Bay) | 3 | Public |
| 4/17/2017 | Oceanography class | Nitrates | 30 | Students |
| 4/18/2017 | Science After Dark (CCSTEM) | Eelgrass, climate change, sedimentation (State of the Bay) | 50 | Public |
| 4/19/2017 | Public/State Parks Docents | Salt marsh and mudflats habitat, stewardship (State of the Bay) | 12 | Public |
| 4/19/2017 | KCBX | Audio airing of "Of Marshes and Morros" | 4,000 | Radio listening public |
| 4/20/2017 | Central Coast Voices | Climate change impacts to Morro Bay estuary and watershed | 4,000 | Radio listening public |
| 4/22/2017 | Estuary Program/ESTERO | Clean water, trash free seas, stewardship, responsible recreation (State of the Bay) | 25 | Public |
| 4/22/2017 | Public/State Parks Docents | Watershed, natural history and geography, stewardship (State of the Bay) | 12 | Public |
| 4/23/2017 | Public/State Parks Docents | Plankton, water quality, stewardship (State of the Bay) | 15 | Public |
| 4/26/2017 | Public/State Parks Docents | Birds and the bay, migration, stewardship, responsible recreation (State of the Bay) | 11 | Public |
| 4/27/2017 | State Parks, Audubon, Anne-Marie Osterback | Sensitive endemic species: plovers, steelhead, stewardship (State of the Bay) | 50 | Public |
| 4/29/2017 | Public/State Parks Docents | Biodiversity in the bay, water quality (State of the Bay) | 15 | Public |
| 4/29/2017 | SWAP | Estuary and watershed intro and State of the Bay data (State of the Bay) | 22 | Public |
| 4/20/2017 | Schools and the public | State of the Bay questions and data (State of the Bay) | 89 | Public |
| 5/6/2017 | SeaLife Stewards/CA State Parks | Morro Bay Estuary overview, biodiversity, stewardship, program highlights | 19 | Public |
| 5/9/2017 | Monarch Grove 1st graders | Morro Bay watershed model and estuary intro | 45 | Students |
| 5/16/2017 | Science After Dark (CCSTEM) (SLOCM) | Macroinvertebrates, bioassessment | 97 | Public |
| 5/11/2017 | Baywood Kindergarteners | Morro Bay watershed model and estuary intro | 51 | Students' Public |
| 5/19/2017 | Public/Coalesce | State of the Bay and stewardship (State of the Bay) | 42 | Public |
| 5/20/2017 | DogFest | Nonpoint source pollution and bacteria messaging | 300 | Public |
| 5/20/2017 | Green Team of Unitarian Universalist SLO | Of Marshes and Morros Screening plus Q&A | 35 | Public |
| 6/2/2017 | Cayucos/Los Osos Rotary Clubs | State of the Bay presentation | 25 | Public |
| 6/12/2017 | Delphinus School | Watershed model, macroinvertebrates, stewardship | 9 | Students |
| 6/13/2017 | City Council | State of the Bay presentation | 45 | Public, in person |
| 6/13/2017 | City Council | State of the Bay presentation | 500 | Radio listening and TV watching public |
| 6/21/2017 | Los Osos-Baywood Kiwanis Club | State of the Bay presentation | 14 | Public |
| 6/24/2017 | CA State Parks Docents/the public | Bioassessment, bug adaptations, and how water quality affects wildlife | 102 | Public |

| Date | Organization | Presentation Topic | Audience Size | Audience Type |
|---|---|---|---|---|
| 6/29/2017 | United Methodist Children's Center Camp | What is a watershed? How clean water helps wildlife and people. | 27 | Public |
| 7/12/2017 | Camp Rock, Church Group from Orange County | What is a watershed, stewardship, effects of marine debris/plastic pollution | 14 | Public |
| 7/13/2017 | Santa Lucia Fly Fishers | State of the Bay presentation | 20 | Public |
| 7/21/2017 | United Methodist Children's Center Camp | Watershed, salt marsh habitat, mud flat habitat, stewardship | 26 | Public |
| 8/10/2017 | Morro Bay Rotary Sunset (formerly Eco Rotary) | State of the Bay presentation | 6 | Public |
| 9/7/2017 | Harbor Advisory Board | State of the Bay--focus on eelgrass | 10 | Harbor Advisory Board, Public |
| 9/7/2017 | Harbor Advisory Board | State of the Bay--focus on eelgrass | 200 | TV-watching public |
| 9/7/2017 | Los Osos Community Service District | State of the Bay | 15 | Public |
| 9/7/2017 | Los Osos Community Service District | State of the Bay | 200 | TV-watching public |
| 9/11/2017 | MBHS Biology classes | State of the Bay: eelgrass, climate change, bioassessment and ecosystems | 56 | Students |
| 9/12/2017 | ECOSLO | Morro Bay National Estuary Program overview | 30 | Public |
| 9/15/2017 | Morro Bay Active Seniors (55+) | State of the Bay | 50 | Public |
| 9/19/2017 | Family Participation Charter School, Morro Bay Montessori | Watershed model, stewardship | 25 | Students |
| 9/21/2017 | Family Participation Charter School, Morro Bay Montessori | Watershed model, stewardship | 42 | Students |
| 9/27/2017 | Los Osos Library | State of the Bay | 10 | Public |
| 9/29/2017 | Morro Bay Library | State of the Bay | 5 | Public |
| 9/29/2017 | Cuesta Oceanography class | Water quality monitoring | 30 | Students |
| 10/4/2017 | Water Board - 319(h) project managers | Eelgrass Monitoring and Restoration, other bay activities, Los Osos Creek Stabilization | 22 | Water Board employees |
| 10/12/2017 | Estuary Program | Morro Bay Science Explorations: Eelgrass (Geraghty=overview. Erin Aiello, Cal Poly=genetics. John Roser=brant) | 50 | Public |
| 10/13/2017 | MSCI 100 class - Nikki Adams | Overview of the Estuary Program | 40 | Undergraduate students |
| 10/24/2017 | Morro Bay Rotary Club | State of the Bay | 30 | Public |
| 10/26/2017 | EPA, West Coast NEPs | Status of Climate Vulnerability Assessments at West Coast NEPs | 14 | EPA, NEPs |
| 11/1/2017 | Waterboard | State of the Bay, restoration projects, bacteria, eelgrass | 24 | Waterboard members |
| 11/3/2017 | Taft Community College (Steve Lytle's Zoology Class) | State of the Bay, otters, stewardship, bioassessment | 25 | Students |
| 11/7/2017 | Las Brisas Retirement Community | State of the Bay | 17 | Public |
| 11/16/2017 | Harbor Advisory Board | Estuary Program activities in the Back Bay | 16 | Harbor Advisory Board, Public |
| 11/16/2017 | Harbor Advisory Board | Estuary Program activities in the Back Bay | 200 | TV-watching public |
| 11/18/2017 | Sons of the American Revolution | State of the Bay | 10 | Public |
| 11/27/2017 | State Parks docents | State of the Bay | 20 | Docents |
| 12/1/2017 | Cuesta Oceanography class | Nitrate analysis | 30 | Students |
| 12/5/2018 | California State Parks | King Tides, Climate Change, Stewardship | 500 | Public/Social Media |
| 12/5/2018 | California State Parks | King Tides, Climate Change, Stewardship | 6,000 | Archived video broadcast via Periscope |

| Date | Organization | Presentation Topic | Audience Size | Audience Type |
|---|---|---|---|---|
| 1/12/2018 | Morro Bay Winter Bird Festival | Estuary and watershed overview, Estuary Program intro, stewardship | 5 | Bird Fest Participants |
| 1/12/2018 | Morro Bay Winter Bird Festival | State of the Bay: eelgrass, brant, steelhead, erosion | 6 | Bird Fest Participants |
| 1/25/2018 | Central Coast Water Conservancy | MBNEP monitoring efforts | 13 | Partners |
| 2/8/2018 | Estuary Program | Morro Bay Science Explorations: Climate Change and Sea Level Rise on the Central Coast | 55 | Public |
| 2/9/2018 | Cal Poly, Adrienne Greve, Graduate Environmental Planning Class | How different planning efforts and jurisdictions affect the bay and natural resource management | 10 | Graduate Students |
| 2/28/2018 | Wishing Well School Students, Kim Wishon contact | Watershed model, stewardship, nonpoint source pollution, Estuary Program overview | 12 | Students |
| 3/3/2018 | Girl Scouts of the Central Coast of California | Watershed, wildlife, stewardship, nonpoint source pollution, Estuary Program overview | 18 | Girl Scouts, parents |
| 3/12/2018 | Cuesta Oceanography class | Water quality monitoring | 30 | Students |
| 3/15/2018 | Del Mar Elementary School ELD Homework club and 2nd and 3rd grade science students. | Watershed model, stewardship, nonpoint source pollution, Estuary Program overview | 40 | Students |
| 3/16/2018 | Monarch Grove PTA-- Science Fair Night | Bioassessment, macroinvertebrates, adaptations, estuary program overview | 62 | Students and parents |
| 3/19/2018 | CCSPA State Parks Docents, Mind Walks | A Changing Bay: The Dynamic Waters of the Morro Bay Estuary | 106 | Public, State Parks Docents |
| 3/31/2018 | Morro Bay Natural History Musuem | CCSPA Spring Fling events | 12 | Public, State Parks Docents |

## 8.0 Glossary

The following terms and acronyms are used in this workplan:

| Acronym | Explanation |
|---|---|
| ANEP | Association of National Estuary Programs. www.nationalestuaries.org |
| Cal Poly | California Polytechnic State University, San Luis Obispo. www.calpoly.edu |
| CCC | California Conservation Corps |
| CCER | Chorro Creek Ecological Reserve |
| CCMP | Comprehensive Conservation and Management Plan |
| CCRWQCB | Central Coast Regional Water Quality Control Board |
| CEQA | California Environmental Quality Act |
| CSLRCD | Coastal San Luis Resource Conservation District |
| CWA | Clean Water Act, the enabling legislation for the National Estuary Program. |
| DFW/CDFW | California Department of Fish and Wildlife |
| EPA | Environmental Protection Agency www.epa.gov |
| GIS | Geospatial Information System |
| HCP | Habitat Conservation Plan |
| IS/MND | Initial Study/Mitigated Negative Declaration |
| LCSLO | Land Conservancy of San Luis Obispo County www.lcslo.org |
| LIDAR | Light Detection And Ranging. LIDAR is an established method for collecting very dense and accurate elevation values using light pulses to determine distance. |
| LOCSD | Los Osos Community Services District http://www.losososcsd.org/cm/Home.html |
| MBNEP | Morro Bay National Estuary Program. www.mbnep.org |

| Acronym | Explanation |
|---|---|
| NEPA | National Environmental Protection Act |
| NEPORT | National Estuary Program Online Report Tool. NEPORT is an online system where all Estuary Programs report annual habitat restoration and leveraging reports. |
| NPS | Non-Point Source |
| QAPP | Quality Assurance Project Plan. A QAPP describe the quality assurance procedures, quality control specifications, and other data collection and analysis details required to complete a project. Estuary Program maintains an up-to-date QAPP for the VMP. |
| QA/QC | Quality Assurance/Quality Control |
| RWQCB/CCRWQCB | Central Coast Regional Water Quality Control Board |
| SWAMP | Surface Water Ambient Monitoring Program – a program created to coordinate water quality monitoring collected by the State and Regional Water Boards. http://www.waterboards.ca.gov/water_issues/programs/swamp/ |
| SWRCB | State Water Resources Control Board |
| TMDL | Total Maximum Daily Loads. TMDL is the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards. |
| VMP | Volunteer Monitoring Program |