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## Semi-annual Report: October 2020 – March 2021

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The Morro Bay National Estuary Program (Estuary Program) is moving forward on completing new and ongoing tasks in the Fiscal Year (FY) 2021 workplan. All workplans are approved by the Environmental Protection Agency and the Estuary Program’s Executive Committee. The budget report shows that our Section 320 expenses under the current grant in the first half of the fiscal year were \$316,034. As of March 31, we have expended 84% of our current 320 grant (started in FY17), with a remainder of approximately \$524,825. The Estuary Program has met 190% of its match requirement for the cumulative grant with cash match and estimated current in-kind contributions (at approximately \$6,086,582).

The Estuary Program requests EPA’s continued participation on the Executive Committee and assistance with meeting relevant administrative and programmatic grant conditions. During this reporting period, the Estuary Program began addressing the final Program Evaluation (PE) letter, which was completed at the end of FY2020. The Estuary Program also requests participation from the EPA Project Officer in providing feedback as the update process for the Comprehensive Conservation and Management Plan (CCMP) is finalized.

The following report summarizes activities and deliverables completed during the semi-annual report period. As the Estuary Program does not have any subawards, a reporting of subaward monitoring activities carried out under 2 CRF 200.331(d) does not apply.

### Habitat and Water Quality Protection and Restoration

#### Land Conservation

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

Status: Ongoing task

Progress Toward Milestones: The Estuary Program has worked with The Land Conservancy of San Luis Obispo County (LCSLO) to explore easement projects in the watershed. Staff time was spent to develop these opportunities, conduct landowner outreach, and support LCSLO efforts. An easement deal is underway, with state funding procured. The Estuary Program will provide some of the match to support the easement, along with the landowner donations, in order to complete the deal. The easement is expected to close by the end of the fiscal year.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: These efforts directly support the task outcome of completing land conservation projects as opportunities arise.

Problems Encountered: None.

Deliverables: None.

Activities Planned for Next Six Months: The Estuary Program plans to coordinate with the LCSLO and the landowner to complete a conservation easement agreement in the watershed.

Pending Deliverables: Updated map tracking protected lands included in next State of the Bay report. NEPORT reporting.

## Restoration Maintenance and Monitoring

Objective: Conduct maintenance and complete monitoring for conservation easements and restoration projects, as necessary.

Status: Ongoing task

Progress Toward Milestones: The Estuary Program conducted flow monitoring on Pennington Creek following removal of a fish passage barrier and improvements to a water diversion. Data are submitted to Trout Unlimited on a regular basis to manage a flow diversion and comply with water rights. Staff monitored eelgrass planted in 2020 to assess restoration success.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The accomplished tasks directly support the outcomes of conducting easement monitoring and maintaining landowner communications. Efforts also support the outcome of further development of eelgrass restoration targets. The Estuary Program is also developing potential projects with Camp San Luis Obispo Army National Guard Base to address stormwater runoff.

Problems Encountered: None.

Deliverables: Pennington Creek data submitted to the California Environmental Data Exchange Network ([CEDEN](#)) and shared with partners. Six month post-planting eelgrass monitoring results submitted to CDFW and restoration funder (Pacific Marine Estuarine Fish Habitat Partnership).

Activities Planned for Next Six Months: The Estuary Program plans to complete eelgrass restoration for FY21 and conduct post-transplant monitoring. We will also work with partners to address any needed restoration maintenance.

Pending deliverables: Final eelgrass restoration monitoring report to restoration funder (Pacific Marine Estuarine Fish Habitat Partnership).

## Eelgrass Restoration

Objective: Develop eelgrass restoration goals based on ongoing monitoring, restoration, and research efforts with various partners.

Status: Ongoing task

Progress Toward Milestones: Estuary Program staff coordinated with local partners, including California Polytechnic State University at San Luis Obispo (Cal Poly), the Pacific Marine and Estuarine Fish Habitat Partnership (PMEP), the city of Morro Bay, the California Department of Fish and Wildlife (CDFW), and

the National Oceanographic and Atmospheric Administration (NOAA). The Estuary Program developed a restoration plan for 2021 and submitted it to CDFW to obtain the necessary Scientific Collection Permit and Letter of Authorization to conduct the restoration work. Eelgrass transplanting was conducted in February and March of 2021 where eelgrass was harvested from healthy beds and transplanted at 13 intertidal sites (3,180 eelgrass rhizomes).

The Estuary Program was awarded a US Fish & Wildlife Service (USFWS) grant through PMEP to partially fund restoration efforts in 2021. Additional funding was provided by the Black Brant Group. These funding sources supported Estuary Program staff and a contract with a consultant to support the restoration and monitoring efforts. The Estuary Program was also selected to receive a Restore America's Estuaries Coastal Watershed Grant (CWG) to fund monitoring, research, and restoration over the next two years. The contract development is currently underway.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Estuary Program activities under this workplan task supported the long-term outcomes, which are monitoring for results to inform future recovery actions and developing numeric targets for eelgrass restoration. The knowledge gained from earlier restoration and monitoring work were utilized for designing the 2021 transplant effort and will inform future efforts and development of numeric targets.

Deliverables: Activities documented in the Semi-annual report (see above). [2019 Eelgrass Report](#).

Problems Encountered: None.

Activities Planned for Next Six Months: Eelgrass planting will be conducted in subtidal areas during the spring. Post-transplant monitoring will be conducted. Staff will communicate restoration results with project partners to support future research and restoration efforts. The subtidal plantings in Spring 2021 are funded by the USFWS Coastal Program grant, which will also support eelgrass restoration within the next four years.

Pending Deliverables: CDFW permit reports for 2021 restoration effort. PMEP reports for grant funding for monitoring of 2020 restoration. USFWS reports for grant funding for 2021 restoration. NEPORT Habitat submittal. 2020 Eelgrass Report.

### Chorro Creek Ecological Reserve Restoration Phase 3

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

Status: Ongoing task

Progress Toward Milestones: Construction was completed in October 2019 with grading of two side channels, installation of large wood structures and willow baffle, implementation of erosion control measures, and improvements to the road crossing. Installation of extensive native plants on the site was also largely completed this winter. Irrigation during the dry season and a small amount of planting occurred in the second half of FY20. In FY21, efforts included completion of plantings and monitoring the site for plant survival. A large storm came through the area in late January, so monitoring was conducted to check on performance of the regraded channels in a big storm event. Overall, the site did well, although a few locations had more erosion than ideal. However, this was expected given an event

of this size occurring within two years of project construction. Additional time was spent on site to replace plant cages.

The CDFW Fisheries Restoration Grant Program (FRGP) award of just over \$1,000,000 is nearly complete. Work is still underway under a \$400,000 award from the California State Coastal Conservancy. The California Conservation Corps is providing labor and materials for planting and irrigating the site. The project is currently coming in under budget.

The post-construction work included establishing the monitoring required by the project permits. This includes the following monitoring activities:

- Frequency and extent of side channel activation: Side channel flows will be monitored with field cameras and temperature loggers on site. Adequate flows occurred during a January storm to trigger the side channels.
- Success of native plantings: Revegetation efforts are being monitored through direct counting of plantings quarterly to track success over the next three to five years. Thus far, plantings continue to do well.
- Fish entrapment: Side channels will be monitored during specific flows to assess the potential for fish stranding. No stranded fish were detected following the January storm.
- Geomorphic conditions: Repeat cross-section and long-profile surveys of the side channels will be conducted periodically to evaluate changes in side channel conditions. This will be conducted during late spring 2021.
- California Rapid Assessment Monitoring (CRAM): A CRAM survey will track changes in the channel and riparian vegetation over time. This will be completed in late spring 2021.

Deliverables: Project reports for FRGP funding.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Efforts conducted under this task directly support the outcome of supporting climate ready estuary goals including floodplain restoration.

Problems Encountered: None.

Activities Planned for Next Six Months: Existing plantings continue to meet target survival requirements. However, given high flows and reduced plant survival, we anticipate conducting additional plantings in fall 2021. Plant success monitoring will continue under a State Coastal Conservancy grant through 2021 and then through NEP funding for another two years. Post-project monitoring as required by the project permits will be conducted.

Pending Deliverables: Final project report. NEPORT reporting.

## Other Restoration Efforts

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

Status: Ongoing task

Progress Toward Milestones: The Estuary Program participated in numerous efforts to meet Management Plan goals. These included participation in the following efforts:

- Public process for wastewater treatment facility in Morro Bay.
- Participation on the PMP Steering Committee, which funds restoration projects and develops data resources for estuaries across the West Coast. Attended their annual meeting to develop the workplan for the upcoming year. Staff reviewed and supported development of a study to synthesize information on eelgrass restoration efforts.
- County Stormwater Resource Plan development through Regional Water Management Group meetings.
- SLO County and Caltrans effort to replace the bridge over Los Osos Creek on South Bay Boulevard.
- Caltrans effort to address a fish passage barrier on San Luisito Creek.
- Los Osos Basin Management Committee.
- Integrated Regional Water Management (IRWM) stakeholder meetings.
- Local invasive management efforts.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The Estuary Program met the anticipated outputs and outcomes by staying involved in partner efforts related to the estuary as opportunities arise that support CCMP implementation and partner projects.

Deliverables: Activities described in Semi-annual report (see above). [Updated IRWM plan](#).

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to continue work on the Conservation Planning Initiative and to continue to participate in the local restoration and management efforts listed above. Staff is also developing a project for a sea level rise vulnerability and adaptation strategies assessment, which would inform future management actions to protect estuarine habitat into the future.

Pending Deliverables: Final conservation planning document.

## Conservation and Restoration Project Development

Objective: To develop projects and funding for conservation and restoration.

Status: Ongoing

Progress Toward Milestones: Staff continues to participate in the IRWM effort at the county level, which covers issues related to stormwater management, water supply issues, water quality issues, and potential implementation projects.

In FY19, the Estuary Program completed a grant from the Resource Legacy Fund to work with the Coastal San Luis Resource Conservation District (CSLRCD) to reach out to private landowners to provide educational resources on conservation practices such as rotational grazing, keyline ploughing, etc. Currently the Estuary Program is providing support to the CSLRCD to apply for grants to procure funding

to implement projects developed under the Resource Legacy Fund grant. CSLRCD is also adding two stormwater projects sites on Camp SLO property to address sediment sources to Chorro Creek.

The Estuary Program partnered with USGS to develop a project to study tidal marsh habitats in the face of sea level rise and is seeking funding for the project.

Deliverables: Activities described in this Semi-annual report (see above).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Working with partners such as the CSLRCD to provide resources to private landowners with the end goal of implementing projects to improve water quality.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to work with partners to further the progress of stormwater management and water conservation projects. The Estuary Program will work with the CSLRCD to further develop project ideas developed under the Resource Legacy Fund effort. The Estuary Program will also work with Camp San Luis Obispo on stormwater implementation projects.

## State Park Marina Stormwater Management Project

Objective: To implement a stormwater management project at State Park Marina.

Status: Ongoing

Progress Toward Milestones: Partnership with Morro Bay State Park and California Marine Sanctuary Foundation to implement a grant from California Ocean Protection Council (OPC) for a stormwater improvement project at the Morro Bay State Park Marina parking lot. Staff developed and managed a contract to conduct pre-construction stormwater runoff monitoring. First Flush monitoring for the 2021 Water Year was conducted in November, and results confirmed the elevated levels of pollutants transported with stormwater runoff into the bay. Staff worked with State Parks and other partners to make progress on the construction plans, bidding, and contracting. Construction is planned for late spring.

Deliverables: None.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Anticipated output is installed stormwater BMPs. Anticipated outcome is improved water quality of stormwater entering the bay.

Problems Encountered: Engagement from State Parks leadership in Sacramento has generated some sticking points on design and scope. Negotiating these issues with State Parks and OPC has significantly delayed the project. A revised timeline and project scope has been approved by State Parks and OPC. The timeline is constrained by the funding source, which has a strict end date, and the project is in danger of not being completed before this deadline if more delays occur.

Activities Planned for Next Six Months: Grant agreement, assistance agreement with State Parks, and permits will be finalized and the design phase re-initiated. This action is dependent upon cooperation from State Parks.

Pending Deliverables: Final completed project report. Data submitted to CEDEN.

## Aquatic Invasive Species Management

Objective: To implement management actions for pikeminnow populations in an effort to improve habitat for native steelhead.

Status: New

Progress Toward Milestones: Pikeminnow management efforts were conducted in the fall of 2020.

Deliverables: Final report for 2020 pikeminnow management efforts completed by Stillwater Sciences, which includes a review of management since 2017 and progress to date.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Anticipated output is control of the invasive pikeminnow population and a better understanding of sustainable ratios of pikeminnow to steelhead that allow for steelhead recovery.

Problems Encountered: None.

Activities Planned for Next Six Months: Planning will take place for pikeminnow management work in the fall of 2021.

Pending Deliverables: None.

## Environmental Monitoring and Research

### Monitoring Program Coordination

Objective: Continue coordination of the Monitoring Program and collect data that meets Quality Assurance Project Plan guidelines.

Status: Ongoing

Progress Toward Milestones: Staff conducted monitoring in the watershed and estuary to track long-term ambient trends and project implementation effectiveness. During the first half of FY21, the following occurred:

- Due to COVID-19, volunteer activities continued to be on hold. Staff were able to continue the most crucial monitoring upon receipt of permission from the County Office of Coordination. Monitoring efforts included: 42 monitoring trips for bay water quality, 64 for bacteria, and 102 for creek water quality.

- As the COVID-19 situation improved in our county, staff began planning and coordination for the reinstatement of volunteers with updated COVID policies, waivers, and protocols. A slow reintegration of volunteers began in early spring, with plans to increase participation throughout the spring and summer.
- Staff coordinated with the California Department of Public Health and local shellfish growers on monitoring related to storm flows and bacteria. This includes monitoring bacteria in Chorro Creek and monitoring freshwater seeps along the bay to track improvements in bacteria and nitrates since the Los Osos Water Reclamation Facility has come on line.
- Staff continued long-term partnership with Cuesta College, providing lecture and class materials for an oceanography course.
- Staff monitored sites watershed-wide for nutrients every other month to track long-term trends.

Deliverables: A quality dataset that meets the parameters outlined in the Quality Assurance Project Plan (QAPP). 2020 data submitted to [CEDEN](#). Activities described in Semi-annual report (see above). [Bioassessment memo for 2020](#). [Sediment report for 2019](#). [Creek Health memo for 2019](#). [Bay Health memo for 2019](#).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities for this task involved collecting and sharing data, resulting in an increased understanding of the long-term trends in ambient water quality in the watershed and estuary.

Problems Encountered: The inability to utilize volunteers due to COVID impacted the number of sites monitored in 2021. Staff was able to pivot and conduct much of the monitoring themselves.

Activities Planned for Next Six Months: Reintegration of volunteers into the program is underway, with plans to increase in the spring and summer. The Estuary Program plans to conduct the following types of monitoring: creek water quality, creek and bay bacteria, bay water quality, seeps water quality, bioassessment, and flow.

Pending Deliverables: Bay Health and Creek Health memos for Water Year (WY) 2020. Sediment monitoring report for 2020.

## Monitoring Program Reporting and Analysis

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

Status: Ongoing

Progress Toward Milestones: Estuary Program staff compiled data in formats appropriate for various audiences, including academic classes, landowners, and the general public. Staff responded to requests for program-generated data. Several blog posts on monitoring-related topics were created over the year, including popular monthly “Field Updates” posts that provide a rundown of what staff have been up to in the estuary and watershed. Analysis is underway of sediment data, bioassessment data, and creek and bay water quality data.



Deliverables: Activities described in Semi-annual report (see above). [Bioassessment memo for 2020](#). [Sediment report for 2019](#). [Creek Health memo for 2019](#). [Bay Health memo for 2019](#). Example monthly bacteria memo.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities conducted under this task involved analyzing data and sharing data and results with partners, landowners, and the general public. These activities directly support the task outcome of making analysis available for others to support their own efforts to protect and restore Morro Bay and its watershed.

Problems Encountered: None.

Upcoming Activities: The Estuary Program plans to respond to requests for data, create blog posts to share data, and compile sediment, bioassessment, and water quality data to share monitoring results.

Pending Deliverables: Sediment Report for 2020. Bay Health and Creek Health memos for WY 2020.

## Monitoring Program Data Management

Objective: Maintain data in Surface Water Ambient Monitoring Program (SWAMP)-compatible format.

Status: Ongoing

Progress Toward Milestones: Estuary Program staff have been preparing monitoring data for submittal to CEDEN. Staff participates in State Water Resources Control Board (SWRCB) meetings to discuss updating of CEDEN. Staff coordinated with SWRCB staff on recent changes to data management. The former system of Regional Data Centers has been eliminated, and the State now handles all data submittal. Staff worked with the SWRCB on submittal of our 2020 bioassessment data.

Deliverable: Activities described in Semi-annual report (see above).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities such as storing and submitting data accomplished the outcome of making available to the public and state a high quality data set that supports TMDL analysis, 303(d) assessment, land management, etc.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program will to continue working with the SWRCB to upload data for WY 2020 and 2021 to CEDEN.

Pending Deliverables: Submittal of WY 2020 and 2021 data to CEDEN.

## Monitoring Program Quality Assurance

Objective: Maintain an approved Quality Assurance Project Plan (QAPP) and implement necessary quality assurance measures.

Status: Ongoing

**Progress Toward Milestones:** The Estuary Program continues to implement the quality assurance measures contained in the QAPP to ensure data quality. The QAPP was approved by EPA at the end of FY20. With award of NEP Coastal Watershed Grants funding, staff prepared a QAPP addendum to address additional monitoring to be conducted during the course of the project. The addendum is under review by EPA.

**Deliverables:** Activities as described in this Semi-annual report (see above).

**Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes:** An accurate and up-to-date QAPP document directly supports the task outcome of producing a high quality data set with data to support efforts throughout the watershed including 303(d) and TMDL assessment.

**Problems Encountered:** None.

**Activities Planned for Next Six Months:** Staff will conduct the QA measures needed to ensure the quality of program-generated data. Staff will update the QAPP for 2021.

**Pending Deliverables:** QAPP update for 2021.

## Project Effectiveness Monitoring

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

**Status:** Ongoing

**Progress Toward Milestones:** Staff conducted monitoring of the freshwater seeps at the bay's edge to assess the impacts of the recently completed Los Osos Water Reclamation Facility. The Estuary Program conducts monitoring for a project on Pennington Creek to assess impacts from improvements to a water diversion. Staff also conducted monitoring of eelgrass conditions in the bay.

**Deliverables:** Activities as described in the Semi-annual report (see above).

**Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes:** The activities under this task support the outcome of conducting monitoring and developing analysis that informs future management and restoration efforts.

**Problems Encountered:** None.

**Activities Planned for Next Six Months:** The Estuary Program plans to continue monitoring the seeps. Staff will coordinate with Cal Poly researchers on future monitoring and potential publications. Staff will also communicate with project partners to share data results and coordinate efforts.

**Pending Deliverable:** Eelgrass Restoration Monitoring PMEP and CDFW permit reports.

## Eelgrass Monitoring and Research

**Objective:** Monitor eelgrass to determine its condition and distribution in the bay.

Status: Ongoing

Progress Toward Milestones: Staff coordinated with Cuesta College faculty on their eelgrass research efforts. Staff completed and shared the 2019 eelgrass report. Cal Poly flew their drone in December to collect baywide imagery for creation of an eelgrass map. Analysis of the imagery is underway. The fall monitoring of permanent transects was conducted, and an increase in eelgrass presence was noted. We partnered with Cal Poly and applied for and won an NEP Coastal Watersheds Grant. The project was one of eight selected for funding, and work is underway to finalize the contract so that work can commence. The project to calculate bay tidal prism was completed, and the Estuary Program is reaching out to partners to help interpret the results.

Deliverables: Monitoring activities documented in the Semi-annual report (see above). [2019 Eelgrass Report](#).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Monitoring and planning for mapping efforts as well as working with research partners all support the outcome of better understanding eelgrass stressors and dynamics. This improved understanding directly supports the outcome of development of restoration strategies and goals.

Problems Encountered: None.

Activities Planned for Next Six Months: Staff will compile the 2020 eelgrass report. Staff will coordinate with Cal Poly to complete creation of the 2020 eelgrass extent map. Staff will coordinate with project partners to share our findings. Staff will work with partners to interpret and share the results of tidal prism calculations for the bay. Staff will begin the Coastal Watershed Grant, conducting eelgrass monitoring and related water quality research.

Pending Deliverables: 2020 Morro Bay Eelgrass Report. Bay tidal prism results included in semi-annual report.

## Partner Research Efforts

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

Status: Ongoing

Progress Towards Milestones: Estuary Program staff coordinated and collaborated with Cal Poly, CDFW, NOAA, Cuesta College, ACOE, the city of Morro Bay, and other project partners to research the causes of eelgrass decline and related water quality issues. Staff studied eelgrass monitoring and restoration methods in other areas, and reached out to other researchers. Staff sought results of research efforts in Morro Bay related to nutrients, sedimentation, ocean acidification, and other water quality data. Staff coordinated with Cal Poly on ocean acidification monitoring efforts in the bay. Staff collaborated with partners such as Cal Poly and USGS on future research efforts related to eelgrass, climate change, and habitat. Staff worked with Cal Poly on collection of baywide drone imagery in fall 2020. Analysis of the imagery is underway to create a baywide eelgrass map. The Coastal Watersheds Grant, which will begin

in spring 2021, will fund Cal Poly and Estuary Program research, restoration, and monitoring efforts to better understand eelgrass and water quality conditions that help build coastal resiliency.

Research efforts conducted in the Morro Bay estuary and watershed include:

- United States Geological Survey (USGS) tidal marsh elevation impacts from sea level rise (SLR).
- Cal Poly research into impact of crabs on eelgrass.
- Cal Poly research on impact of brant grazing on eelgrass.
- Cuesta College research on impact of *Labyrinthula spp.* wasting disease on eelgrass.
- Cal Poly research on ocean acidification in Morro Bay, in partnership with Central and Northern California Ocean Observing System (CeNCOOS).
- Cal Poly research on herbicide use and potential impacts on Morro Bay and its eelgrass.

We also track research that is occurring elsewhere but is relevant to Morro Bay, including nutrient target development in Elkhorn Slough and pathogen TMDL development in Southern California.

Deliverables: Water quality data collected by Cal Poly partners and shared on CeNCOOS web portal for the [front bay](#) and [back bay](#). [2019 Eelgrass Report](#).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Coordination with research partnership efforts directly supports the task outcome of improving understanding of resources in order to better target efforts such as monitoring and restoration.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to coordinate with monitoring and research partners to share data, methods, and knowledge. These partners include Cal Poly, NOAA, CDFW, USGS, EPA, the Water Board, Cuesta College, and Elkhorn Slough National Estuarine Research Reserve (NERR).

Pending Deliverables: 2020 eelgrass report. Bay tidal prism results included in semi-annual report. 2020 baywide eelgrass map from drone imagery.

## Public Participation, Education and Outreach

### Communications

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

Status: Ongoing

Progress Toward Milestones: Estuary Program staff regularly conducted the following communications tasks:

- Created weekly blog posts that were shared via email, website, and social media. 389 subscribers receive the blog via email each week. The blog is posted on Facebook and Twitter,

and corresponding content is posted to Instagram when appropriate for the platform. Popular blog posts have as many as 4,860 reads, not including subscribers. Updated the website to share program news, COVID-19 changes, and upcoming digital events.

- Conducted ten presentations that reached 311 individuals online. All events have been conducted digitally since March 13, when local COVID-19 restrictions were put in place.
- Continued to increase the number of followers on Facebook to 2,406 users. Utilized two-way communication with these users, such as shout outs to rain gauge network and cleanup participants.
- Maintained a Twitter feed that currently has 599 followers.
- Maintained an Instagram feed that currently has 2,317 followers.
- Four news stories were published that covered Estuary Program-specific content and projects in the watershed. One of these articles covered the successful completion of the highly collaborative Chorro Creek Ecological Reserve Restoration Project and another covered the Estuary Program's ongoing efforts to restore eelgrass to Morro Bay.
- Issued two media releases promoting Estuary Program accomplishments and events.
- Finished the design phase of the Habitat Exhibit Update in the Morro Bay Estuary Nature Center. The exhibit is now being fabricated and will be installed during late spring or summer 2021.
- Provided information about the impacts of marine debris and other trash and used social media and blog posts to encourage locals and visitors to participate in self-directed cleanups in the Morro Bay watershed. Participants filled out our online Trash Tracker form. We now have two groups who participate in COVID-safe cleanups at least every other week and track their data.

Deliverables: Weekly blog posts (26 for this time period) at [www.mbnep.org/blog](http://www.mbnep.org/blog). Website and social media statistics (see above). Relevant news stories available online and press releases submitted at [www.mbnep.org/news](http://www.mbnep.org/news).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The activities listed above enhanced communication with residents, visitors, and the general public. This works toward the task outcome of increasing their understanding of their roles as stewards of the estuary and encouraging behaviors that protect clean water.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to continue the communications tasks outlined above.

Pending Deliverables: Additions to the Nature Center Habitats exhibit.

## Education

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

Status: Ongoing

Progress Toward Milestones: Efforts to support Education included the following:

- Maintained the Nature Center and its exhibits. Due to shelter-at-home order, the Nature Center was closed during the first half of FY21. The content for our Estuary Science Kiosk, which can be accessed via the internet, had about 9,221 page views during the same time period.
- Collaborated with SLO and Monterey Marine Protected Area Collaboratives to add content to a marine education focused coloring book and activity book that covers stewardship and estuarine ecology content. Both books will be available in Spanish and English both online and in print by summer of 2021.
- Morro Bay National Estuary Program staff also provided information, feedback, and other guidance for two college-level student presentations focused on estuarine health and stewardship.

Deliverables: Estuary Science Kiosk statistics (see above). Fieldtrip and presentation statistics (see above in the Communications section).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The activities under this task directly support the outcome of providing formal education partnerships to share estuary-related messaging with local students.

Problems Encountered: Due to COVID-19 restrictions and concerns for the health of both visitors and staff, we closed the Nature Center on March 13, 2020 and have not welcomed any new visitors since then. Summer is typically our busiest time at the Nature Center, so our visitor numbers for this year are much lower than normal. Morro Bay High School students did not complete field portion of microplastics monitoring curriculum as normal during this period, due to COVID restrictions. COVID restrictions also led to the closure of the Central Coast Aquarium, our longtime partner in environmental education. Because of this and school closures, we were not able to offer any additional on-the-water educational experiences. We are working to cultivate new educational partnerships to fill this gap. We were also not able to implement microplastic monitoring due to school being conducted entirely online and continued worries over COVID-19 safety precautions throughout this reporting period

Activities Planned for Next Six Months: The Estuary Program plans to continue the Education tasks outlined above, including developing new education partnerships. We will reopen the Nature Center when it is safe to do so.

Pending Deliverables: Final versions and distribution statistics of updated English and Spanish versions of the Marine Protected Areas coloring book and kids' activity workbook as well as statistics of use of the online version. Protected Area coloring book and activity book will be available at [www.mbnep.org/kids](http://www.mbnep.org/kids) in summer 2021.

## Nature Center Update

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

Status: Ongoing

Progress Toward Milestones: Estuary Program staff have finished the design phase of three new informational panels for the large habitat mural on the Nature Center's south wall. These will be manufactured and installed in FY21. Work has begun on the design phase of a hands-on exhibit that

teaches kids about the lifecycle of steelhead trout in the Morro Bay watershed. Staff are also planning to change the freshwater tank to a saltwater tank that will allow visitors to see species that are commonly found directly outside the Morro Bay Estuary Nature Center. Ongoing maintenance and upkeep was conducted to keep the Nature Center functioning smoothly. Staff maintained the trout tank and continued to photograph the fish throughout their life cycle for educational purposes, even though the Nature Center is closed.

Deliverables: User statistics for the Nature Center kiosk (see above in the Education section).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The updates to the Nature Center conducted as part of this task directly support the outcome of providing a learning center for the estuary that contains updated and engaging exhibits. Due to the public health situation, visitors are not currently allowed in the Nature Center, thus eliminating the public reach of this resource.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program will develop content and seek funding to update additional exhibits in the Nature Center, including plans to update the fish tank to a salt water tank featuring species common to the estuary.

## Other E&O Tasks/Community Partner Projects

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

Status: Ongoing

Progress Toward Milestones: Efforts to support outreach projects in the community included:

- Partnered with ECOSLO to plan adopt-a-spot cleanups across San Luis Obispo County. ECOSLO will be creating and distributing cleanup kits to serve participants in their efforts to keep marine debris out of the waters of San Luis Obispo County. The Estuary Program will be the organizational liaison for any adopt-a-spot cleanup groups formed in Morro Bay or Los Osos.
- Working with Morro Bay State Parks staff, Creek Lands Conservation, and other community groups to create a Watershed Protectors educational activity booklet for kids.
- Working with the Monterey and SLO MPA Collaboratives on community forums discussing wildlife and recreation concerns as well as possible solutions.
- Gave feedback on the California Marine Sanctuaries Foundation's MPA presentation kit based on San Luis Obispo County. This presentation kit will be distributed across the county for use by commercial and noncommercial businesses and organizations to inform visitors and locals about the wildlife, ecology, outdoor recreation opportunities, and stewardship needs of the local MPAs.

Deliverables: Outreach statistics (see above).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities conducted under this task directly support the outcome of coordinating with partner organizations on developing and sharing key messages.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program will continue working with the MPA Collaborative to manage the ROV for use by partners. We will work with ECOSLO to manage the Los Osos and Morro Bay groups of adopt-a-spot cleanup crews. We will also continue working with partners on the Watershed Protectors educational activity booklet and the MPA Collaborative on assorted projects.

Pending Deliverables: ROV checkout statistics. Cleanup statistics. Watershed Protectors educational activity booklet.

## Mutts for the Bay

Objective: Support pet waste management program to prevent bacterial contamination in the bay.

Status: Ongoing

Progress Toward Milestones: The Estuary Program continued its work managing the program, which included accepting and managing donations, installing and maintaining dispensers, and coordinating volunteers. In 2018, the program received a grant from a private foundation to fund staff time and related costs for three years. In March 2021, the grant was extended and will now support the Mutts for the Bay Program through 2025. The grant also funds developing outreach materials and sharing them with pet owners. In the first half of FY21, 32 dispensers were maintained and an additional dispenser was installed. More than 180,000 bags were given away to pet owners. This number of bags prevents an estimated 44,100 pounds of pet waste from negatively impacting the estuary. Estuary Program staff distributed educational curriculum on the negative impacts of pet waste and distributed it to more than 150 teachers across San Luis Obispo County and in the Central Valley. This content was optimized for online learning to better serve teachers and students who were not on campus due to the COVID-19 restrictions.

Deliverables: Mutts for the Bay program statistics (see above). [Curriculum](#) available online.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities under this task directly support the outcome of encouraging responsible behavior by pet owners to reduce bacterial loading to the estuary, thus improving water quality and protecting beneficial uses such as shellfish farming and recreation.

Problems Encountered: None.

Activities Planned for Next Six Months: Staff will continue its financial and coordinating activities to maintain the program. Efforts will also continue on developing outreach materials and delivery methods for pet owners.

Pending Deliverables: Reporting for the private foundation grant. Outreach materials.



## Program Management

### Manage Committees and Build Partnerships

Objective: Hold quarterly meetings and support partnerships.

Status: Ongoing

Progress Toward Milestones: Staff compiled meeting materials and coordinated quarterly meetings of the Executive Committee (EC) throughout the year. Technical Advisory Committee (TAC) members were called on as needed for review of Community Project applications and technical plans. Membership was updated for the EC and TACs.

Staff has already integrated TACs into the decision-making processes of the organization. They lent their expertise for Community Project application review, eelgrass efforts, water quality monitoring, data analysis, and pikeminnow management.

Partnerships are also supported through collaborative project development and technical support. The Estuary Program continues its work on partnership projects developed and implemented in collaboration with partner organizations. These include:

- The Estuary Program was awarded a US Fish & Wildlife Service (USFWS) grant through the Pacific Marine and Estuarine Fish Habitat Partnership (PMEP) to fund restoration efforts over the next two years. Staff coordinated with PMEP to conduct eelgrass restoration in 2021.
- Coastal San Luis Resource Conservation District was awarded a grant to continue efforts to design and implement restoration at their Los Osos Wetland property. The Estuary Program is an essential partner in this project, providing technical expertise and outreach components.
- The Estuary Program is a partner on the Santa Monica Bay National Estuary Program's vessel pump-out monitoring program, monitoring three pump-outs three times a year, and providing data through a statewide accessible app.
- The Estuary Program partnered with Cal Poly on a Coastal Watersheds Program grant, which will begin in 2021. The work focuses on eelgrass monitoring and restoration as well as research into water quality impacts of eelgrass.
- The Estuary Program is partnering with USGS to develop a project looking at tidal marshes and rising sea levels.
- The Estuary Program is working with Caltrans, SLO County, and other partners to study the feasibility of removing a fish passage barrier on San Luisito Creek.

Deliverables: Minutes, agendas, staff reports, and materials completed for each meeting. List of partnerships and project activities (see above).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The activities conducted under this task directly supported the task outcome of providing input and direction for the program and ensuring that partnerships are well supported.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to continue to coordinate quarterly meetings and work with Management Conference members. We will continue to work with the TACs to develop projects, funding, and collaborations. We will continue to partner with the CSLRCD to seek funding to implement projects developed with Resource Legacy Funding and support work at the Los Osos Wetland property.

## Grants and Contracts Administration and Financial Management

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

Status: Ongoing

Progress Toward Milestones: Staff worked on financial reporting, progress reports to the EPA and the Management Conference, and participation in NEP conference calls and committees. We coordinated with EPA to provide required materials for oversight of the 320 grant and managed numerous grants to the Estuary Program to support our project work. Staff supported the annual financial audit, which was completed in early 2021.

Deliverables: Semi-annual report for the second half of FY20. Minority Business Enterprises-Women Business Enterprises (MBE-WBE) submitted to EPA Region 9 Grants Office.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities under this task directly supported the outcome of conducting grant administration and financial management tasks in a timely and accurate manner.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program will implement the FY21 Workplan and conduct reporting for the FY21 grant.

Pending Deliverables: Annual FFR and MBE-WBE.

## General Administration and Human Resources Management

Objective: Maintain accurate financial and human resources records and manage personnel.

Status: Ongoing

Progress Toward Milestones: Staff maintained the ongoing financial and administrative functions, including recordkeeping, filing, bookkeeping, and equipment and office space upkeep, as well as interacting with the general public. In addition, the Director spent time managing staff performance and workplan progress. Other HR tasks included training, professional development, recruitment, and keeping all personnel policies and procedures up to date. Staff responded to the COVID-19 situation. Protocols addressing fieldwork, staff use of the office, etc. were developed, and training was provided. COVID-19 protocols are regularly reviewed and updated based on new state and federal guidance as well as changes in local restrictions. The Estuary Program hired a Monitoring Projects Manager, an Eelgrass Technician, and an Environmental Planning Intern during the first half of FY21.

Deliverables: Summary of task activities (see above). Bookkeeping and other recordkeeping tasks contribute to the completion of the deliverables included for the previous tasks (financial management).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The administrative and human resources management tasks conducted in the first half of FY21 directly supported the outcome of providing the administrative support that allows the program to function smoothly so that staff can focus on attaining the goals of the organization.

Problems Encountered: None.

Activities Planned for Next Six Months: Staff will conduct all bookkeeping and recordkeeping tasks required for grant management. Staff will conduct all HR tasks including training and professional development.

## Tracking Implementation of the CCMP and Workplan

Objective: Keep track of Workplan and Comprehensive Conservation and Management Plan (CCMP) implementation.

Status: Ongoing

Progress to Date: Tracked progress on CCMP implementation through biannual reports to the Executive Committee. Began planning for a website to share the CCMP tracking results with the public.

Deliverables: Semi-annual report to EPA submitted Fall 2020. Biannual Executive Committee reports.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The tasks completed directly support the outcome of conducting tracking to ensure that tasks are completed in a timely and accurate manner.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to report to the Executive Committee on Workplan progress and conduct NEPORT reporting.

Pending Deliverables: NEPORT entries for FY21.

## Management Plan Update/Revision

Objective: Update the CCMP per EPA guidance.

Status: Ongoing

Progress Toward Milestones: EPA issued comments on a draft CCMP update in late FY20. Staff has been coordinating with EPA to discuss the comments. Incorporation of comments is now underway on the

CCMP update and ancillary documents, including the Monitoring Plan, Communication Plan, and Finance Plan.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The tasks conducted directly support the outcome of working toward a Management Plan that is up-to-date, relevant, and complies with EPA's guidance.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to work with EPA to finalize the CCMP and sub-plans.

Pending Deliverables: Management plan and ancillary document update.

## Community Projects

Objective: Provide support for Community Projects that further the goals of the Management Plan and engage the community.

Status: Ongoing

Progress Toward Milestones: Under the recently redesigned Community Projects program, staff worked with multiple partners to develop potential projects. The Bay Foundation and EC selected two projects for funding in FY21. Contracts were established with each applicant, and project activities are underway.

One Community Project was recently completed:

- Dr. John Perrine of Cal Poly completed a project to deploy wildlife cameras throughout the watershed in 2019 and 2020 to track wildlife movement. The resulting data helps us target areas for conservation and restoration.

Three Community Projects are ongoing:

- California State Parks received funding for a Watershed Demonstrator project to design curriculum and build a learning station to demonstrate soil health. Although the project has been delayed due to COVID, efforts are underway to develop the curriculum that will accompany the demonstrator. A State Parks volunteer is continuing to work on constructing the demonstration station.
- Dr. Nikki Adams of Cal Poly will be a partner on a microplastics monitoring effort in Morro Bay. She and her students will select and implement protocols to monitor microplastics in the sediment in different regions of the bay throughout an entire year. Education and outreach materials will be developed based on the work.
- The Coastal San Luis Resource Conservation District (CSLRCD) will restore habitat for pollinators and monarchs. The CSLRCD will also develop educational signage for the site and conduct field tours to share with the general public what they can do to enhance habitat for pollinators and monarchs.

Deliverables: None.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The activities conducted under this task included working with existing funding recipients and coordinating with partners to develop new projects that support CCMP goals and Action Plans. These activities directly supported these goals, thus meeting the task outcomes of developing and completing projects that meet program guidelines on community involvement and CCMP nexus.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to continue to work with partners on ongoing Community Projects. Staff will work with partners to develop projects for FY22.

Pending Deliverables: Final reports for completed Community Projects.

## Lab Competency Documentation for 2021

The Estuary Program utilizes laboratories that have met the certification requirements for their technical area. During FY21, the following labs will be used:

For Water Quality: We primarily use two labs, BC Laboratories and County of SLO Public Health Laboratory. Both maintained Environmental Laboratory Accreditation Program (ELAP) certification during this time period. The certification for BC Laboratories is available [online](#). Documentation for the county lab is provided with the deliverables for this semi-annual report.

For Bioassessment: The Estuary Program uses one lab, EcoAnalysts, Inc., for analysis of our bioassessment samples. Bioassessment labs certify their individual taxonomists rather than the lab as a whole. They provided their taxonomists' certifications. Any of the taxonomists listed could be assigned to our projects. The list of taxonomists' certifications are provided with the deliverables for this semi-annual report.

For Bay Nutrient Analysis: The University of California, Santa Barbara (UCSB) Marine Sciences Laboratory will be conducting analysis of Morro Bay waters for nutrients as part of the Coastal Watersheds Grant that will be occurring over the next two years. Although the laboratory is not ELAP certified, it undergoes similar steps to ensure data quality. Their detailed QA manual was provided and reviewed by Estuary Program staff, and the lab's QA activities were deemed sufficient to ensure data quality.

## Budget Overview

Table 1: Costs expended during this semi-annual report period (October 1, 2020 through March 31, 2021) and cumulative since the beginning of the grant in October 2016.

Category	Subcategory	FY21 Period 1 320 Funds	FY21 Period 1 Cash Match	FY21 Period 1 TOTAL	Cumulative 320 Funds	Cumulative Cash Match	Cumulative TOTAL
Personnel	Salaries	\$197,967	\$2,321	\$200,288	\$1,618,655	\$85,800	\$1,704,455
	Fringe	\$12,319	\$1,398	\$13,717	\$146,544	\$2,762	\$149,306
	Management Conference	\$0	\$0	\$0	\$0	\$0	\$0
	<i>Subtotal</i>	\$210,286	\$3,719	\$214,005	\$1,765,199	\$88,562	\$1,853,761
Travel		\$179	\$0	\$179	\$30,508	\$0	\$30,508
Supplies	Computers, software	\$298	\$0	\$298	\$7,104	\$79	\$7,183
	Vehicle maintenance, fuel	\$979	\$0	\$979	\$6,057	\$0	\$6,057
	Monitoring supplies	\$5,344	\$64	\$5,408	\$38,498	\$1,879	\$40,377
	Misc. office supplies	\$642	\$0	\$642	\$28,006	\$0	\$28,006
	Rent	\$28,992	\$0	\$28,992	\$246,621	\$0	\$246,621
	Utilities	\$1,425	\$0	\$1,425	\$13,298	\$0	\$13,298
	<i>Subtotal</i>	\$37,680	\$64	\$37,744	\$370,092	\$1,958	\$372,050
Contractual	Audit/Taxes/Accounting	\$10,495	\$3,178	\$13,673	\$63,641	\$28,123	\$91,764
	Education and Outreach	\$4,134	\$13,827	\$17,961	\$81,645	\$108,662	\$190,307
	Monitoring and Research	\$3,745	\$11,691	\$15,436	\$181,327	\$63,718	\$245,045
	Restoration and Protection	\$40,749	\$8,798	\$49,547	\$145,787	\$332,955	\$478,742
	<i>Subtotal</i>	\$59,123	\$37,494	\$96,617	\$472,400	\$533,458	\$1,005,857
Other	Postage	\$171	\$0	\$171	\$4,762	\$1,165	\$5,927
	Copying, Printing	\$1,217	\$0	\$1,217	\$10,827	\$0	\$10,827
	Training, Prof. Dev.	\$656	\$0	\$656	\$6,286	\$0	\$6,286
	Telephone, Internet	\$2,448	\$0	\$2,448	\$18,541	\$0	\$18,541
	Repairs and Maintenance	\$1,210	\$0	\$1,210	\$10,469	\$879	\$11,348
	Insurance	\$3,064	\$0	\$3,064	\$12,599	\$0	\$12,599
	<i>Subtotal</i>	\$8,766	\$0	\$8,766	\$63,484	\$2,044	\$65,528
<b>TOTAL</b>	<b>\$316,034</b>	<b>\$41,277</b>	<b>\$357,311</b>	<b>\$2,671,175</b>	<b>\$626,022</b>	<b>\$3,297,196</b>	

Table 2: Costs by program area and task. Match numbers do not include in-kind match.

Program Area	Project	FY21 Period 1 320 Funds	FY21 Period 1 Match	FY21 Period 1 TOTAL	FY21 Overall TOTAL
Education and Outreach	Communications	\$644	\$0	\$644	\$644
	Community Projects	\$0	\$0	\$0	\$0
	Bay Friendly Recreation	\$746	\$1,248	\$1,994	\$1,994
	Education and Nature Center	\$823	\$0	\$823	\$823
	Community Volunteer Program	\$0	\$0	\$0	\$0
	State of the Bay	\$0	\$0	\$0	\$0
	Other E&O Tasks	\$1,921	\$12,579	\$14,500	\$14,500
	<i>Subtotal</i>	\$4,134	\$13,827	\$17,961	\$17,961
Monitoring and Research	Benthic Invertebrate Monitoring	\$0	\$0	\$0	\$0
	Stats	\$0	\$0	\$0	\$0
	Water Quality Monitoring	\$3,745	\$11,691	\$15,436	\$15,436
	Eelgrass Monitoring & Analysis	\$0	\$0	\$0	\$0
	<i>Subtotal</i>	\$3,745	\$11,691	\$15,436	\$15,436
Habitat Protection and Restoration	Restoration & Conservation Planning	\$8,534	\$0	\$8,534	\$8,534
	Eelgrass Restoration	\$0	\$329	\$329	\$329
	Chorro Creek Ecological Reserve	\$644	\$0	\$644	\$644
	Restoration Project Maintenance	\$0	\$0	\$0	\$0
	Other Restoration*	\$1,727	\$8,469	\$10,196	\$10,196
	Invasive Species Management	\$29,844	\$0	\$29,844	\$29,844
	<i>Subtotal</i>	\$40,749	\$8,798	\$49,547	\$49,547
Program Administration		\$0	\$0	\$0	\$0
	<b>TOTAL</b>	<b>\$48,628</b>	<b>\$34,316</b>	<b>\$82,944</b>	<b>\$82,944</b>