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## Semi-annual Report: April 2021 – September 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 second half of the fiscal year were \$353,420. As of September 31, we have expended 94% of our current 320 grant (started in FY17), with a remainder of approximately \$193,395. The Estuary Program has met 258% of its match requirement for the cumulative grant with cash match and estimated current in-kind contributions (at approximately \$8,248,431).

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 under this federal grant, 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. A conservation easement was completed on a 388-acre ranch in the upper Chorro Creek watershed with a combination of state funding, landowner donation, and Estuary Program Restoration Fund monies.

The conservation easement permanently protects the agricultural, wildlife habitat, and watershed conservation values provided by the property in its current undeveloped state. The easement prohibits any subdivision of the property and limits future residential development to a single residential home on a pre-identified 1-acre building envelope. The easement also prohibits high-intensity agricultural operations such as the establishment of vineyards, commercial greenhouses, and commercial feedlots.

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: Updated conserved land map

Activities Planned for Next Six Months: The Estuary Program plans to coordinate with the LCSLO to continue outreach to landowners and support new easements as opportunities arise.

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 and 2021 to assess restoration success.

ESA completed a monitoring effort at Chorro Creek Ecological Reserve (CCER) to assess elevation changes (erosion/deposition) through cross-sections, long-profile, and digital elevation model of the site. They also tracked project success of other project installations (e.g., willow baffles) after the 10-year storm event in January 2021. Land Conservancy of SLO also completed a California Rapid Assessment Monitoring of the CCER project in April to track a range of wetland function parameters since implementation. California Conservation Corps monitor plant installations at CCER once a quarter to meet permit requirements for success rates.

Tenera Environmental, Inc. completed eelgrass restoration site monitoring at 1, 3, and 6 months depending on individual sites and when sites were planted in Spring 2021.

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 final report to restoration funder (Pacific Marine Estuarine Fish Habitat Partnership). ESA

CCER Monitoring Report. Land Conservancy of SLO CRAM Monitoring Report. Tenera Environmental, Inc. Eelgrass Restoration Monitoring reports.

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

Pending deliverables: None.

## Eelgrass Restoration

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

Status: Ongoing task

Progress Toward Milestones: Eelgrass transplanting was completed at 13 sites during the previous reporting period and five additional sites during this reporting period (three subtidal and two intertidal). Post-restoration monitoring occurred at different intervals (e.g., one, three, and/or six months) depending on the site.

The Estuary Program completed the grant contract process for a new grant through Restore America's Estuaries Coastal Watershed Grant (CWG) to fund monitoring, research, and restoration for spring of 2021 and later monitoring. Funding from the USFWS for up to 5 years starting in 2020 is also secured to support restoration in 2022 and possibly beyond. Some funds for the Spring 2021 effort were also funded through the USFWS grant.

Work was conducted with support from contractor Tetra Tech to develop numeric targets for eelgrass restoration. These targets were incorporated into the Conservation Planning Initiative, to be completed in the next reporting period.

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

Deliverables: Activities documented in the Semi-annual report (see above). NEPORT Habitat submittal. PMP reports for grant funding for monitoring of 2020 restoration.

Problems Encountered: None.

Activities Planned for Next Six Months: Post-transplant monitoring will continue. Staff will communicate restoration results with project partners to support future research and restoration efforts.

Pending Deliverables: CDFW permit reports for 2021 restoration effort. USFWS reports for grant funding for 2021 restoration. CDFW permit application for 2022 restoration. 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: In FY21, efforts included completion of plantings and monitoring the site for plant survival. Additional time was spent on site to replace plant cages damaged during a January 2021 storm event. Monitoring was also completed by ESA and a report summarized the impacts of the storm on the project site. Although some areas experienced erosion, the project overall was very robust. Land Conservancy of SLO also completed a CRAM survey.

The California Conservation Corps is providing labor and materials for planting and irrigating the site under the California Coastal Conservancy grant. The California Department of Fish and Wildlife grant has closed. The project is currently coming in within 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 2021 storm to trigger the side channels. No new activation of the channels occurred during this reporting period.
- 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. There has been some reduction in the success of plantings but we are still meeting permit targets two years post planting.
- Fish entrapment: Side channels will be monitored during specific flows to assess the potential for fish stranding. No new activation of the channels occurred during this reporting period.
- Geomorphic conditions: Repeat cross-section and long-profile surveys of the side channels was conducted in spring 2021 with results in the ESA monitoring report.
- California Rapid Assessment Monitoring (CRAM): A CRAM survey was completed by the Land Conservancy of SLO to track wetland conditions over time.

Deliverables: Progress reports for SCC funding. ESA CCER Monitoring Report. Land Conservancy of SLO CRAM Monitoring Report.

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. Additional caging of existing plantings will occur in fall 2021. Plant success monitoring will continue under a State Coastal Conservancy grant through June 2022 and then through NEP funding for another year and a half. Post-project monitoring as required by the project permits will be conducted.

Pending Deliverables: Final project report.

## 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:

- Participation on the PMEP Steering Committee, which funds restoration projects and develops data resources for estuaries across the West Coast. Staff reviewed and supported development of a study to synthesize information on eelgrass restoration efforts.
- 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.
- Integrated Regional Water Management (IRWM) stakeholder meetings.
- Local invasive management efforts, including taking over project management from the Land Conservancy for the eradication of an invasive sea lavender in the Morro Bay salt marsh.
- Working with the Coastal San Luis RCD on monitoring results from iceplant removal on the Morro Bay sandspit.
- Developing measurable targets for creek flow to inform Conservation Planning Initiative.

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). [PMEP Final Eelgrass Synthesis Report](#).

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. Ice plant monitoring result summary.

## 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. With support from the Estuary Program, CSLRCD was awarded a state grant to implement a subset of these projects. 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.

Estuary Program staff supported the County of San Luis Obispo in a planning effort to improve the coastal access point at Pasadena Point in Los Osos. This access point is well used for launching kayaks and paddleboards from the beach. Because the access is soft sand, users have been walking over salt marsh habitat to avoid the sand. The County is looking to improve the original access area to protect the marsh habitat from trampling.

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 implement projects explained above. 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. Staff worked with State Parks and other partners to make progress on the construction plans, bidding, and contracting. Construction has been delayed due to internal State Parks processes and post-RFP negotiations with the selected contractor. State Parks anticipates that construction will begin in late October or early November 2021.

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: A state grant was awarded to conduct pikeminnow management for the next three years. Permit processing, project planning, and contracting was completed during this reporting period.

Deliverables: None.

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: Fish snorkel surveys and pikeminnow management work will occur in Fall 2021.

Pending Deliverables: Annual report for 2021 pikeminnow management efforts completed by Stillwater Sciences.

## 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 second half of FY21, the following occurred:

- As the COVID situation improved, staff were able to bring back long-time volunteers to conduct monitoring to support understanding of bay and creek health. Staff and volunteers were able to conduct the following monitoring in the second half of FY21: 42 monitoring trips for bay water quality, 82 for bacteria, and 110 for creek water quality.
- 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). Activities described in Semi-annual report (see above). [Bay Health memo for 2020](#). [Creek Health memo for 2020](#).

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: None.

Activities Planned for Next Six Months: Expansion of volunteer involvement is planned for the fall, assuming that the public health situation allows us to safely work with new volunteers. 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) 2021. 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 creek and bay water quality data.

Deliverables: Activities described in Semi-annual report (see above). [Bay Health Memo for 2020](#). [Creek Health Memo for 2020](#). 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, bioassessment, bacteria, and water quality data to share monitoring results.

Pending Deliverables: Sediment Report for 2020. Bay Health and Creek Health memos for WY 2021.

## 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 worked with the SWRCB on submittal of our 2020 and 2021 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. A draft QAPP was submitted to EPA in September, and staff are waiting for EPA's response. The Estuary Program received approval of the QAPP addendum addressing additional work under the Restore America's Estuaries Coastal Watershed Grants funding.

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 respond to EPA comments on the draft QAPP.

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: None.

## 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 are finalizing the 2020 eelgrass report. Cal Poly flew their drone in December 2020 to collect baywide imagery for creation of an eelgrass map. Analysis of the imagery was recently completed and the results are being analyzed and shared. The spring bed condition monitoring was conducted, and an increase in eelgrass presence was noted. Our Restore America's Estuaries Coastal Watersheds Grant is underway, with eelgrass mapping and water quality research occurring throughout the year. Cal Poly, with support from the NEP, will complete drone imagery in Spring 2021 and additional water quality monitoring in summer 2021. NEP staff also completed permanent plot eelgrass monitoring in May 2021 with Coastal Watershed grant funding.

Deliverables: Monitoring activities documented in the Semi-annual report (see above).

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 analyze the drone imagery to be collected by Cal Poly at the end of 2021 to create a baywide eelgrass extent map. Staff will coordinate with project partners to share our findings. Staff will continue conducting eelgrass monitoring and related water quality research within the Coastal Watershed grant.

Pending Deliverables: 2020 Morro Bay Eelgrass Report. CWG RAE grant final 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 marsh habitat. Staff worked with Cal Poly to complete the baywide eelgrass map from fall 2020, and

efforts are underway for the 2021 map. The Coastal Watersheds Grant, which began in spring 2021, funds Cal Poly and Estuary Program research, restoration, and monitoring efforts to better understand eelgrass and water quality conditions that help build coastal resiliency.

The Estuary Program also began supporting a neighboring watershed whose stakeholders are interested in creating a bioassessment monitoring effort. Estuary Program staff will mentor the group, including Cal Poly researchers and the City of San Luis Obispo, by providing trainings, creating a graduate student support position, and helping with planning for field work schedule and data management. This will expand the use of this assessment tool as well as provide data for comparison to our watershed. Regional comparative data provides useful context for Morro Bay data; in addition, the mentorship role of the Estuary Program supports existing partnerships and strengthens the reputation of the Estuary Program as a reliable provider of science in our region.

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.
- Cal Poly research on bay phytoplankton populations.
- 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).

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](#).

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, the city of San Luis Obispo, and Elkhorn Slough National Estuarine Research Reserve (NERR).

Pending Deliverables: 2020 eelgrass 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. 434 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 6,850 reads, not including subscribers. Updated the website to share program news, COVID-19 changes, and upcoming digital events.
- Conducted eleven presentations that reached 458 individuals. Most events have been conducted digitally since March 13, when local COVID-19 restrictions were put in place. A few outdoor field trips were scheduled when allowed by local COVID-19 guidelines.
- Continued to increase the number of followers on Facebook to 2,450 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 607 followers.
- Maintained an Instagram feed that currently has 2,423 followers.
- Seven news stories were published that covered Estuary Program-specific content and projects in the watershed. Most coverage was focused on the Estuary Program's ongoing efforts to restore eelgrass to Morro Bay and partner research efforts.
- Installed the new informational panels for Habitat Exhibit in the Morro Bay Estuary Nature Center.
- 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: Weekly blog posts. Social media statistics included in semiannual report. News stories posted to website.

## 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 Center re-opened on July 15, 2021. The content for our Estuary Science Kiosk, which can be accessed via the internet, had about 5,504 page views during the same time period and the Nature Center had 5,516 in-person visitors.
- 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 were printed in Spanish and English and shipped to all the Marine Protected Area Collaboratives statewide. They are available online in English at <https://www.mpacollaborative.org/project/mpa-coastal-explorer-guide-english-v2/> and in Spanish at <https://www.mpacollaborative.org/project/a-descubrir-areas-marinas-protegidas-guia-del-explorador-costero-de-california-2/>
- Morro Bay National Estuary Program staff also provided information, feedback, and other guidance for five 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 did not allow any visitors until the state lifted indoor COVID-19 restrictions on July 15, 2021. 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 microplastics 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.

Pending Deliverables: None.

## Nature Center Update

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

Status: Ongoing

Progress Toward Milestones: Three new informational panels for the large habitat mural on the Nature Center's south wall are now installed. 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 have begun work to transform it into a saltwater tank where a variety of estuarine species can be displayed for educational purposes.

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.

Problems Encountered: Due to an upcoming transition in Communications and Outreach staff, the Estuary Program anticipates that this task will be delayed during the next reported period.

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.
- Participated in ECOSLO's Eco Talks program as a co-presenter with the Marine Mammal Center of Morro Bay to discuss marine debris, toxics, and other pollutants and their effects on the watershed and native wildlife.
- 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.
- Partnered with Marine Protected Area Collaborative of San Luis Obispo, Marine Protected Area Collaborative of Monterey, and Statewide Marine Protected Area Collaborative, to design and write a grant for upcoming projects related to the health of marine protected area collaboratives.
- Assisted California State Parks staff with redesign of an estuary and eelgrass-focused exhibit that will be created and displayed at the Morro Bay Museum of Natural History.

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 second half of FY21, 33 dispensers were maintained. More than 200,000 bags were given away to pet owners. This number of bags prevents an estimated 49,000 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 initiated construction of a wetlands restoration project 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 began 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 developed a workplan and budget for FY22, both of which were approved by the Management Conference.

Deliverables: Semi-annual report for the first half of FY20. Minority Business Enterprises-Women Business Enterprises (MBE-WBE) submitted to EPA Region 9 Grants Office. FY22 Workplan and budget.

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 FY22 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 Coordinator and a Communications and Outreach Specialist 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 second 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 Spring 2021. Biannual Executive Committee reports. NEPORT reporting.

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.

Pending Deliverables: None.

## 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. Two project ideas were submitted for FY22, and staff will work with these partners present these ideas to the Management Conference for consideration.

The three existing projects are underway, with the following status updates:

- 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, the demonstration station is now built and is expected to be utilized immediately. Efforts are underway to develop the graphic design elements to accompany the curriculum for the demonstrator.

- Dr. Nikki Adams of Cal Poly implemented a microplastics monitoring effort in Morro Bay. She and her students conduct monthly monitoring of microplastics in the sediment in different regions of the bay. Education and outreach materials will be developed based on the work.
- The Coastal San Luis Resource Conservation District (CSLRCD) worked with volunteers to conduct habitat restoration for pollinators and monarchs in the Sweet Springs Nature Preserve. The educational signage for the site is in development. The CSLRCD plans to conduct field tours to share with the general public what they can do to enhance habitat for pollinators and monarchs.

Deliverables: Final Report for the Wildlife Camera project.

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 the EC and TAC to select and implement projects for FY22.

Pending Deliverables: Final reports for completed Community Projects.

## Lab Competency Documentation

The Estuary Program utilizes laboratories that have met the certification requirements for their technical area. During FY22, 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 available online.

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 is 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 (April 1, 2021 – September 30, 2021) and cumulative since the beginning of the grant in October 2016.

Category	Subcategory	FY21 Period 2 320 Funds	FY21 Period 2 Cash Match	FY21 Period 2 TOTAL	Cumulative 320 Funds	Cumulative Cash Match	Cumulative TOTAL
Personnel	Salaries	\$203,879	\$7,351	\$211,230	\$1,822,534	\$91,632	\$1,914,166
	Fringe	\$23,797	\$177	\$23,974	\$170,353	\$2,897	\$173,250
	Management Conference	\$0	\$0	\$0	\$0	\$0	\$0
	<i>Subtotal</i>	\$227,676	\$7,528	\$235,204	\$1,992,887	\$94,529	\$2,087,416
Travel		\$1,211	\$0	\$1,211	\$31,718	\$0	\$31,718
Supplies	Computers, software	\$1,246	\$0	\$1,246	\$8,350	\$79	\$8,429
	Vehicle maintenance, fuel	\$775	\$0	\$775	\$6,832	\$0	\$6,832
	Monitoring supplies	\$7,378	\$369	\$7,747	\$45,876	\$2,249	\$48,125
	Misc. office supplies	\$6,439	\$186	\$6,625	\$34,444	\$186	\$34,630
	Rent	\$28,139	\$0	\$28,139	\$274,760	\$0	\$274,760
	Utilities	\$1,307	\$0	\$1,307	\$14,605	\$0	\$14,605
	<i>Subtotal</i>	\$45,284	\$555	\$45,839	\$416,585	\$2,514	\$419,099
Contractual	Audit/Taxes/Accounting	\$4,608	\$4,339	\$8,947	\$68,249	\$31,732	\$99,981
	Education and Outreach	\$19,276	\$88,414	\$107,690	\$100,622	\$198,843	\$299,465
	Monitoring and Research	\$12,641	\$29,701	\$42,342	\$176,547	\$121,056	\$297,603
	Restoration and Protection	\$35,230	\$88,354	\$123,584	\$176,736	\$310,255	\$486,991
	<i>Subtotal</i>	\$71,755	\$210,808	\$282,563	\$522,154	\$661,886	\$1,184,040
Other	Postage	\$196	\$0	\$196	\$4,958	\$1,165	\$6,123
	Copying, Printing	\$1,198	\$0	\$1,198	\$12,025	\$0	\$12,025
	Training, Prof. Dev.	\$2,355	\$0	\$2,355	\$8,641	\$0	\$8,641
	Telephone, Internet	\$2,404	\$0	\$2,404	\$20,945	\$0	\$20,945
	Repairs and Maintenance	\$1,409	\$0	\$1,409	\$11,878	\$879	\$12,757
	Insurance	-\$68	\$0	-\$68	\$12,532	\$0	\$12,532
	<i>Subtotal</i>	\$7,494	\$0	\$7,494	\$70,979	\$2,044	\$73,023
	<b>TOTAL</b>	<b>\$353,420</b>	<b>\$218,891</b>	<b>\$572,311</b>	<b>\$3,002,605</b>	<b>\$760,973</b>	<b>\$3,763,578</b>

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

Program Area	Project	FY21 Period 2 320 Funds	FY21 Period 2 Match	FY21 Period 2 TOTAL	FY21 Overall TOTAL
Education and Outreach	Communications	\$2,400	\$0	\$2,400	\$3,044
	Community Projects	\$0	\$9,402	\$9,402	\$9,402
	Bay Friendly Recreation	\$275	\$219	\$494	\$2,488
	Education and Nature Center	\$5,186	\$2,913	\$8,099	\$8,922
	Community Volunteer Program	\$212	\$0	\$212	\$212
	State of the Bay	\$0	\$0	\$0	\$0
	Other E&O Tasks	\$11,203	\$75,880	\$87,083	\$101,583
	<i>Subtotal</i>	\$19,276	\$88,414	\$107,690	\$125,651
Monitoring and Research	Benthic Invertebrate Monitoring	\$0	\$7,400	\$7,400	\$7,400
	Stats	\$0	\$0	\$0	\$0
	Water Quality Monitoring	\$4,045	\$22,301	\$26,346	\$41,781
	Eelgrass Monitoring & Analysis	\$8,596	\$0	\$8,596	\$8,596
	<i>Subtotal</i>	\$12,641	\$29,701	\$42,342	\$57,777
Habitat Protection and Restoration	Restoration & Conservation Planning	\$31,277	\$0	\$31,277	\$39,811
	Eelgrass Restoration	\$0	\$186	\$186	\$515
	Chorro Creek Ecological Reserve	\$180	\$85,044	\$85,224	\$85,868
	Restoration Project Maintenance	\$2,000	\$0	\$2,000	\$2,000
	Other Restoration*	\$1,773	\$3,124	\$4,897	\$15,093
	Invasive Species Management	\$0	\$0	\$0	\$29,844
<i>Subtotal</i>	\$35,230	\$88,354	\$123,584	\$173,131	
Program Administration		\$0	\$0	\$0	\$0
	<b>TOTAL</b>	<b>\$67,147</b>	<b>\$206,469</b>	<b>\$273,616</b>	<b>\$356,559</b>