



Morro Bay National Estuary Program 320 Grant Semi-annual Report: October 2022 to March 2023

The Morro Bay National Estuary Program (Estuary Program) is moving forward on completing new and ongoing tasks in the Fiscal Year (FY) 2023 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 grant (Grant Number 98T25101) in the first half of the fiscal year were \$356,545. As of March 31, we have expended 60% of the 320 grant (started in FY22). The Estuary Program has met 245% of its match requirement for the cumulative grant with cash match and estimated current in-kind contributions (at approximately \$3,546,437).

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 continued to address the final Program Evaluation (PE) letter, which was completed at the end of FY20.

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.

The Estuary Program received a grant to implement Bipartisan Infrastructure Law (BIL) funding in January 2023. Some of the organization's work is funded by BIL but supported and implemented by staff funded through the Estuary Program's 320 grant. Thus, the status of BIL-funded efforts are included in this semi-annual report. Deliverables for efforts with project costs other than staff time directly funded by BIL will be reported in the BIL semi-annual report.

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:

In November 2022, The Estuary Program partnered with the Morro Bay Open Space Alliance (MBOSA) to take assignment over a conservation easement of a small open space parcel in Morro Bay. The parcel resides in a neighborhood area and is known as Cerrito Peak (Eagle Rock). The parcel, owned by the City of Morro Bay, is a natural open space hill with rock outcroppings and established trails for public use. Estuary Program staff will conduct periodic monitoring to ensure that the requirements of the easement are being met. The Estuary Program continues to work with The Land Conservancy of San Luis Obispo (LCSLO) to explore potential easement projects in the watershed. Staff time has been spent visiting

possible projects given the recent storm events and impact to lands in the Morro Bay watershed. A conservation easement floodplain area along lower Chorro Creek is currently being explored.

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: [2023 SOTB Habitat Map](#).

Activities Planned for Next Six Months: The Estuary Program plans to coordinate with the LCSLO and other partners 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 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 a project to remove a fish passage barrier and improve a water diversion. Data are submitted to Trout Unlimited on a regular basis to manage the flow diversion and comply with water rights.

The California Conservation Corps monitored success rates of plants installed at the Chorro Creek Ecological Reserve (CCER) once a quarter to meet permit requirements. Following the intense storms of early 2023, many plantings in the lower floodplain were lost. Additional monitoring and clean-up efforts are underway at CCER.

Tenera Environmental, Inc. completed eelgrass restoration site monitoring in spring 2022 at one, three, and six months after planting depending on individual sites and when sites were planted. No additional monitoring of eelgrass restoration sites is planned outside of bay-wide mapping of eelgrass.

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 meeting eelgrass restoration targets.

Problems Encountered: None.

Deliverables: Pennington Creek data submitted to the California Environmental Data Exchange Network ([CEDEN](#)) and shared with partners. Tenera Environmental Eelgrass Restoration Monitoring reports.

Activities Planned for Next Six Months: The Estuary Program plans to assess CCER as the winter storms continue. We will also work with partners to address any needed restoration maintenance.

Pending deliverables: None.

Chorro Creek Ecological Reserve Restoration Monitoring and Maintenance

Objective: Conduct monitoring and maintenance of the Chorro Creek Ecological Reserve Restoration Project.

Status: Ongoing task

Progress Toward Milestones: In the first half of FY23, efforts included monitoring the site for plant survival. Additional time was spent on site to replace plant cages damaged during storm events or plants that had outgrown cages. The California Conservation Corps provided labor and materials for plant cages and irrigating the site.

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 were monitored with field cameras and temperature loggers on site. Video of the site during the January 2023 storms is available here on [MBNEP's recent blog post](#).
- Success of native plantings: Revegetation efforts are being monitored through direct counting of plantings quarterly to track success three to five years post-implementation. There has been some reduction in planting survival, but the permit-required survival targets have been met through November 2022, three years after planting.
- Fish entrapment: Side channels will be monitored during specific flows to assess the potential for fish stranding. No known fish strandings have occurred so far.

Deliverables: None.

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: Plantings meet target survival requirements at three years post planting (November 2022). Plant success monitoring will continue through Estuary Program funding for another year. Post-project monitoring as required by the project permits has now been completed.

Pending Deliverables: None.

Other Restoration Efforts

Objective: Engage in other restoration efforts that arise to 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:

- San Luis Obispo (SLO) County and Caltrans effort to replace the bridge over Los Osos Creek on South Bay Boulevard.
- Collaboration and support of Coastal San Luis Resource Conservation District (CSLRCD) restoration of their Los Osos Wetland project.
- Caltrans and SLO County effort to address two fish passage barriers on San Luisito Creek.
- Integrated Regional Water Management (IRWM) stakeholder meetings.
- Local invasive management efforts, including managing eradication of an invasive sea lavender in the estuary and recent collaboration with SLO County on Arundo management.
- Working with the CSLRCD on monitoring results from ice plant removal on the Morro Bay sandspit.
- Worked with State Parks and Cal Poly to map sandspit vegetation to inform future ice plant removal on the sandspit.

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).

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.

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 remain informed on Integrated Regional Water Management (IRWM) efforts 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 CSLRCD to educate private landowners on conservation practices such as rotational grazing, keyline ploughing, etc. and identify potential projects. 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/sediment reduction projects sites on Army National Guard Base Camp San Luis Obispo (Camp SLO) property to address sediment sources to Chorro Creek. With increased coordination with

Camp SLO, the Estuary Program financially supported project development and full designs for another stormwater project at the facility along Calaveras Ave.

The Estuary Program partnered with the US Geological Survey (USGS) to develop a project to study tidal marsh habitats in the face of sea level rise. The Estuary Program also partnered with the San Luis Obispo Council of Governments (SLOCOG) on a transportation planning grant to study sea level rise impacts on South Bay Blvd. (connecting Morro Bay and Los Osos) and adjoining roads that ring the estuary. If funded, the grant would also support a bay-wide vulnerability model.

Permitting for the removal of invasive ice plant primarily on the City of Morro Bay's section of the sandspit and potentially other sensitive habitats is underway with anticipated treatments in fall/winter 2023.

Estuary Program staff also supported SLO County planning efforts to improve the coastal access point at Pasadena Point in Los Osos. This access point is popular for launching kayaks and paddleboards from the beach. Because the access is through 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. An initial grant was not funded but staff are considering tying in another adjacent property into a possible access and habitat improvement project in the future.

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 described above. The Estuary Program will also work with Camp SLO on stormwater implementation projects.

Aquatic Invasive Species Management

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

Status: Ongoing

Progress Toward Milestones: The first year of a three-year state grant was begun in fall 2021 and continued in fall 2022 to conduct pikeminnow management. Permit processing, project planning, implementation (management in creek and reservoir), and reporting were completed. Planning for snorkel monitoring are underway for the fall 2023 pikeminnow management work.

Deliverables: Annual report for 2022 pikeminnow management efforts completed by Stillwater Sciences.

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: The California Conservation Corps and a contractor will be conducting pikeminnow management efforts in fall 2023.

Pending Deliverables: Annual report for 2023 pikeminnow management efforts.

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 FY23, the following occurred:

- Staff continued to work with long-time volunteers and began training new volunteers to conduct monitoring to support understanding of bay and creek health. Staff and volunteers were able to conduct the following monitoring in the first half of FY23: 54 monitoring trips for bay water quality, 99 for bacteria, and 145 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, Upper Los Osos Creek, Warden 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 continued its bacteria monitoring effort in partnership with the Cuesta College Biology Department. Cuesta students completed their fall 2022 semester of monitoring and began the spring 2023 semester work. The partnership continues the Estuary Program's long-running ambient bacteria data set while providing monitoring and research opportunities for community college students.
- Staff monitored sites watershed-wide for nutrients every other month to track long-term trends.
- Staff monitored water quality conditions monthly at three sites to assess impacts from agricultural land use.
- Staff maintained a network of water depth sensors to track flows year-round. Staff are coordinating the installation of additional sensors throughout the watershed to expand tracking of year-round flow conditions.

- Staff are developing a bay macroalgae monitoring protocol to track macroalgae abundance over time and space. This is particularly of interest due to the potential of macroalgae to crowd out eelgrass.
- Staff deployed continuous monitoring sensors to measure temperature, dissolved oxygen, pH, chlorophyll-a, and conductivity at watershed sites.
- Staff are planning for the spring bioassessment season, including site selection, landowner coordination, and staff and volunteer training.

Deliverables: A quality dataset that meets the parameters outlined in the Quality Assurance Project Plan (QAPP). Activities described in Semi-annual report (see above). [Sediment monitoring report for 2020 and 2021](#).

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: The Estuary Program plans to conduct the following types of monitoring: bioassessment, creek water quality (including bimonthly nutrient monitoring, monthly agricultural site monitoring, and toxicity monitoring), creek and bay bacteria, bay water quality, seeps water quality, stream profiling, and streamflow monitoring. Staff will complete installation of additional water depth sensors throughout the watershed.

Pending Deliverables: Creek and Bay Health memos for Water Year (WY) 2022. Bioassessment memo for 2022.

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, researchers, regulators, 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 on creek and bay water quality data.

Deliverables: Activities described in Semi-annual report (see above). [Sediment Report for 2020 and 2021](#). Example monthly bacteria memo.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities conducted under this task involved analyzing 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 2022. Creek and Bay Health memos for WY 2022. Bioassessment memo for 2022.

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 and submitting 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 bioassessment and water quality 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 continue to manage data and work with the SWRCB to upload data for WY 2022 to CEDEN.

Pending Deliverables: Submittal of WY 2022 data to CEDEN.

Monitoring Program Quality Assurance

Objective: Update and submit a Quality Assurance Project Plan (QAPP), work with reviewers to approve document, 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. Staff completed an update for 2023, which was approved by EPA in early 2023. The QAPP was modified to incorporate monitoring projects conducted under the BIL funding agreement. A QAPP addendum was developed and submitted to EPA for review for toxicity monitoring planned for this year with BIL 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 begin QAPP update for 2024.

Pending Deliverables: QAPP addendum for 2023.

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 Los Osos Water Reclamation Facility. The Estuary Program conducted monitoring for a project on Pennington Creek to assess the impacts of a water diversion improvement project. Staff also conducted monitoring of eelgrass in the bay. Staff managed a contract to monitor stormwater runoff following installation of bioswales at the State Park Marina parking lot to determine the effectiveness of the project at reducing contamination from the parking lot reaching 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 collect and share Pennington Creek flow data with Trout Unlimited. Staff will coordinate with California Polytechnic State University, San Luis Obispo (Cal Poly) researchers on future monitoring and potential publications. Reporting and monitoring for the State Park Marina parking lot stormwater monitoring will be completed. 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 completed the 2021 eelgrass report and shared it with partners. Cal Poly flew their drone in December 2022 and January 2023 to collect bay wide imagery for creation of an eelgrass map. Planning is underway for the 2023 mapping efforts, which will include sonar and drone surveys to create a bay wide map of subtidal and intertidal eelgrass. Our Restore America's Estuaries (RAE) Coastal Watersheds Grant (CWG) is now complete, with water quality research and analysis finalized. Annual fall permanent transect monitoring was conducted at set sites around the estuary to collect metrics of eelgrass health. Staff are developing a macroalgae monitoring protocol to track its presence throughout the bay and how it changes over time, to be implemented in spring 2023.

Deliverables: Monitoring activities documented in the Semi-annual report (see above). RAE CWG semi-annual reports and final report. [2021 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 and monitoring strategies and goals.

Problems Encountered: None.

Activities Planned for Next Six Months: Staff will conduct ground truthing for the spring sonar and drone eelgrass map. Staff will conduct spring monitoring of eelgrass health.

Pending Deliverables: 2022 Morro Bay Eelgrass Report. Bay wide eelgrass map for 2023.

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, California Department of Fish & Wildlife (CDFW), the National Oceanographic and Atmospheric Administration (NOAA), Cuesta College, the Army Corps of Engineers (ACOE), the city of Morro Bay, and other project partners to research bay eelgrass and related water quality issues. Staff sought results of research efforts in Morro Bay and other areas on the west coast related to nutrients, macroalgae, 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. Work began on a project with USGS to study impacts to the tidal marsh by tracking sedimentation and water levels. Staff worked with Cal Poly to ground truth conditions on the ground for drone imagery collected in December 2022 and January 2023. The Coastal Watersheds Grant, which began in spring 2021, funded Cal Poly and Estuary Program research, restoration, and monitoring efforts to better understand eelgrass and water quality conditions that help build coastal resiliency. The project has wrapped up and staff hosted a webinar to share results and discuss future steps.

The Estuary Program has coordinated with Cal Poly on numerous ongoing monitoring efforts, including bay nutrient monitoring, Olympia oyster research, microplastic research, and phytoplankton monitoring.

The Estuary Program continued supporting a neighboring watershed whose stakeholders are working to create a bioassessment monitoring effort. Estuary Program staff helped guide the group's bioassessment monitoring in 2022, conducted by Cal Poly students in partnership with the city of San Luis Obispo. Staff are coordinating with project partners to prepare for the 2023 monitoring season.

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

- USGS tidal marsh elevation and plant species monitoring to help assess future impacts from sea level rise (SLR).
- Cal Poly research into the impact of crabs on eelgrass.
- Cal Poly research on the impact of brant grazing on eelgrass.
- Cal Poly research on marine mammal relationships with eelgrass.
- Cal Poly research on microplastics in Morro Bay.
- Cal Poly research on Olympia oysters in the bay.
- Cal Poly research on bay nutrient levels.
- 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 and water quality 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 and shared on the CeNCOOS web portal for the [front bay](#) and [back bay](#). RAE CWG final report. [2021 eelgrass reporting, including a baywide eelgrass map](#).

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: Staff will coordinate with Cal Poly and Cuesta on ongoing research efforts. Staff will work with USGS staff on salt marsh monitoring.

Pending Deliverables: 2022 eelgrass report.

State of the Bay Analysis and Reporting

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

Status: Ongoing

Progress Towards Milestones: Estuary Program staff gathered data and completed analysis for the 2023 State of the Bay (SOTB) report card. Staff compiled all report content for print and online versions and worked with partners to provide review. Staff compiled additional content for inclusion in the online version of the report.

Deliverables: [2023 State of the Bay report, printed version](#). [2023 State of the Bay report, online version](#).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Conducting analysis for the report card directly supports the task outcome of sharing the results of monitoring by the Estuary Program and its partners, with the goal of increasing education on nonpoint source pollution, climate change, restoration, etc.

Problems Encountered: None.

Activities Planned for Next Six Months: The Estuary Program plans to share report results with the community and partners.

Pending Deliverables: None.

Public Participation, Education and Outreach

Communications

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

Status: Ongoing

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

- Created regular blog posts that were shared via email, website, and social media. 536 subscribers receive the blog via email each week. The blog is posted on Facebook and corresponding content is posted to Instagram and LinkedIn when appropriate for the platforms. Popular blog posts have as many as 2,500 reads, not including subscribers.
- Updated the website to share program news and upcoming events.
- Continued to increase the number of followers on Facebook to 2,537 users. Utilized two-way communication with these users, such as recognition of rain gauge network and cleanup participants.
- Maintained an Instagram feed for the Estuary Program that currently has 2,781 followers, and a Mutts for the Bay Instagram account that currently has 83 followers.
- Maintained a LinkedIn account with 315 followers.
- Three news stories were published that covered Estuary Program-specific content and projects in the watershed.
- Updated the program website to refresh current content. Worked on updating various webpages with new content and projects completed. In the first half of FY23, the program website had 37,656 visits.

- Provided information on stormwater and floodplains during the local rainstorms, promoted Estuary Program events, and posted a social media campaign in collaboration with California State Parks about Elephant Seal awareness.

Deliverables: Blog posts published typically on a weekly basis at 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.

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 as well as planning a seasonal newsletter encapsulating the Estuary Programs efforts each month, including blog posts, published reports, upcoming events, and stewardship tips.

Pending Deliverables: Regular 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 and had 6,782 visitors during the first half of FY23.
- Hosted two field trips in the Nature Center focusing on watersheds and pollution for 32 students from Camp Ocean Pines.
- Hosted four field trips in various locations around the watershed for school groups, youth organizations, and a group from Kings County, reaching 95 students. Topics included watershed health, careers in the environmental field, local wildlife, and estuarine habitats.
- Presented to four Cuesta College oceanography classes about salinity, dissolved oxygen, and nutrients that reached 74 students.
- Continued distribution of marine education focused coloring book and activity book available in English and Spanish. Project is a partnership of SLO and Monterey Marine Protected Area (MPA) Collaboratives. 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-marinhas-protegidas-guia-del-explorador-costero-de-california-2/>

- Formalized an education partnership with Camp Ocean Pines in Cambria. Trained seven of their naturalist instructors about the Morro Bay estuary and provided curriculum ideas for their students.
- Established an educational partnership with Cal Poly to support a new four-unit course at the university in the College of Science and Mathematics called “Environmental Literacy: An Integrative STEM Approach.” This partnership will also support the creation of professional development teacher training workshops.
- Developed and coordinated a Project WET training in partnership with Project WET, the Department of Water Resources, Cal Poly, and California State Parks. This event was postponed until May 2023 due to unsafe weather conditions.
- Established a partnership to host a Project WILD training in Morro Bay in June 2023.
- Developed an educational partnership with California State Park Interpreters at the Morro Bay State Park Natural History Museum and the SLO Coastal district.

Deliverables: 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: Postponed events and fieldtrips due to storms and flooding.

Activities Planned for Next Six Months: The Estuary Program plans to continue the Education tasks outlined above and host a Project WET and a Project WILD training.

Pending Deliverables: None.

Nature Center Update

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

Status: Ongoing

Progress Toward Milestones: Staff are working on a steelhead trout interactive exhibit to be placed in the Nature Center. The saltwater tank in the Nature Center is now populated with species native to the Morro Bay estuary. Estuary Program staff are planning a redesign of the space for new exhibits. Staff conducted ongoing maintenance to keep the Nature Center functioning smoothly.

Deliverables: Visitor statistics for the Nature Center (see above in the Communications section).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The maintenance and 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: None.

Activities Planned for Next Six Months: The Estuary Program will develop content to update additional exhibits in the Nature Center. The Estuary Program will continue to provide field trips and educational programming in the Nature Center.

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:

- Continued discussions on partnering with ECOSLO to plan adopt-a-spot cleanups across San Luis Obispo County. ECOSLO will create and distribute cleanup kits to help 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. The effort is expected to launch in summer/fall 2023.
- The Estuary Program's Community Engagement Coordinator serves as a co-chair for the SLO MPA Collaborative. As the Bay Foundation acts as the applicant and grant recipient for the Collaborative, taking on this role is a logical step for the organization.
- Worked with the SLO MPA Collaborative to develop and install interpretive and MPA regulatory signs for SLO County with funding from the Resource Legacy Fund.
- Worked with the SLO MPA Collaborative on new interpretive panels for the Morro Bay State Park Natural History Museum. These will be completed and installed in the summer.
- Tabled at the Wildlife Symposium for the California Central Coast Chapter of the Wildlife Society and shared Estuary Program materials and projects with 75 attendees.

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: The Adopt-a-Spot cleanup partnership with ECOSLO has been delayed due to the storms and flooding. We will be assessing implementation of the cleanups for summer or fall 2023.

Activities Planned for Next Six Months: Staff will work with ECOSLO to launch and manage the Los Osos and Morro Bay groups of adopt-a-spot cleanup crews. Staff will also continue to co-chair the SLO MPA Collaborative and to host and attend community event opportunities as they arise.

Pending Deliverables: Cleanup statistics. Event participation statistics.

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 FY23, 34 dispensers were maintained. More than 150,000 bags were given away to pet owners. These bags prevented an estimated 40,000 pounds of pet waste from reaching the estuary. The Estuary Program continued its Mutts for the Bay Instagram account (see above in Communications). The Estuary Program continued its partnership with a local humane society animal shelter, Woods Humane Society. Staff tabled at the Woods Humane Society Fall Festival that had approximately 800 community members attend and shared information about the Mutts for the Bay Program and how to be an eco-friendly dog-owner. Staff renewed a partnership with the San Luis Obispo County Stormwater Program to fund the bags in all the Los Osos dispensers. An interactive map of dispenser locations is continuously updated with new sponsors at <https://www.mbnep.org/mutts-for-the-bay/>.

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 management and coordination activities to maintain the program. Staff will also continue to develop outreach materials and connect with pet owners. The partnership with Woods Humane Society will be further developed to bring Mutts for the Bay curriculum and materials to students across SLO County through the Woods Humane Society educational programming. Estuary Program staff will seek more community outreach opportunities such as tabling at pet-focused events and farmers markets. Staff are working to place another pet waste bag dispenser at the Baywood Pier in Los Osos.

Pending Deliverables: Reporting on the private foundation grant. Outreach materials. Statistics on students reached as applicable.

State of the Bay Events

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

Status: New

Progress Toward Milestones: Every three years, the Estuary Program hosts a SOTB event series to share knowledge of the health of the estuary and watershed. Report design was completed, and reports were printed. Posters were designed and manufactured. Events have been planned to take place throughout the spring. The following events have already taken place with the following reach:

- The Estuary Program was the official nonprofit of the Morro Bay Triathlon and had a table at the finish line talking about State of the Bay, the Estuary Program, and bay water quality. This event reached over 780 racers and spectators.
- Following the Morro Bay Triathlon, the Estuary Program held a cleanup event with seven participants to clean up the beach area around the finish line.
- Staff tabled at the Downtown San Luis Obispo Farmers Market, reaching 50 people.
- At the Clean Water Talk and Beer Launch, the Estuary Program partnered with a local Morro Bay microbrewery, Three Stacks and a Rock, to create an estuary-themed beer. Estuary Program staff gave two talks about eelgrass, water quality, and shellfish in the bay. This event reached approximately 60 people.
- Staff tabled at the Morro Bay Farmers Market, reaching 70 people.

Deliverables: [2023 SOTB report, online](#). [2023 SOTB report, print](#). [SOTB advertisements](#).

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities under this task directly support the outcome of sharing the results of monitoring by the Estuary Program and its partners, with the goal of increasing education on nonpoint source pollution, restoration, etc.

Problems Encountered: None.

Activities Planned for Next Six Months: Staff will implement additional SOTB events throughout the spring.

Pending Deliverables: SOTB event statistics.

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, eelgrass efforts, water quality monitoring, data analysis, pikeminnow management, and technical plans. The TAC also assisted with review of SOTB report content. Membership was updated for the EC and TACs.

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 conducted eelgrass monitoring and restoration under a USFWS grant awarded through the Pacific Marine and Estuarine Fish Habitat Partnership (PMEP).
- Staff served on the PMEP Science and Data Committee and attended two meetings during this time period.

- The CSLRCD completed construction of a wetland restoration project at their Los Osos Wetland property. The Estuary Program was a 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 publicly-accessible app.
- The Estuary Program partnered with Cal Poly on a Coastal Watersheds Grant, which concluded in early 2023. The work focused on eelgrass monitoring and restoration as well as research on water quality impacts of eelgrass.
- The Estuary Program partnered with USGS to begin implementing 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.
- Staff served on the California Coastal Dune Science Network Advisory Team. The organization strives to expand understanding of coastal dunes and their role in building a resilient, transitional, and adaptive coast for the future.
- Staff served on the Western Society of Naturalists (WSN) Diversity, Inclusion, and Equity committee.

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. Staff will continue monitoring efforts in partnership with USGS to support modeling and planning to address the impact of sea level rise on the tidal marsh.

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 and BIL grants and managed numerous outside grants to the Estuary Program to support our project work. Staff managed the workplan and budget for FY23. Staff are beginning development of a workplan and budget for FY24 for the 320 funding. Staff also completed contracting and began implementation of the FY22 and FY23 BIL funding

workplan, which was approved by the Management Conference. Staff worked in conjunction with an outside accounting firm to conduct a single audit for FY22. The Executive Director attended the spring Association of National Estuary Programs (ANEP) meeting in Washington, D.C. in March.

Deliverables: Minority Business Enterprises-Women Business Enterprises (MBE-WBE) submitted to EPA Region 9 Grants Office. Semi-annual report for FY22 funding.

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 continue to implement the FY23 Workplan. Staff will develop the FY24 workplan and budget.

Pending Deliverables: Annual FFR and MBE-WBE. FY24 workplan.

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. COVID-19 protocols were regularly reviewed and updated based on new state and federal guidance as well as changes in local restrictions. The Estuary Program hired a part-time Environmental Planning Intern and three full-time positions under BIL: a Monitoring Coordinator, an Education & Outreach Specialist, and a Restoration Coordinator.

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 FY23 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 Management Plan 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. Conducted analysis of status of CCMP Action Plans to develop a “dashboard” with implementation status for the public.

Deliverables: Semi-annual report to EPA submitted Fall 2022. 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.

Pending Deliverables: None.

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: Ongoing Community Projects are underway, with staff working with partners to complete the efforts. Staff worked with two applicants to develop projects for FY23. Staff gathered TAC feedback on the proposed projects, and the Management Committee approved two projects for funding in FY23. Contracts have been issued and both projects have commenced. The Estuary Program is working with a Cal Poly professor to study Morro Bay phytoplankton and with the Los Osos Community Services District to address trash management in Los Osos.

The Morro Bay Harbor Department Spill Response Program project was completed at the end of 2023 and the final report is under development. The Harbor Department purchased approximately a four-year supply of oil absorbent pads for an exchange program with local boaters. These are being distributed along with Estuary Program Clean Boating educational materials.

Staff are working with partners to develop projects for FY24.

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 the EC and TAC to review and approve projects for FY24.

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 FY23, the following labs were used:

For Water Quality: We primarily use two labs, Pace Analytical (formerly BC Laboratories) and County of SLO Public Health Laboratory. Both maintained Environmental Laboratory Accreditation Program (ELAP) certification during this time period. The certification for Pace Analytical is available [online](#). Documentation for the county lab is [available online](#). Note that the state has been slow to update the certification status online. Staff contacted the labs to confirm that their certifications are still current.

For Bioassessment: The Estuary Program uses one lab, EcoAnalysts, Inc., for analysis of bioassessment samples. Bioassessment labs certify their individual taxonomists rather than the lab as a whole. They provided their taxonomists' certifications. Any of the lab's 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. 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, 2022 – March 31, 2023) and cumulative since the beginning of the grant in October 2021.

Category	Subcategory	FY23 Period 1	FY23 Period 1	FY23 Period 1	Cumulative	Cumulative	Cumulative
		320 Funds	Cash Match	TOTAL	320 Funds	Cash Match	TOTAL
Personnel	Salaries	\$232,521	\$5,352	\$237,873	\$599,419	\$19,402	\$618,821
	Fringe	\$25,842	\$132	\$25,974	\$59,872	\$430	\$60,302
	Management Conference	\$0	\$0	\$0	\$0	\$0	\$0
	<i>Subtotal</i>	\$258,363	\$5,484	\$263,847	\$659,291	\$19,832	\$679,123
Travel	<i>(category includes local mileage)</i>	\$7,904	\$0	\$7,904	\$9,348	\$0	\$9,348
Supplies	Software	\$508	\$0	\$508	\$2,206	\$0	\$2,206
	Monitoring supplies	\$9,237	\$0	\$9,237	\$16,160	\$11,138	\$27,298
	Misc. office supplies, computers	\$8,434	\$0	\$8,434	\$11,588	\$0	\$11,588
	<i>Subtotal</i>	\$18,179	\$0	\$18,179	\$29,954	\$11,138	\$41,092
Contractual	Audit/Taxes/Accounting/Fees	\$2,543	\$2,848	\$5,391	\$17,200	\$10,358	\$27,558
	Education and Outreach	\$14,360	\$11,294	\$25,654	\$26,033	\$11,981	\$38,014
	Monitoring and Research	\$3,194	\$19,451	\$22,645	\$9,165	\$39,700	\$48,865
	Restoration and Protection	\$9,572	\$101,142	\$110,714	\$16,444	\$996,663	\$1,013,107
	<i>Subtotal</i>	\$29,669	\$134,735	\$164,404	\$68,842	\$1,058,702	\$1,127,544
Other	Rent	\$28,992	\$0	\$28,992	\$69,128	\$0	\$69,128
	Utilities	\$1,318	\$0	\$1,318	\$3,328	\$0	\$3,328
	Postage	\$158	\$0	\$158	\$359	\$0	\$359
	Copying, Printing	\$1,121	\$0	\$1,121	\$2,618	\$0	\$2,618
	Training, Prof. Dev.	\$1,020	\$0	\$1,020	\$3,039	\$0	\$3,039
	Telephone, Internet	\$2,482	\$0	\$2,482	\$5,904	\$0	\$5,904
	Repairs and Maintenance	\$2,864	\$0	\$2,864	\$9,853	\$0	\$9,853
	Insurance	\$3,894	\$0	\$3,894	\$3,894	\$0	\$3,894
	Vehicle maintenance, fuel	\$581	\$0	\$581	\$3,589	\$0	\$3,589
	Community Projects	\$0	\$2,757	\$2,757	\$0	\$12,555	\$12,555
	<i>Subtotal</i>	\$42,430	\$2,757	\$45,187	\$101,712	\$12,555	\$114,267
	TOTAL	\$356,545	\$142,976	\$499,521	\$869,147	\$1,102,227	\$1,971,374

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

Program Area	Project	FY23 Period I 320 Funds	FY23 Period I Match	FY23 Period I TOTAL	FY23 Overall TOTAL
Education and Outreach	Communications	\$280	\$0	\$280	\$280
	Bay Friendly Recreation	\$583	\$0	\$583	\$583
	Education and Nature Center	\$764	\$0	\$764	\$764
	Community Volunteer Program	\$0	\$0	\$0	\$0
	State of the Bay	\$11,777	\$0	\$11,777	\$11,777
	Mutts for the Bay	\$0	\$11,294	\$11,294	\$11,294
	Other E&O Tasks	\$956	\$0	\$956	\$956
Monitoring and Research	<i>Subtotal</i>	\$14,360	\$11,294	\$25,654	\$25,654
	Benthic Invertebrate Monitoring	\$765	\$0	\$765	\$765
	Stats	\$0	\$0	\$0	\$0
	Water Quality Monitoring	\$2,429	\$19,451	\$21,880	\$21,880
	Eelgrass Monitoring & Analysis	\$0	\$0	\$0	\$0
Habitat Protection and Restoration	<i>Subtotal</i>	\$3,194	\$19,451	\$22,645	\$22,645
	Restoration & Conservation Planning	\$0	\$0	\$0	\$0
	Eelgrass Restoration	\$0	\$0	\$0	\$0
	Chorro Creek Ecological Reserve	\$580	\$2,080	\$2,660	\$2,660
	Restoration Project Maintenance	\$0	\$0	\$0	\$0
	Other Restoration	\$6,693	\$0	\$6,693	\$6,693
	State Park Marina Stormwater Project	\$0	\$93,765	\$93,765	\$93,765
	Invasive Species Management	\$2,299	\$5,297	\$7,596	\$7,596
Program Administration	<i>Subtotal</i>	\$9,572	\$101,142	\$110,714	\$110,714
	Community Projects	\$0	\$3,871	\$3,871	\$3,871
	TOTAL	\$27,126	\$135,758	\$162,884	\$162,884