Morro Bay National Estuary Program

Infrastructure Investment and Jobs Act (IIJA)

Semi-Annual Report

October 1, 2024 to March 31, 2025
(FY25 Workplan)

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Contents

1. Introduction

The Morro Bay National Estuary Program (Estuary Program) is a locally driven, non-regulatory program established under Section 320 of the Clean Water Act (CWA) and further supported by the Protect and Restore America's Estuaries Act (PRAE Act). As one of 28 National Estuary Programs (NEPs) across the country, the Estuary Program works in partnership with federal, state, and local agencies, as well as community stakeholders, to protect and restore the health of Morro Bay and its watershed. The program operates under the guidance of its Comprehensive Conservation and Management Plan (CCMP) which serves as a strategic framework for addressing key water quality, habitat, and resource management challenges in the region.

Infrastructure Investment and Jobs Act of 2021

On November 15, 2021, the Infrastructure Investment and Jobs Act of 2021" (IIJA) (P.L. 117-58) was enacted. The law includes $50 billion to the EPA for water infrastructure, the single largest investment in water that the federal government has ever made. The IIJA provides $132 million in funding for the 28 longstanding NEPs for fiscal years 2022 through 2026. This funding will be evenly distributed to the NEPs, annually providing each with approximately $900,000 in IIJA funds. Funding through the IIJA provides a historic investment to the NEP, more than doubling the current base funding of $850,000 per program annually.

A core emphasis of the NEP IIJA funding is the acceleration of environmental and community restoration goals within the CCMPs. The substantial increase in NEP funding appropriated in the IIJA is expected to significantly enhance NEP capacities to do this work, as well as enable the NEPs to develop and strengthen partnerships necessary to make the most effective use of these new funds.

Morro Bay National Estuary Program (Estuary Program)

The Estuary Program is moving forward with implementing the FY24 IIJA Workplan. Our spending under the grant (Grant Number 4T-98T47301) as of March 31, 2025, was $1,943,788.

The Estuary Program requests EPA's continued participation on the Executive Committee and assistance with meeting relevant administrative and programmatic grant conditions. During this period, the Estuary Program continued to coordinate with EPA staff to get relevant IIJA administration information, particularly related to updated guidance with new administration priorities.

The following report summarizes IIJA activities and deliverables completed during the first period of FY25.

2. NEP IIJA Priorities

A core emphasis of IIJA funding is the acceleration of goals and actions in the Estuary Program's CCMP. The EPA has also specified goals to be addressed by IIJA-funded projects, including delivering environmental benefits to all communities and building the adaptive capacity of ecosystems. The following section summarizes progress made during this reporting period in alignment with these goals. All projects and activities are included in the Estuary Program's approved IIJA workplans.

Accelerate and more extensively implement the Estuary Program's CCMP

- Maintained and expanded staff capacity to implement IIJA projects and support CCMP goals.
- Advanced monitoring, habitat restoration, stormwater planning, and education tasks.
- Continued implementation of high-priority projects such as fish passage planning, invasive species treatment, stormwater improvements, and BMP installation.
- Finalized and began applying the Habitat Protection and Restoration Strategy to guide restoration and management activities throughout the watershed.

Ensure that benefits reach all communities

- Hosted field trips and educator workshops that engaged over 200 students and 22 regional educators, reaching both traditional classrooms and informal education networks.
- Partnered with local schools and environmental education organizations to expand curriculum offerings and access to science-based outdoor learning opportunities.
- Updated exhibits and public content at the Nature Center, including a new entrance design, interactive activities, and maintenance.
- Developed a public-facing StoryMap to explore CCMP progress.

Build the adaptive capacity of ecosystems and communities

- Supported stormwater improvement project planning at Camp San Luis Obispo and the CCC Center, including hydrologic studies, groundwater assessments, and a geotechnical survey.
- Advanced fish habitat projects, including barrier assessment, steelhead growth and movement monitoring, and bay fish assessments.
- Collaborated with USGS to develop sediment transport models and adaptation strategies to reduce coastal flooding and support long-term estuary habitat resilience.
- Conducted riparian fencing and BMP installation on working lands and supported conservation planning to enhance open space and floodplain function.
- Continued to support sensor systems to collect high-resolution water quality parameters to support the Central and Northern California Ocean Observing System

(CeNCOOS) program that will inform changing conditions and research/modelling in the bay.
- Coordinated with Cal Poly and Cuesta College to collect and analyze water quality, phytoplankton, and indicator bacteria data across the watershed and bay.
- Supported expanded monitoring of groundwater in Los Osos through well installation and rehabilitation to monitor water supplies.

These efforts collectively reflect the Estuary Program's commitment to advancing CCMP implementation with transparency, accountability, and in alignment with EPA's IIJA goals. A detailed summary of task level progress is included in the sections that follow.

3. Project updates

The following section provides updates to IIJA projects and activities by workplan task: capacity building, environmental monitoring and research, habitat restoration and planning, water infrastructure, and education and outreach.

Capacity Building

Capacity-1: Capacity Building
Project Status: ongoing
Objective: Increase and maintain staff capacity to support all programmatic areas including BIL administration and implementation.

Description: The addition of BIL funding requires additional staff capacity to administer and implement projects. Staff will support the administration of BIL funding, reporting, and grant/contract management. Additionally, staff will support restoration, monitoring, and education/outreach needs. This task includes increasing associated technology needs such as equipment and software to perform programmatic tasks. General monitoring and restoration equipment and supplies that can support multiple program efforts are included in this task. This activity also includes professional development training opportunities for staff.
Progress Towards Milestones: The Estuary Program successfully recruited and hired staff to build capacity to support the implementation of BIL projects. BIL funding supported a full-time Restoration Coordinator, Education & Outreach Specialist, and Monitoring Technician. Part-time positions supported by the BIL funding included one Monitoring Technician, Administrative Assistant, Planning Intern, and Planning Advisor. Additionally, several Estuary Program staff funded through the 320 grant contribute time towards implementing BIL projects.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: BIL-funded staff directly support BIL projects and implementation of the CCMP.
Problems Encountered: None.
Deliverables: None.

Activities Planned for the Next Six Months: The Estuary Program will continue to support staff positions.
Pending Deliverables: None.

Environmental Monitoring and Research

Monitoring-1: Tracking Bay Health
Project Status: ongoing
Objective: Collect high quality data set to support understanding of estuary health.

Description: A primary goal of the Estuary Program is to conduct monitoring to understand changing conditions. The program will continue tracking key environmental indicators, working with partners to develop and implement monitoring efforts, and collecting data related to future environmental impacts.
Progress Towards Milestones: Staff coordinated with Cal Poly on use of data generated by the Central and Northern California Ocean Observing System (CeNCOOS) sensor arrays in Morro Bay. Planning is underway to send sensors in for calibration and maintenance work. Staff recruited, trained, and coordinated Cuesta College students to conduct monitoring in the bay for indicator bacteria. The volunteers are collecting high quality bacteria data from the bay to support safe swimming and shellfish farming efforts. The community college student volunteers are at the same time gaining real-life field and lab skills that may help open doors to future career pathways. The indicator bacteria data is being shared via the California Environmental Data Exchange Network (CEDEN), a State Water Resources Control Board (SWRCB) data portal and with partners to facilitate resource management and support efforts to safeguard human health. The Estuary Program is coordinating with Cal Poly faculty and students to collect monthly nutrient samples from bay shoreline sites. To better understand bay tidal prism, a Cal Poly researcher installed a tide height sensor purchased with IIJA funding to provide data to further refine the existing tidal prism calculations for the bay. Staff are also partnering with a Cal Poly researcher on a phytoplankton monitoring project. The work includes collecting and identifying phytoplankton samples from the front and back bay, and samples underwent genetic analysis of sediment and water to assess phytoplankton communities. The phytoplankton data is under analysis. Staff purchased supplies to support monitoring efforts throughout the estuary.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities for this task involved collecting and sharing high quality data that increases understanding of the long-term trends in ambient water quality in the estuary, promotes safe swimming and aquaculture, and supports identification of projects to address bacteria and nutrient pollution.
Problems Encountered: None.
Deliverables: Example of monthly indicator bacteria memos shared with partners. Data for front bay and back bay sites available via CeNCOOS data dashboard. Activities as described in

semi-annual reports. Bay water quality data submitted to CEDEN for use in the State Water Resources Control Board (SWRCB) Integrated Report process to assess the status of impaired water bodies in the Morro Bay watershed.
Activities Planned for the Next Six Months: Continue data collection and coordination with partners. Continue submitting data to CEDEN. Compile Bay Health Memo for WY24.
Pending Deliverables: Data managed in an Access-based system for submittal to CEDEN. Monthly bacteria result memos. Bay Health Memo for WY24.

Monitoring-2: Tracking Creek Health

Project Status: ongoing
Objective: Collect high quality data to support our understanding of watershed creek health.

Description: A primary goal of the Estuary Program is to conduct monitoring to understand changing conditions. The program will continue tracking key environmental indicators, working with partners to develop and implement monitoring efforts, and collecting data related to future environmental impacts.
Progress Towards Milestones: Staff conducted monitoring to track key environmental indicators in the watershed. We worked with partners to collect and analyze data from water level sensors to expand our surface flow monitoring network throughout the watershed. Staff are now collecting data for the development of rating curves. A contract is underway to conduct additional analysis with the low flow data. Staff conducted water quality monitoring of agricultural impacted sites throughout the watershed, with a focus on analysis of nutrients. Staff implemented monitoring efforts, including coordination with the Central Coast Ambient Monitoring Program (CCAMP) and the Stream Pollution Trends Monitoring Program (SPoT) for sediment and water toxicity monitoring. Staff worked with Cuesta College volunteers to collect and analyze creek samples for indicator bacteria. Staff shared the bacterial indicator results on CEDEN and via monthly bacteria memos sent to partners, agencies, land managers, and landowners. Staff conducted expanded nutrient and water quality parameter monitoring. Staff conducted planning for spring bioassessment monitoring at ten sites. Although staff had planned to have a researcher conduct sediment impact monitoring as part of the bioassessment monitoring effort, the work was not able to be coordinated this year. Efforts are also underway to develop a pesticide monitoring effort in conjunction with existing toxicity and biossessment monitoring efforts. Staff have been coordinating with the CCRWQCB and the California Department of Pesticide Regulation to develop a monitoring effort. Staff purchased supplies to support monitoring efforts throughout the watershed.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities for this task involve working with partners to develop and implement monitoring efforts to increase understanding of the long-term trends in ambient water quality in the watershed.

Problems Encountered: Delay in the IIJA funding award have held up projects under this task. Wet season toxicity monitoring and sediment impact monitoring as part of bioassessment could not be conducted this year due to the uncertainty in the FY25 funding.
Deliverables: A quality data set that meets the parameters outlined in the Quality Assurance Project Plan (QAPP). Monthly indicator bacteria memo (see example). Creek water quality data submitted to CEDEN for use in the SWRCB Integrated Report process to assess the status of impaired water bodies in the Morro Bay watershed.
Activities Planned for the Next Six Months: Continue data collection. Submit data to CEDEN.
Pending Deliverables: Monthly bacteria memos. Data submittal to CEDEN. Bioassessment Memo for WY24. Creek Health Memo for WY24.

Monitoring-3: Eelgrass Monitoring and Research

Project Status: ongoing
Objective: Conduct eelgrass monitoring to determine distribution in the bay as well as bed health.

Description: Eelgrass is a valuable habitat type in Morro Bay, providing multiple benefits. It enhances water quality and water clarity, reduces erosion, and provides habitat for wildlife. Morro Bay's eelgrass has undergone rapid changes recently, with a steep decline in acreage from 2007 to 2017 and a rebound after that. Mapping and monitoring of eelgrass allows for tracking of bed health and indicates when there is a need for restoration efforts.
Progress Towards Milestones: The Estuary Program conducted initial planning and coordination for the baywide eelgrass map for spring 2025. Estuary Program staff conducted macroalgae monitoring. High resolution drone imagery was collected by Cal Poly in late 2024 and early 2025. Staff are partnering with Cal Poly to use this imagery with an automated model to map eelgrass. Staff continued a partnership with a Cuesta College professor to develop a project to analyze eelgrass prokaryote communities and the genetics of the slime mold that causes wasting disease to better understand how eelgrass supports the estuarine ecosystem.
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 of eelgrass stressors and dynamics. This improved understanding directly supports the outcome of development of eelgrass monitoring and restoration.
Problems Encountered: Delay in the IIJA funding award have held up projects under this task. The baywide eelgrass map for 2025 and the genetic analysis of prokaryote communities and wasting disease have not commenced this year as planned due to the uncertainty in the FY25 funding.
Deliverables: None.
Activities Planned for the Next Six Months: Creation of a baywide eelgrass mapping effort may take place in spring 2025 depending on IIJA funding. Macroalgae monitoring will occur in 2025.

Eelgrass prokaryote and slime mold genetic analysis work may be conducted, depending on the status of IIJA funding.
Pending Deliverables: 2025 bay-wide map of eelgrass in Morro Bay. 2024 Eelgrass Report.

Monitoring-4: Data Analysis and Management

Project Status: Ongoing
Objective: Analyze and maintain data in state-compatible format.

Description: The Estuary Program compiles and analyzes program-generated data to assess long-term trends and project-specific effects on water quality and other indicators of environmental quality. These analyses are shared with program partners, local landowners, and the public to help inform decision-making. Data must be available in the correct format for analysis and must be maintained in a data management system that allows for easy sharing of results.
Leads, Partners, and Roles: The lead is the Estuary Program, with partner support from the CCRWQB and SWRCB who as users of the data and provide input on data collection, analysis, and sharing.
Progress Towards Milestones: Staff coordinated with SWRCB CEDEN and CCRWQCB staff for support on data submittal to the CEDEN system for the Integrated Report process. Staff worked with an Access database contractor to implement updates to the data management system. Staff are analyzing the 2024 bioassessment data with the recently calculated CSCI scores for a bioassessment memo for 2024. Monitoring data was submitted to CEDEN to support the SWRCB Integrated Report for 2028.
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.
Deliverables: Data submittal to CEDEN.
Activities Planned for the Next Six Months: Continue to work with SWRCB on CEDEN updates.
Pending Deliverables: Bioassessment Memo for WY24.

Habitat Restoration and Protection

RESTORATION-1: Invasive Species Management

Project Status: Ongoing
Objective: Prioritize, manage, and implement invasive species management in the estuary and watershed.

Description: To protect sensitive habitats in the watershed, proactive management of invasive species is a key tool. The Estuary Program works with partners and landowners to map and treat invasives such as giant reed *(Arundo donax),* ice plant (*Carpobrotus)*, European sea lavender (*Limonium duriuscilum*), salt cedar (*Tamarisk ramosissima)*, cobweb bush (*Plechostachys serpyliflora)*, and purple pampas grass (*Cortaderia jubata).* Efforts also include support of weed management on the restored floodplain area of the Chorro Creek Ecological Reserve (CCER).
Progress Towards Milestones: A contractor surveyed and mapped *Arundo donax* and up to 19 other priority invasive species within the Chorro Creek watershed in spring 2024 and January 2025. Surveys were completed by foot and using drone surveys. Priority management areas were identified and staff are taking steps (e.g., permitting) to treat invasives. Army National Guard Base Camp San Luis Obispo (SLO) continued to implement their invasive species management plan focusing on cape ivy, tree of heaven, periwinkle, *Arundo*, and thistle in spring 2024 with partner funding. They treated a total of 38.6 acres of invasive species in spring 2023. Staff received a permit wavier from the California Coastal Commission to manage iceplant on the sandspit for five years starting in October 2023. Estuary Staff received additional funds for this project through USFWS Coastal Program. Iceplant treatment occurred in fall 2023 and January 2025. Additional hand pulling of iceplant near sensitive plant species and near the water's edge occurred in August and December 2024. In May 2024, the CCC corpsmembers managed weeds at CCER. Staff completed bi-monthly European sea lavender monitoring at target areas and a bay-wide monitoring effort in summer 2024.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Tasks are on schedule.
Problems Encountered: None.
Deliverables: Iceplant Monitoring Report for Coastal Commission, 2023-2024.
Activities Planned for the Next Six Months: Complete re-spray of any ice plant sprouts and new locations that weren't treated in 2023 and 2025. Complete post-project monitoring and reporting to the California Coastal Commission for Year 2 of iceplant management. Work with the CCC to complete weeding of the CCER floodplain restoration site.
Pending Deliverables: None.

RESTORATION-2: Habitat Restoration and Coastal Resilience Planning

Project Status: Ongoing
Objective: Further understanding of short- and long-term environmental impacts to estuary and watershed habitats. Implement restoration projects to improve habitat acreage or conditions.

Description: Shifts in environmental conditions pose a threat to sensitive estuary habitats. Monitoring, modeling, and planning efforts can help communities mitigate the impacts of these changes by supporting planning and designs of additional habitat restoration projects within the watershed and estuary.
Progress Towards Milestones: The Estuary Program partnered with the San Francisco Estuary Institute (SFEI) to conduct a historical ecology project. To date, SFEI has completed an extensive list of referenced documents and georeferenced maps in GIS. We have also met with an advisory committee on the draft habitat map and plan to engage local partners in May 2025. The Habitat Protection and Restoration Strategy was approved by the EPA. Match funding has also been provided to the CSLRCD for a State Coastal Conservancy (SCC) grant to model storm and flood vulnerability and adaptation measures along lower Chorro Creek. Staff are working with partners on baseline monitoring and planning for in-creek and floodplain habitat enhancement (e.g., low-tech process-based restoration) on Cal Poly's property on Walters Creek. The Estuary Program partnered with Trout Unlimited to complete conceptual designs and initial permitting efforts for the project. In September, a contractor completed geomorphic surveys at CCER to access change over time (accretion/erosion) and fish passage at the restoration site. Estuary Program and CDFW staff on considering what adaptation measures are needed to maintain fish passage at low flows.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Tasks are on schedule.
Problems Encountered: None.
Deliverables: None.
Activities Planned for the Next Six Months: A local advisory panel for the historical ecology study will occur in May 2025.
Pending Deliverables: To be determined as contracts are completed over the next six months.

RESTORATION-3: Fish Habitat Monitoring and Improvement

Project Status: Ongoing

Objective: Support research and monitoring to increase understanding of fish habitat conditions and populations. Prioritize and further implementation of fish passage barrier improvement projects.

Description: Much of the habitat restoration and protection efforts of the Estuary Program target the protection of sensitive species, including steelhead. Monitoring and management of fish populations and their habitats directly support this work.

Progress Towards Milestones: Estuary Staff received funds from the United States Fish and Wildlife Service (USFWS) Coastal Program to conduct bay fish monitoring. Two rounds of bay fish monitoring were conducted, one in fall 2023 and spring 2024. Various methodologies were employed to collect fish for identification and counting, before fish were returned to the water. A final summary report was completed in January 2025. Juvenile steelhead growth and tracking study was initiated in fall 2023 and has continued into spring 2025. Steelhead were tagged and antennae were installed to track fish movement in lower Chorro Creek. Data from the winter storms show steelhead moving from Chorro Creek into the estuary and back again. The contractor for the San Luisito Creek Fish Passage Barrier completed two conceptual design options. Although, given extensive utilities within the project footprint, the project is evaluating next steps with a summary report expected in summer 2025. Invasive pikeminnow were managed in Chorro Creek with the CCC's in October 2025.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Project tasks are so far on schedule.

Problems Encountered: None.

Deliverables: Morro Bay Estuary Fisheries Monitoring Report

Activities Planned for the Next Six Months: Complete a summary report of alternatives with description of utilities for the San Luisito Creek fish passage barrier. Develop contract and implement a reduced effort for pikeminnow management in fall 2025.

Pending Deliverables: Summary report on juvenile steelhead growth and habitat use survey in the Chorro Creek watershed. Revised report of conceptual alternatives and utility challenges for the San Luisito Creek fish passage barrier.

RESTORATION-4: Open Space Habitat and Access

Project Status: Ongoing
Objective: Further plans and implementation to restore habitat and improve conditions at coastal access sites.

Description: The Estuary Program strives to protect sensitive open space habitats while supporting access to these areas. We collaborate with community stakeholders and partner organizations to further plans to restore habitat and improve conditions at coastal access sites. The program supports habitat restoration opportunities and access improvements at Sweet Springs Nature Preserve and other established and protected open spaces in the watershed. The Estuary Program and our partners are always seeking opportunities for further acquisitions or conservation easements for the protection of habitats.
Progress Towards Milestones: Estuary Program staff consulted with a landowner and The Land Conservancy of San Luis Obispo County (LCSLO) on a possible easement along the floodplain of Chorro Creek. Estuary Program staff met with SLO County Parks and Recreation staff to discuss Pasadena Point habitat enhancement opportunities. A project to conduct cultural resource survey and remove iceplant is under development.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Staff continue to collaborate with partners to prioritize projects.
Problems Encountered: None.
Deliverables: None.
Activities Planned for the Next Six Months: Coordinate with LCSLO and private landowner on possible easement and funding allocated, if needed. Work with SLO County on Pasadena Point habitat project.
Pending Deliverables: None.

RESTORATION-5: Implement BMPs in Watershed

Project Status: Ongoing
Objective: Implement best management practices (BMPs) in the watershed to support improved water quality and quantity.

Description: The Estuary Program collaborates with partners and landowners to prioritize and implement best management practices (BMPs), which can include improvements to gully erosion areas, roads, fencing, culverts, and others. Installing fencing along riparian corridors to limit grazing is another common tool.
Progress Towards Milestones: The CSLRCD completed 20,000 feet of wildlife-friendly riparian fencing and off-channel watering on private lands. A subaward with Cuesta College was completed to install water and fencing infrastructure to support their sustainable agriculture program.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: None.
Problems Encountered: No further problems.
Deliverables: None.
Activities Planned for the Next Six Months: Work with partners to identify new projects to support this goal. Continue discussion with Cal Poly on rainwater/high flow capture tanks.
Pending Deliverables: None.

Water Infrastructure

WATER-1: Stormwater Improvement

Project Status: Ongoing
Objective: Prioritize and further implementation of stormwater improvement projects that improve the health of the bay.

Description: Stormwater management is an effective tool for protecting sensitive habitats such as our estuary and creeks. The Estuary Program engages stakeholders on planning, data collection, and prioritizing stormwater projects that could be supported with BIL funding.
Progress Towards Milestones: Estuary Program staff hired a consultant to support review of existing stormwater projects to focus on identifying those with the most benefits given costs. Staff hired a consultant to complete project planning at Camp SLO and the CCC Center, including a hydrology delineation and groundwater study. A geotechnical survey was also recently completed in March 2025.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Project tasks are so far on schedule.
Problems Encountered: None.
Deliverables: None.
Activities Planned for the Next Six Months: Further discussion on the results of the geotechnical study and prioritizing projects for implementation.
Pending Deliverables: None.

WATER-2: Groundwater Monitoring

Project Status: Ongoing
Objective: Support monitoring of groundwater for the community of Los Osos.

Description: Increasing drought and groundwater supply is a major issue, in particular for vulnerable communities. The community of Los Osos depends primarily on groundwater for its water supply. Water withdrawals are leading to saltwater intrusion into the lower aquifer. To

halt this threat to the aquifer, the Estuary Program works with partners such as the Los Osos Basin Management Committee and the Los Osos Community Services District (LOCSD).
Progress Towards Milestones: The LOCSD completed monitoring well installation at the end of 2023, and the contract and subaward have been closed. The LOCSD has completed all technical and financial reporting for the subaward. Staff worked with LOCSD staff to implement a subaward to rehabilitate two existing monitoring wells to expand the network needed to support the drinking water needs of the Los Osos community. All three wells support expanded monitoring to better manage the drinking water supply. The work was completed in early 2025 and all spending has been completed. The next step is concluding the subaward reporting for the project.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: The project supports the outcome of expanding monitoring of groundwater for the community of Los Osos to ensure access to clean safe drinking water.
Problems Encountered: None.
Deliverables: None.
Activities Planned for the Next Six Months: Complete subaward reporting for well rehabilitation project for two existing wells. Develop subaward for FY25 utilizing hydrogeology techniques to study saltwater intrusions in the aquifer.
Pending Deliverables: None.

Education and Outreach

E&O-1: Communications

Project Status: Ongoing
Objective: Implement a communications strategy and develop multi-media content to share the story of the Estuary Program, highlight projects, and engage a variety of audiences.

Description: A primary goal of the Estuary Program is to educate residents and visitors of all ages on how to be good stewards of the bay. Communication in various forms is essential to this work, allowing us to effectively communicate the status of our work, to highlight progress on CCMP implementation, and to engage a wide variety of audiences.
Progress Towards Milestones: Staff regularly updated webpages on the Estuary Program's website. The website had over 37,400 views in the first half of FY25. Staff launched a new CCMP tracker StoryMap and webpage on the website to track CCMP progress over time. The seasonal *Between the Tides* newsletter continues to be published every quarter and has 260 email subscribers. The newsletter is posted on the website and sent out to subscribers via email. Communications via social media have been utilizing multi-media content including educational Reels on Instagram. In the first half of FY25, 13 blogs were posted on our website, sent to 548 email subscribers, and posted on our social media pages.

Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Progress towards updating the Estuary Program's website.
Problems Encountered: None.
Deliverables: Communications statistics shared in the semi-annual report (see above).
Activities Planned for the Next Six Months: Continue to update website and improve the user-friendliness of the site. Continue the quarterly newsletter and work to expand its reach. Develop and share more stories on CCMP progress.
Pending Deliverables: None.

E&O-2: Environmental Education

Project Status: Ongoing
Objective: Provide environmental watershed and estuary-based education opportunities for students and teachers.

Description: Partnerships are key to implementing our program's environmental education goals. Staff work with partners to support bay field trips and develop curriculum.
Progress Towards Milestones: The Estuary Program continued education partnerships with One Cool Earth, Camp Ocean Pines, California State Parks, Creek Lands Conservation, and Cal Poly. Staff coordinated and hosted the FY25 series of three educator workshops that focused on Coastal Ocean Literacy, restoration, and inspiring stewardship in the Morro Bay estuary and watershed. The same cohort of 22 educators attended all three workshops of the series in FY25. These attendees included traditional school teachers as well as informal educators, docents, volunteers, and environmental educators. The attendees were from San Luis Obispo and Santa Barbara Counties. In the first half of FY25, we hosted eight field trips that reached 205 students and individuals. These field trips were for school groups, classrooms, and youth organizations. Topics included watershed health, local wildlife, nature journaling, tide pooling, and estuarine habitats. Funded the 2024-2025 school year garden education programming at Monarch Grove Elementary School in Los Osos in partnership with One Cool Earth. MBNEP also funded and provided training for the One Cool Earth watershed week activities and curriculum at the 36 SLO County schools that participate in One Cool Earth programming. Staff also trained the 15 educators at One Cool Earth about watersheds to then confidently teach their classes about the Morro Bay watershed and surrounding areas. The Estuary Program worked with Camp Ocean Pines to build up their touch tank and marine lab curriculum and facilities. We worked together to develop curriculum on a watershed model demonstration, water quality labs, and touch tank educational activities, and led a staff training for their spring 2025 naturalists focused on watershed education.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Development of education partnerships increased educational opportunities for students and teachers and resulted in curriculum development.
Problems Encountered: None.
Deliverables: Environmental education statistics shared in semi-annual report (see above).

Activities Planned for the Next Six Months: Begin work on planning the 2026 educator workshop series. Continue to offer field trips to school groups.
Pending Deliverables: None.

E&O-3: Nature Center

Project Status: Ongoing
Objective: Design and install new exhibits, upgrade and maintain exhibits, and support education and outreach programing for the Nature Center.

Description: The Estuary Program maintains a free Nature Center open to the public to share messaging about the estuarine environment and stewardship. Staff maintain, update, and promote the center.
Progress Towards Milestones: Staff created updated artwork for the Nature Center entrance, and a new logo was made. These signs were manufactured and will be installed in the next six months. The Kid's Corner activity sheets are regularly updated and stocked for youth to use while in the Nature Center and to take home. Staff are continuing to create a Nature Center activity guide specific to activities related to the Nature Center exhibits. This will be added to and revised in the next six months. The Nature Center had over 7,200 visitors in the first half of FY25.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Nature Center updates support the task outcomes to create engaging exhibits and develop supplemental programming that will increase annual visitation.
Problems Encountered: Challenges identifying a contractor to work on multiple upgrades to the Nature Center**.**
Deliverables: Nature Center statistics shared in the semi-annual report (see above).
Activities Planned for the Next Six Months: Staff plans to continue programming in the Nature Center and hosting field trip groups to the space. Staff will work on adding new interactive exhibits and continue maintenance and infrastructure updates. Staff will continue to advertise for the Nature Center to attract more visitors.
Pending Deliverables: Programming statistics and Nature Center usage statistics.

E&O-4: Community Engagement and Stewardship

Status: Ongoing
Objective: Provide community engagement and stewardship opportunities by hosting events and partnering with environmental organizations.

Description: The Estuary Program engages with partners to collaborate in efforts to engage the community and promote stewardship. Volunteer efforts are particularly powerful for connecting with community members and encouraging stewardship.
Progress Towards Milestones: Staff opportunistically partnered with organizations to engage the community including Creek Lands Conservation, Camp Ocean Pines, California State Parks, and more. Staff hosted one Science on Tap event in October, with 18 attendees learning about the habitats of Morro Bay. We also hosted a Science Explorations event in January to learn more about our marsh modelling efforts and partner projects assessing vulnerability and planning in vital habitat and transportation corridors. This event held in Los Osos had 22 attendees. Staff hosted one cleanup at Morro Rock in the first half of FY25, picking up 15 pounds of trash with 65 students, teachers, and parents from Monarch Grove Elementary. The plans for working with ECOSLO on Adopt-a-Spot cleanups in Morro Bay and Los Osos have been progressing.
Comparison of Actual Accomplishments with Anticipated Outputs/Outcomes: Activities conducted support the workplan task outcomes of increasing volunteer engagement and developing the infrastructure to keep the estuary free of litter.
Problems Encountered: The Adopt-a-Spot program with ECOSLO has been put on hold due to staff changes at ECOSLO.
Deliverables: Event statistics included in the semi-annual report (see above).
Activities Planned for the Next Six Months: Staff will continue planning efforts to launch Adopt-A-Spot in Los Osos and Morro Bay in partnership with ECOSLO. We will continue to host cleanups and table at events and markets.
Pending Deliverables: Event statistics and amount of trash picked up (see above).

4. Subaward Reporting

The Estuary Program utilizes subawards to manage BIL funding projects. The following efforts with partners were initiated as subawards:

- Cuesta College: Sustainable Agriculture Educational Program Support
- USGS: Salt Marsh Monitoring and Modeling to Plan for Future Sea Level Rise Impacts
- Los Osos Community Services District: Groundwater Monitoring Well Installation
- Los Osos Community Services District: Groundwater Monitoring Well Rehabilitation
- San Francisco Estuary Institute: Historical Ecology Study
- Coastal San Luis Resource Conservation District: BMP fencing implementation and stormwater planning support

Staff conducted the following activities to manage subawards:

- Each subawardee was contacted to determine the fiscal year under which they operate and the timing of their next financial audit that will include the subaward funds.
- Estuary Program staff developed tracking and reporting forms for use with subawardees to review the results of any financial auditing and review for their organization.
- Estuary Program staff developed the subaward reporting content for inclusion in upcoming BIL semi-annual reports.
- Staff developed a new project and subaward with the LOCSD.

The status of each Estuary Program subaward under the BIL funding is as follows.

Subawardee: Los Osos Community Services District Monitoring Well Installation

Project Name: Groundwater Monitoring Well Installation

Project Status: Completed

Activities Completed to Date: Procurement, selection, and contracting with contractor and well driller. Permitting coordinated and completed. Well successfully installed. Final reporting completed. Contract closed. Subaward closed. Technical and financial reporting completed.

Future Activities: None. Subaward is now complete.

Review of Financial and Programmatic Reports: In the contract development and implementation process, the subaward recipient met all financial and programmatic requirements. A financial audit, and the results shows no issues of concern.

Summary of Findings from Site Visits/Desk Reviews: In all project updates and communication with the subawardee, there were no issues of concern raised related to implementation of the subaward.

Environmental Results Achieved: The installation of this monitoring well expands the monitoring network for the Los Osos Basin Management Committee and the LOCSD. This allows

for better management of the drinking water supply for the community. Data from the newly installed monitoring well from fall 2024 was provided. Future annual groundwater monitoring reports will be available on the Los Osos Basin Management Committee website: https://www.losososbmc.org/

Summaries of Audit Findings and Related Subawardee Management Decisions: The Estuary Program received the results of the LOCSD's financial audit, and there were no issues identified. There were no issues related to the pass-through entity's (PTE) management decisions.

Actions the Subawardee Taken to Correct Deficiencies: Not applicable. No deficiencies have been identified to date.

Subawardee: Los Osos Community Services District Monitoring Well Rehabilitation

Project Name: Groundwater Monitoring Well Rehabilitation

Project Status: Ongoing

Activities Completed to Date: Procurement, selection, and contracting with consultant and contractor. Permitting coordination. Successful transfer of ownership of one of the wells from the County to the LOCSD. Well rehabilitation completed.

Future Activities: Closing the contract and subaward. Upon completion of financial audit, Estuary Program staff will review subaward reporting forms to ensure that all subaward management requirements have been successfully met.

Review of Financial and Programmatic Reports: In the contract development and implementation process, the subaward recipient met all financial and programmatic requirements. Upon completion of a financial audit, Estuary Program staff will review the results.

Summary of Findings from Site Visits/Desk Reviews: In all project updates and communication with the subawardee, there were no issues of concern raised related to implementation of the subaward.

Environmental Results Achieved: The rehabilitation of two monitoring wells expands the monitoring network for the Los Osos Basin Management Committee and the LOCSD. This allows for better management of the drinking water supply for the community.

Summaries of Audit Findings and Related Subawardee Management Decisions: The Estuary Program is awaiting the results of the LOCSD's upcoming financial audit. There were no issues to date related to the PTE's management decisions.

Actions the Subawardee Taken to Correct Deficiencies: Not applicable. No deficiencies have been identified to date.

Subawardee: Cuesta Community College

Project Name: Sustainable Agriculture Educational Program Support

Project Status: Completed

Activities Completed to Date: Completed procurement, selection, and contracting for pipe installation and fence installation. All construction work completed. Final reporting completed. Contracted closed. Subaward closed.

Future Activities: Upon completion of financial audit, Estuary Program staff will review subaward reporting forms to ensure that all subaward management requirements have been successfully met.

Review of Financial and Programmatic Reports: In the contract development and implementation process, the subaward recipient met all financial and programmatic requirements. Upon completion of a financial audit, Estuary Program staff will review the results.

Summary of Findings from Site Visits/Desk Reviews: In all project updates and communication with the subawardee, there were no issues of concern raised related to implementation of the subaward.

Environmental Results Achieved: The installation of infrastructure to support Cuesta College's sustainable agriculture education curriculum trains the next generation of ranchers in environmentally friendly land management practices. While these environmental results cannot be directly measured, the project expands and improves Cuesta's ability to provide education in updated land management practices which benefits rangeland in the Morro Bay watershed and beyond.

Summaries of Audit Findings and Related Subawardee Management Decisions: The Estuary Program is awaiting the results of the Cuesta College's upcoming financial audit. There have been no issues to date related to PTE management decisions.

Actions the Subawardee Taken to Correct Deficiencies: Not applicable. No deficiencies have been identified to date.

Subawardee: San Francisco Estuary Institute (SFEI)

Project Name: Historical Ecology Study

Status: Ongoing

Activities Completed to Date: SFEI coordinated with partners to identify available resources for study. SFEI completed visits to several archival sites and a site visit in the watershed in spring 2024. SFEI has compiled initial georeferenced maps with ArcGIS.

Future Activities: SFEI will conduct analysis and mapping to determine the habitat and channel types present prior to major Euro-American modification of the landscape and to develop an

illustrated report describing early landscape patterns and processes. Advisory members will be chosen in October 2024. Deliverables are expected in late 2025.

Review of Financial and Programmatic Reports: In the contract development and implementation process, the subaward recipient met all financial and programmatic requirements. Upon completion of a financial audit, Estuary Program staff will review the results.

Summary of Findings from Site Visits/Desk Reviews: In all project updates and communication with the subawardee, there were no issues of concern raised related to implementation of the subaward.

Environmental Results Achieved: The project supports more sustainable restoration and land management to adapt to future environmental challenges. While the environmental results cannot necessarily be quantified, the results support building a more resilient landscape to protect natural resources for both humans and the environment.

Summaries of Audit Findings and Related Subawardee Management Decisions: The Estuary Program is awaiting the results of SFEI's upcoming financial audit. There have been no issues to date related to PTE management decisions.

Actions the Subawardee Taken to Correct Deficiencies: Not applicable. No deficiencies have been identified to date.

Subawardee: USGS

Project Name: Salt Marsh Monitoring and Modeling to Plan for Future Sea Level Rise Impacts

Status: Ongoing

Activities Completed to Date: Estuary Program staff worked with USGS to conduct sediment monitoring in the salt marsh. This data as well as historical information was fed into USGS models to understand sediment transport and sea level rise impacts on the fragile salt marsh habitat. A draft model has been completed.

Future Activities: USGS will further refine their model of future outcomes, considering several scenarios including a range of sea levels and sediment availability. The effort will address the likely loss of key habitats and the development of adaptation strategies to reduce coastal flooding for the Morro Bay estuary. The effort will develop management scenarios for restoration, enhancement, and adaptation for sea level rise concerns.

Review of Financial and Programmatic Reports: In the contract development and implementation process, the subaward recipient met all financial and programmatic requirements. Upon completion of a financial audit, Estuary Program staff will review the results.

Summary of Findings from Site Visits/Desk Reviews: In all project updates and communication with the subawardee, there were no issues of concern raised related to implementation of the subaward.

Environmental Results Achieved: By better understanding the historical landscape, the project supports more sustainable restoration and land management to adapt to future environmental challenges. While the environmental results cannot necessarily be quantified, the projects provide guidance and framework for developing a more resilient landscape to both the fragile habitats surrounding the estuary and essential infrastructure.

Summaries of Audit Findings and Related Subawardee Management Decisions: The Estuary Program is awaiting the results of USGS's upcoming financial audit. There have been no issues to date related to PTE management decisions.

Actions the Subawardee Taken to Correct Deficiencies: Not applicable. No deficiencies have been identified to date.

Subawardee: Coastal San Luis Resource Conservation District

Project Name: BMP implementation and stormwater improvement implementation

Status: Ongoing

Activities Completed to Date: Estuary Program staff worked with CSLRCD on two projects, both of which are now complete. The first project involved collaborating with landowners to develop on-farm BMPs through riparian fencing and associated stock water infrastructure on upper Los Osos and Warden Creeks. CSLRCD completed 20,000 feet of wildlife-friendly riparian fencing and off channel watering on private lands. The second project supports stormwater improvement projects at the Camp SLO military base. This project supported the implementation of the Calaveras Avenue stormwater improvement project on Camp SLO, which occurred in September 2023. The project had to be slightly scaled back due to more utility infrastructure in the project area than expected.
Future Activities: None.

Review of Financial and Programmatic Reports: In the contract development and implementation process, the subaward recipient met all financial and programmatic requirements. Upon completion of a financial audit, Estuary Program staff will review the results.

Summary of Findings from Site Visits/Desk Reviews: In all project updates and communication with the subawardee, there were no issues of concern raised related to implementation of the subaward.

Environmental Results Achieved: The projects aim to address stormwater and soil erosion in the watershed. Bioswales associated with the stormwater improvement project will be

constructed to capture and infiltrate stormwater while slowing flow to reduce erosion in the current drainages. On-farm BMPs will improve water quality through reduced sediment and nutrient loading.

Summaries of Audit Findings and Related Subawardee Management Decisions: The Estuary Program is awaiting the results of CSLRCD's upcoming financial audit. There have been no issues to date related to PTE management decisions.

Actions the Subawardee Taken to Correct Deficiencies: Not applicable. No deficiencies have been identified to date.

5. Lab Competency Documentation

The Estuary Program utilizes laboratories that have met the certification requirements for their technical area. During FY25, the following labs were used:

For Water Quality: In this period, we primarily used two labs, Fruit Growers Laboratory (FGL) and County of SLO Public Health Laboratory. Both labs maintained Environmental Laboratory Accreditation Program (ELAP) certification during this time period. Documentation for the county lab is available online. The certification for FGL is available online.

For Bay Nutrient Analysis: The University of California, Santa Barbara (UCSB) Marine Sciences Laboratory conducts 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.

The Marine Pollution Studies Laboratory at Granite Canyon Laboratories (GC) conducts toxicity monitoring for the Estuary Program. This laboratory is ELAP-certified under certificate number 2821.

The University of Connecticut (UCONN) Institute for Systems Genomics (CGI) conducts amplicon sequencing of 18S rRNA genes, following rigorous protocols to ensure data quality. The CGI adheres to Illumina MiSeq protocols and quality assurance processes, which have been reviewed and approved by Estuary Program staff and the Pasulka Lab, ensuring that their QA practices meet high standards for producing accurate and reliable sequence data.

The CD Genomics conducts whole genome sequencing and amplicon sequencing of 16S rRNA gene, performing quality control tests at every major step in the sequencing process to ensure accuracy. Upon receiving samples, CD Genomics checks the quantity and purity of each sample using industry standard equipment and methods. Positive controls and integrated software are then used to monitor sequencing quality on all runs, with additional QA measures available upon request. These protocols have been reviewed and approved by Estuary Program staff and Dr. Silvio Favoreto, ensuring that the QA practices meet high standards for producing accurate and reliable sequencing data.

6. Budget Overview

Tables 1 and 2 present costs associated with IIJA activities since the beginning of the IIJA grant agreement on December 12, 2022.

Table 1: Costs expended during this semi-annual report period (October 1, 2024 – March 31, 2025). These costs represent cumulative costs since the initiation of IIJA activities.

Category	Subcategory	IIJA FY25 Period 1 Funds	Total Cumulative Funds
Personnel	Salaries	$ 141,616	$ 517,309
	Fringe	$ 16,796	$ 53,264
	Subtotal	*$ 158,413*	*$ 570,573*
Supplies	Computers, software	$ 1,390	$ 16,626
	Monitoring supplies	$ 8,695	$ 76,763
	Education and Outreach supplies	$ 1,588	$ 32,306
	Subtotal	*$ 11,673*	*$ 125,690*
Travel	Travel (includes local mileage)	$ 5,222	$ 6,510
	Subtotal	$ 5,222	$ 6,510
Equipment	Monitoring equipment	$ 0	$ 152,746
	Subtotal	*$ 0*	*$ 152,746*
Contractual	Capacity Building	$ 0	$ 24,729
	Monitoring	$ 41,122	$ 195,087
	Restoration	$ 125,966	$ 340,370
	Water Infrastructure	$ 20,311	$ 53,174
	Education and Outreach	$ 10,928	$ 33,968
	Subtotal	*$ 198,328*	*$ 647,327*
Other	Training, Prof. Dev.	$ 475	$ 4,954
	Restoration Subawards	$ 47,591	$ 276,023
	Water Infrastructure Subawards	$ 67,808	$ 159,965
	Subtotal	*$ 115,874*	*$ 440,942*
TOTAL		**$ 489,509**	**$ 1,943,788**

Table 2: Costs by Program Area and Task for IIJA funding (FY22-25)

Program Area	Workplan Task	IIJA FY25 Period 1 Funds	Total Cumulative Funds
Capacity Building	Capacity-1: Capacity Building	$ 165,500	$ 623,386
	Subtotal	***$ 165,500***	***$ 623,386***
Environmental Monitoring and Research	Monitoring-1: Tracking Bay Health	$ 15,553	$ 175,070
	Monitoring-2: Tracking Creek Health	$ 30,858	$ 166,283
	Monitoring-3: Eelgrass Monitoring and Research	$ 2,136	$ 73,229
	Monitoring-4: Data Analysis and Management	$ 1,270	$ 10,014
	Subtotal	***$ 49,816***	***$ 424,596***
Habitat Restoration and Protection	Restoration-1: Invasive Species Management	$ 50,973	$ 113,688
	Restoration-2: Habitat Restoration and Coastal Resilience Planning	$ 59,548	$ 246,554
	Restoration-3: Fish Habitat Monitoring and Improvement	$ 63,037	$ 190,625
	Restoration-4: Open Space Habitat and Access	$ -	$ -
	Restoration-5: Implement BMPs in Watershed	$ -	$ 65,525
	Subtotal	***$ 173,558***	***$ 616,393***
Water Infrastructure	Water-1: Stormwater Improvement	$ 20,311	$ 68,139
	Water-2: Groundwater Monitoring	$ 67,808	$ 145,000
	Subtotal	***$ 88,119***	***$ 213,139***
Education and Outreach	E&O-1: Communication	$ 206	$ 1,556
	E&O-2: Environmental Education	$ 11,213	$ 40,874
	E&O-3: Nature Center	$ 447	$ 20,048
	E&O-4: Community Engagement and Stewardship	$ 650	$ 3,796
	Subtotal	***$ 12,516***	***$ 66,274***
	TOTAL	**$ 489,509**	**$ 1,943,788**