Funding Analysis									
Action	**Action Name**	**Task**	**Task Description**	**Milestone**	**Low End Total**	**High End Total**	**Already Funded?**	**Task Owner**	**How Estimate was Generated**
1	Develop and implement a comprehensive, watershed-scale approach to aquatic resource protection	1.1	Develop a written framework that explains the need for watershed-based aquatic resource protection; frames an approach to meet this need; and identifies and incorporates supporting technical tools and policies. The framework should also address relevant regulatory and governance issues	Complete framework.	$125,000	$125,000	Partially	SF Estuary Institute	Estimates are based on recent pilots of various watershed assessment and reporting methodologies and tools conducted in multiple sierran and coastal watersheds involving multiple local, state and federal partners. These efforts in aggregate represent the Healthy Watersheds Initiative of the State Water Board, the Perennial Stream Assessment Program of the CA Surface Water Ambient Monitoring Program, the Klamath Basin Monitoring Program, the One Water Program and Environmental Monitoring Framework of the Santa Clara Valley Water District, the San Diego River Watershed Monitoring and Assessment Program, the proposed watershed approach to mitigation planning and assessment by the Army Corps of Engineers and the State Water Board, and plans for the Russian River Regional Monitoring Program.
		1.2	Develop criteria to evaluate watersheds that could be used to pilot the Task 1-1 framework. Select a pilot watershed that drains into San Francisco Bay based on these criteria.	Complete criteria and select pilot Bay watershed	$30,000	$30,000	No	SF Estuary Institute, SF Estuary Partnership	Same as above
		1.3	Plan and initiate the pilot project with a steering committee of local, regional, and federal agencies involved in aquatic resources management in the selected watershed. The project should build on related efforts to date, and use scientific understanding of historical (pre-settlement) and present-day conditions within the pilot watershed to identify ways to increase the protection of aquatic resources. Recommendations for more comprehensive, watershed-scale management of aquatic resources (with reference to their distribution, abundance, diversity, and condition) should be consistent with governing policies. The pilot project will also identify the best available regulatory mechanisms for achieving ideal future conditions.	Complete Bay watershed pilot project.	$1,100,000	$1,100,000	Partially	SF Estuary Institute, SF Estuary Partnership	Same as above

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2	Establish a regional wetland and stream monitoring program	2.1	Develop and implement a Bay Area and Delta regional wetland monitoring plan that establishes separate, yet closely coordinated, steering committees for the upper and lower Estuary. The plan will identify regulatory and management monitoring priorities, as well as existing wetland, stream, or riparian monitoring efforts, to determine where there may be opportunities for partnerships and where there are gaps.	Hold initial meeting of the steering committees.	$75,000	$100,000	Partially	SF Bay Joint Venture, SF Bay Regional Water Quality Control Board, SF Estuary Institute	Estimates based on experience establishing the Bay RMP and the Delta RMP, recent applications of the Wetland and Riparian Area Monitoring Plan (WRAMP) of the CA Wetland Monitoring Workgroup at regional and watershed scales throughout California, plus experience quantifying specific aspects of stream and wetland physical and biotic condition that are likely components of a regional wetland and stream monitoring program. Costs to establish the program are covered here, apart from annual costs for program operation and maintenance.
		2.2	Determine how much funding is needed to support program management and administration, technology purchase and upgrades, hardware and software operations and maintenance, practitioner training and helpdesk support, and annual data synthesis and report; develop a business model to meet these funding needs .	Complete the business model.	$30,000	$50,000	Partially	SF Bay Joint Venture, SF Estuary Partnership	Same as above
		2.3	Complete the California Aquatic Resource Inventory (CARI) for the Delta; complete riparian inventories for the Delta and the Bay Area; upload the inventories into the California EcoAtlas information system	Complete the Delta CARI and the Delta and Bay Area riparian inventories.	$750,000	$850,000	No	SF Bay Joint Venture, SF Estuary Institute	Same as above
		2.4	Establish a regional network of sentinel tidal marsh monitoring stations within the Delta and the Bay to support ecological functioning and planning, incorporating and building on the San Francisco Bay National Estuarine Research Reserve program.	Establish sentinel marsh monitoring network.	$250,000	$350,000	Partially	SF Bay Joint Venture, SF Bay National Estuarine Research Reserve, SF Estuary Partnership	Estimated implementation of 10 monitoring sites to have a diverse representation of the upper and lower estuary. Assumed $10K per year for each site (=100K) multiplied by 3 years planning horizon for this milestone. Two of these sites are already included as pilot sites as part of the SFNERR programs: China Camp State Park and Rush Ranch Open Space Preserve.
		2.5	Establish a network of streamflow gauges and fish population surveys within select tributary streams to assess aquatic habitat conditions for existing or potentially reintroduced steelhead and salmon	Establish the stream gauge network.	$450,000	$550,000	Partially	SF Estuary Institute, SF Estuary Partnership	Estimates based on establishing the Bay Regional Monitoring Program and the Delta Regional Monitoring Program, and recent applications of the Wetland and Riparian Area Monitoring Plan (WRAMP) of the CA Wetland Monitoring Workgroup as well as what is likely needed to quantify specific aspects of stream and wetland physical and biotic condition. Estimates include the costs to establish the program only, not the annual costs for program operation and maintenance.

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3	Protect, restore and enhance tidal marsh and tidal flat habitat	3.1a	Restore tidal habitat in the Estuary.	Restore 15,000 acres of tidal habitat in SF Bay.	$700,000,000	$1,000,000,000	Partially	SF Bay Joint Venture	Estimates based on likley types of projects to be restored within 5 years. For the low end, likely to get around 2000 acres relatively cheaply (at $5,000 per acre), around 10,000 acres at a middle range cost ($25k per acre), and around 3,000 acres at a very high cost ($150,000 per acre). Range of costs dependent on complexity of projects, including whether they include sediment augmentation and/or toxic remediation. High end estimate accounts for the uncertainty and possibility that more projects will be at a higher cost range.
		3.1b	Restore tidal habitat in the Estuary.	Restore 8,000 acres of tidal habitat in the Delta.	$300,000,000	$300,000,000	Yes	SF Bay Joint Venture	Estimate includes cost of land, the cost of design, construct, and monitor as well as a contingency for long term management for each anticipated restoration site.
		3.2	Protect land to support preservation and enhancement of tidal habitats.	Acquire and protect 500 acres through various mechanisms including transfer of fee title, donation, or easement	$2,500,000	$3,500,000	Partially	SF Bay Joint Venture	Range based on an analysis of past projects. Variables that impact the cost per acre are: historic baylands or zoned agricultural not developable. Developable acquisitions would be at a higher rate, location in urban areas.
4	Identify, protect, and create transition zones around the Estuary	4.1	Develop a regional steering committee and technical advisory committee to guide a bay-wide, science-based, inventory of existing and projected future transition zones. Base the inventory on current baylands restoration projects, land use, ownership, topography, elevation, and other criteria consistent with climate change adaptation science and regional, state, and federal agency initiatives.	Establish transition zone inventory steering and technical advisory committees.	$60,000	$60,000	Partially	SF Bay Joint Venture, SF Estuary Partnership	Estimate generated through information collected from an existing grant.
		4.2	Complete a regional inventory of transition zones based on the methodology developed by the technical advisory committee.	Complete Bay transition zone inventory.	$1,000,000	$1,500,000	Partially	SF Bay Joint Venture, SF Estuary Partnership	Estimate based on assessed cost of a pilot project in North Richmond, extrapolated to the entire Bay Area.
		4.3	Protect transition zones and land for migration space, based on identified needs and opportunities, through acquisition of fee title, partnerships to develop conservation easements, or other management agreements.	Protect, or plan to protect, 10 of the identified sites.	$250,000	$1,000,000	Partially	SF Bay Joint Venture, SF Estuary Partnership	Estimates based on historical costs of $5000 - $10,000 per acre, and site size of 5-10 acres per site. Costs of urban parcels are generally higher than rural parcels.
		4.4	Include enhancement, restoration, or creation of transition zones in tidal restoration projects and multi-benefit climate adaptation projects where feasible.	Include transition zones in five tidal restoration projects.	$225,000	$2,400,000	Partially	SF Bay Joint Venture, SF Estuary Partnership	Estimate based on comparing examples of a range of restoration projects. Does not include use of fill material, which would increase the cost of a project.

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5	Protect, restore, and enhance intertidal and subtidal habitats	5.1	Increase populations of native eelgrass (Zostera marina) by expanding the extent of existing beds or establishing new beds on the bay floor.	Increase eelgrass coverage in the Bay by 25 acres.	$4,375,000	$16,000,000	Partially	CA Coastal Conservancy, NOAA Fisheries	Estimate generated from breakdown of existing cost to monitor and restore acres of eelgrass - $35,000 per acre per year to restore and monitor at low end, and high-end as 128,000 per information from NOAA. For 25 acres and through the planning period of the CCMP (5 years).
		5.2	Increase populations of native oysters (Ostrea lurida) by expanding the extent of existing beds or establishing new beds on the bay floor.	Increase native oyster bed coverage in the Bay by 25 acres.	$20,000,000	$20,000,000	Partially	CA Coastal Conservancy	Estimated cost of restoration per acre for native oysters, including all aspects of design and construction.
		5.3	Restore intertidal and subtidal habitats other than eelgrass and oyster beds, such as rocky intertidal, sandy beach, and macroalgal beds. Identify appropriate and feasible sites, secure funds, and implement projects to create or improve these types of habitats as well as projects that integrate multiple habitats.	Implement five projects in the Bay that focus on rocky intertidal, sandy beach, macroalgal bed, living shorelines, or other integrated habitats.	$8,000,000	$10,000,000	Partially	CA Coastal Conservancy	Estimate based on comparing a range of completed living shoreline projects.
6	Maximize habitat benefits of managed wetlands and ponds	6.1	Analyze the response of birds to management of wetlands and ponds to provide increased nesting, foraging, roosting, and high tide refuge habitat. Investigate the effectiveness of specific habitat enhancement measures such as management of water levels in and adjacent to ponds, varied pond topography, levee improvements, and the creation of islands. Conduct monthly bird surveys in the Bay to assess species response to these measures.	Produce a yearly report on bird response to specific management measures, and share progress within five years	$100,000	$250,000	No	CA Department of Fish and Wildlife, CA Coastal Conservancy, US Fish and Wildlife Service	Information gathered from grant proposal on cost to produce a report.
		6.2	Study the ability of managed ponds to sustain waterbird numbers in the Bay. Analyze regional waterbird monitoring data with regard to managed pond use and bird density over time, as compared to other habitats.	Produce report comparing bird use of various habitat types in the Bay and share results.	$100,000	$250,000	No	CA Coastal Conservancy, US Geological Survey	Information gathered from grant proposal on cost to produce a report.
		6.3	Study the ability of managed wetlands to sustain diverse species of vertebrates, invertebrates, and endemic and endangered plants over time. Analyze species use, density and diversity as compared to non-managed wetlands.	Produce report comparing species use and diversity in various managed wetlands in the Bay, and share results.	$100,000	$250,000	No	CA Coastal Conservancy	Information gathered from grant proposal on cost to produce a report.
		6.4	Develop a methodology for assessing the long-term costs and benefits of managed wetlands and ponds. Methodology should take into account habitat benefits for multiple species and changes in maintenance requirements resulting from sea level rise and climate change	Develop and implement a methodology.	$100,000	$100,000	No	CA Coastal Conservancy	Information gathered from grant proposal.

Funding Analysis									
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7	Conserve and enhance riparian and in-stream habitats throughout the Estuary's watersheds	7.1	Merge the San Francisco Bay Joint Venture's project tracking database with California's EcoAtlas. Identify potential additional functions to facilitate riparian and stream projects.	Complete merge of project tracking database with EcoAtlas.	$400,000	$600,000	Yes	SF Bay Joint Venture	Task is funded by an EPA grant. Low end is the merge itself. The high end is the merge plus 5 years of maintenance, upgrades, and to fulfill specific requests for summary data and maps.
		7.2	Provide technical and policy guidance to the watershed restoration community and decision-makers. Guide the development of needed stream and watershed data sets, the use of appropriate assessment methodologies, and conservation policy. Critical information includes characterization of key habitat areas, fish monitoring and limiting factors analyses, instream flow needs, and process-based assessment of channel and riparian condition for reaches that support salmonids and other native fish assemblages. Policy guidance will likely address issues such as development setback recommendations, conservation easements, and land acquisition.	Make new policy and technical guidance documents available online.	$169,000	$195,000	No	SF Bay Joint Venture	Estimate based on a 10-person task force attending 24 meetings, plus staff support and coordination.
		7.3	Develop projects and programs to conserve and enhance regional priority stream habitats that support the life history requirements of salmonids and other native fish populations. Emphasize protecting and enhancing the sources of flow and structure elements that maintain dry season aquatic habitats, particularly coldwater refugia, and rehabilitating critical channel and riparian reaches. Guidance will be based on information compiled in Tasks 7-1 and 7-2.	Establish specific flow enhancement goals, riparian zone improvements, and channel rehabilitation projects for prioritized streams and stream reaches.	$162,000	$350,000	No	SF Bay Joint Venture	Estimate based on a 7-person task force attending 16 meetings, plus staff support and coordination, and also including funds for instrumentation and design services.
		7.4	Implement riparian corridor and in-stream habitat restoration and conservation projects throughout the region (primarily informed by Tasks 7-1, 7-2, 7-3), including at least one pilot effort to protect and enhance the sources of flows that maintain aquatic habitats, particularly coldwater refugia and migratory habitat critical to salmonids.	Conserve 10,000 acres of riparian corridor and restore five miles of creek channel and in-stream habitat.	$46,000,000	$102,000,000	No	SF Bay Joint Venture	Estimates based on restoring 5 miles of creek/200' corridor width, with low range of $800/linear ft and high range of $2,000/linear ft., and including $25-50m for acquisitions/easements.
8	Protect, restore, and enhance seasonal wetlands	8.1	Re-establish the Interagency Vernal Pool Stewardship Initiative among state and federal agencies. Build relationships through the Initiative with land trusts and conservancies, landowners, Resource Conservation Districts, and municipalities to coordinate planning efforts.	Re-establish the Vernal Pool Stewardship Initiative.	$30,000	$30,000	No	SF Estuary Partnership	Estimate of staff time to coordinate partners and re-establish Initiative.
		8.2	Through the Initiative, leverage funding and investments to protect targeted vernal pools.	Protect at least 300 acres of vernal pool landscapes in the San Francisco Bay region and an additional 500 acres in the Delta region.	$1,500,000	$2,100,000	No	SF Bay Joint Venture	Estimate of $5000 - $7,000 per acre (via restoration numbers). Numbers are interim placeholders until more refined info on vernal pools can be generated.
		8.3	Develop a white paper on best practices for grazing management to protect seasonal wetlands and enhance habitat quality.	Complete white paper.	$5,000	$12,000	No	SF Bay Joint Venture	Estimate based on historical costs of producing white papers. In-kind costs of partner participation not included.

Funding Analysis									
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9	Minimize the impact of invasive species	9.1	Expand and improve invasive species prevention programs. Actions may include developing new or expanding existing policies and programs, conducting outreach, and working with existing bodies to identify priority activities.	Develop new or expand existing policies and programs to prevent non-native species invasions. Coordinate and streamline programs throughout the western region and identify priority activities. Ongoing until 2021.	$47,750	$111,000	Partially	SF Estuary Partnership	Estimate of staff time.
		9.2	Increase early detection, monitoring, and rapid response programs. Rapid response should be adaptive and include activities such as 1) assessing and mapping Estuary-wide distribution of key invasive species; 2) improving the Calflora website and expanding it to include wetland species and to increase citizen reporting of species; 3) working with professional divers associations and training them to detect new invasive species while cleaning boat bottoms; 4) increasing scientific monitoring to measure the number of new species coming into the region; and 5) increasing citizen science monitoring.	Identify 3-4 funding sources for early detection, monitoring, and rapid response, by 2021.	$23,875	$55,500	Partially	SF Estuary Partnership	Estimate of staff time.
		9.3	Implement eradication and control programs with priority given to species detected early, species that have a chance of being eradicated, and species that have extensive impacts on habitats important to the health of the estuarine ecosystem. Research and test pilot control measures for key invasive species.	Reduce acreage of key invasive species. Ongoing until 2021.	$23,875	$55,500	Partially	SF Estuary Partnership	Estimate of staff time.
		9.4	Provide adequate specificity in permit language requirements for restoration projects to include non-native plant monitoring requirements where appropriate; add language about non-native plant monitoring requirements were lacking. Confirm that Best Management Practices are shared for invasive species where they exist (for example: Invasive Spartina Project Best Management Practices 2016). Confirm that “percent cover” requirements in permits are appropriate to individual invasive species.	Increase the number of permits with improved invasive spartina requirements	$15,000,000	$15,000,000	No	CA Coastal Conservancy	Estimate of staff time.

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10	Increase the efficacy of terrestrial predator management	10.1a	Develop a map showing priority areas in the San Francisco Estuary where actions can be taken to reduce feral cat predation on sensitive species, particularly Ridgway's Rail. This cat predator threat assessment and opportunities map will include: 1) locations of known or suspected feral cat colonies and feeding stations; 2) identification of entity(s) maintaining each cat colony (individual, group-sanctioned, or city and county authorized activity); 3) jurisdictions of landowners with the authority and willingness to enforce the law (map to include all landowners of marshes and adjacent areas); 4) information on city and county cat-feeding station laws; 5) presence of critical Ridgway's Rail populations; and 6) extent of housing and urban development, including landfills and transfer stations	Produce feral cat threat assessment and opportunities map	$32,000	$32,000	No	Point Blue Conservation Science, US Fish and Wildlife Service	Estimate generated from funding proposal based on this task.
		10.1b	Same as above	Engage managers on feral cat management and report on findings.	$32,000	$32,000	No	Point Blue Conservation Science, US Fish and Wildlife Service	Same as above
		10.2a	Guide predator management on publicly-owned conservation lands that support threatened and endangered species by: 1) assessing the impacts of management strategies (including the direct removal of predators and landscape alterations to reduce predator access to sensitive habitats) on populations of listed threatened and endangered species (in particular Ridgway's rail, Western snowy plover, and California least tern); 2) developing data and protocols for predator management activities (including predator surveys); 3) engaging managers of conservation lands in needs assessments.	Complete and disseminate predator management assessment report and recommendations.	$75,000	$150,000	No	US Fish and Wildlife Service	Estimate based on past contracts for similar data mining and analysis on programs like waterbird surveys and Ridgway's rail survey protocol development.
		10.2b	Same as above	Implement predator management recommendations at Don Edwards National Wildlife Refuge.	$250,000	$325,000	Partially	US Fish and Wildlife Service	Estimate of the cost of one full time staff person for one year, plus equipment and overhead.

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11	Increase carbon sequestration through wetland restoration, creation, and management	11.1	Work with agencies and willing private landowners to identify appropriate sites and funding sources, and to plan and implement projects that create managed and tidal wetlands on former agricultural lands in the Suisun and Delta region.	Convert 3,000 acres to wetlands in the Suisun and Delta region.	$125,000,000	$125,000,000	Partially	CA Department of Water Resources, Delta Conservancy	Estimate includes cost for land, cost to design and construct the projects and endowments for long-term management.
		11.2	Continue to conduct applied research to better understand atmospheric carbon sequestration and storage fluxes in wetlands in the Bay and Delta. Work within reference systems and utilize scenario testing to inform management and restoration approaches. Quantify greenhouse gas emissions (CO_2, CH_4, NO_x) from different types of wetlands and different management regimes.	Complete and publish several (1-3) applied research studies on carbon sequestration, as a product of specific restoration and management approaches.	$100,000	$300,000	No	CA Department of Water Resources, SF Bay National Estuarine Research Reserve	Estimate based on a comparison of costs of similar reports in previously funded grants
		11.3	Support the carbon market by completing relevant offset protocols for wetlands and by developing reference sites and standard carbon monitoring and accounting practices that reduce reporting costs for participants.	Completion of relevant offset protocols.	$598,000	$698,000	No	CA Department of Water Resources, Delta Conservancy, SF Bay National Estuarine Research Reserve	Estimate of staff time.
12	Restore watershed connections to the Estuary to improve habitat, flood protection and water quality	12.1	Develop and disseminate data, information, and tools to assist with site selection and design of multi-benefit projects.	Disseminate data and tools through a website.	$70,000	$70,000	Yes	SF Estuary Institute	Task is fully funded through existing grant.
		12.2	Advance a multi-benefit project in the Yolo Bypass by establishing a common vision for improvements supported by local, state, and federal agencies.	Initiate construction of multiple fish passage improvement projects within the Yolo Bypass.	$25,000,000	$25,000,000	Yes	CA Department of Water Resources	Estimate based on Freemont Weir Adult Fish Passage project – including improvements to four agricultural crossings. Costs including planning, design and construction, and includes local funding contributed toward these efforts.
		12.3	Use the tools developed in Task 12-1, as well as findings from other research and projects (including the Yolo Bypass project) to identify and select sites for multi-benefit projects. In partnership with property owners and public entities, assess existing conditions in the context of historic and projected conditions (including sea level rise) to develop appropriate project scopes and conceptual restoration designs for selected sites.	Develop project scopes and conceptual restoration designs for four sites.	$800,000	$1,200,000	No	SF Estuary Partnership	Estimate based on previous similar projects and includes historical ecology, vision workshop and conceptual report.
		12.4	Secure funding in conjunction with partners to complete designs and construction documents. Obtain necessary permits and approvals for selected sites.	Initiate implementation phase of two projects.	$1,000,000	$2,500,000	No	SF Estuary Partnership	Range based on similar project and includes feasibility to final design, CEQA, permits, additional technical studies.

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13	Manage sediment on a regional scale and advance beneficial reuse	13.1	Strengthen Long Term Management Strategy (LTMS) policies on the beneficial reuse of dredged material by expanding programs such as "SediMatch." Resolve logistical issues in matching sediment supply from dredging projects and upland construction sites with habitat restoration and shoreline adaptation projects.	Expand and improve SediMatch.	$82,000	$100,000	Partially	Bay Conservation and Development Commission, SF Bay Joint Venture, SF Estuary Institute	Cost of Improving/Expanding taken from grant proposal providing the low end funded total. High end total assumes additional funds for expansion/improvement over time.
		13.2	Identify funding to pay for the additional costs of dredged materials disposal beyond "least-cost" options, including costs for offloaders to pump sediment for beneficial reuse projects on Estuary shorelines.	Identify and secure funding.	$13,000	$16,000	No	SF Bay Joint Venture	Estimate based on staff time for working with partners, and identifying and securing funding. In-kind cost of partner participation not included.
		13.3	Identify funds and conduct research and monitoring to quantify all potential sediment sources to the Estuary. Determine sediment needs for maintaining current habitats under various sea level rise projections.	Complete study and share results.	$1,675,000	$3,550,000	Partially	SF Bay Joint Venture, SF Estuary Institute	Estimate includes gauging 3 watersheds for 5 years, long profile surveys of flood channels, bathy survey and coring, synthesis reports, and determining sediment needs for maintaining current habitats under various sea level rise projections.
		13.4a	Advance understanding of how the creation of sandy beaches and their replenishment provides multiple benefits in terms of ecosystem health, shoreline erosion control, and sea level rise adaptation. Create (or enhance an existing) monitoring tool to identify potential sites for sandy beach creation or replenishment projects, choose pilot project sites, and track progress. Provide information about the benefits of sandy beaches to regulators and the restoration community.	Release the monitoring and tracking tool.	$200,000	$400,000	No	SF Bay Joint Venture	Estimate based on cost of merging JV project tracking data into EcoAtlas, assuming EcoAtlas could also be used as the base for this monitoring tool.
		13.4b	Same as above	Identify pilot project location, coarse grain sediment source(s), funds for implementation, and begin implementation.	$1,800,000	$5,200,000	No	SF Bay Joint Venture	Estimates based on construction costs for two sandy beach projects - one constructed island project, and one estimate for shoreline project currently under construction. Costs for sandy beach projects will vary based on type of material needed (fine grain, course grain, cobble), where material comes from (dredged from Bay, purchased from elsewhere), size and location of project (island project more expensive as material had to be barged in, shoreline projects easier to access), and associated necessary elements such as shore amoring and public access facilities.

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14	Demonstrate how natural habitats and nature-based shoreline infrastructure can provide increased resiliency to changes in the Estuary environment.	14.1	Develop a primer on how bayshore projects can be designed and optimized to achieve multiple rather than single benefits. Challenge designers and planners to look beyond a primary objective and find opportunities to incorporate not only flood protection but also habitat enhancement and recreational access, among other objectives, in proposed projects.	Develop primer and implement outreach strategy for primer.	$100,000	$180,000	Partially	SF Estuary Institute, SF Estuary Partnership	Estimate based on staff time.
		14.2	Develop a system for describing the variety of shorelines around the Estuary based on shoreline features, ecosystem processes, land use, and other relevant factors.	Develop shoreline typologies.	$300,000	$675,000	Partially	SF Estuary Institute, SF Estuary Partnership	Estimate based on staff time/technical work.
		14.3	Based on the primer developed in Task 14-1 and the system developed in Task 14-2, develop best practices guidelines for natural and nature-based shoreline features that increase the resiliency of the Estuary and provide multiple ecosystem benefits to the region.	Develop best practices guidelines and recommendations.	$200,000	$300,000	No	SF Estuary Institute, SF Estuary Partnership	Estimate based on staff time.
		14.4a	Construct pilot projects to test and refine natural and nature-based approaches to resilience by applying the guidelines developed in Task 14-3. These pilot projects will build on design and adaptation steps established by projects such as the Oro Loma Horizontal Levee project, the San Rafael Oyster/Eelgrass Living Shoreline Project, and the Aramburu Island Beach Restoration Project. Like these projects, the Task 14-4 pilots will address a specific hypothesis, evaluate the performance of multi-benefit restoration design elements, and budget for monitoring, evaluation, and subsequent design refinement. Results from the pilot projects will be incorporated into a revised version of the guidelines developed in Task 14-3.	Identify, design, permit, and implement three additional pilot projects in the Bay.	$3,000,000	$6,000,000	No	SF Estuary Partnership	Estimate based on cost of recent projects.
		14.4b	Same as above	Update best practices guidelines.	$50,000	$100,000	No	SF Estuary Partnership	Estimate based on staff time.
15	Advance natural resource protection while increasing resiliency of shoreline communities in the Bay Area	15.1	Coordinate programs to provide technical assistance on best practices in climate change planning and adaptation for cities, counties and other stakeholders.	Form a multi-stakeholder Bay Area Climate Technical Assistance Task Force and complete a work plan for coordinated assistance.	$89,700	$89,700	Yes	Bay Area Regional Collaborative	Estimate based on staff time for existing funded work.
		15.2	Integrate resiliency and natural resource protection into Plan Bay Area. Lay the groundwork for a more comprehensive regional resiliency effort.	Complete resiliency section in the 2017 update of Plan Bay Area.	$27,600	$27,600	Yes	Bay Area Regional Collaborative, CA Coastal Conservancy	Estimate based on staff time for existing funded work.
		15.3	Support local government efforts to develop shoreline vulnerability assessments that include assessment of natural resources as an asset category.	Complete vulnerability assessments for all nine Bay Area counties.	$6,200,000	$9,200,000	Partially	Bay Area Regional Collaborative	Estimate based on secured funding and estimated additional need.

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16	Integrate natural resource protection into state and local government hazard mitigation, response, and recovery planning	16.1	Establish and implement innovative approaches for integrating natural resources into hazard mitigation, response and recovery planning in the Delta.	Complete the Delta Levee Investment Strategy.	$1,500,000	$1,500,000	Yes	Delta Stewardship Council	Estimate based on budget for existing funded work.
		16.2	Provide technical assistance to Bay Area cities and counties including guidance, case studies, and suggested approaches for integrating natural resource protection into hazard mitigation planning. Facilitate completion of hazard mitigation plans (emphasizing the co-benefits of integration with climate adaptation plans) that include specific actions to protect natural resources. Plans should take into account the contribution of natural resources to reduce hazard impacts and increased resiliency.	Complete 30 Bay Area city or county hazard mitigation plans that include natural resources as an asset category.	$96,600	$126,600	Partially	Association of Bay Area Governments	Estimate based on staff time.
		16.3	Provide information and technical assistance to Bay Area cities and counties on how to include natural resource considerations in disaster recovery planning. Facilitate completion of Disaster Recovery Plans that include "Recovery Support Functions" (RSFs) for natural resources as described in the Federal Emergency Management Association's National Disaster Recovery Framework (FEMA's NDRF).	Complete ten local (city or county) Disaster Recovery Plans that include FEMA's NDRF RSFs for natural resources.	$130,000	$1,000,000	No	Association of Bay Area Governments	Estimate based on staff time.

Funding Analysis									
Action	**Action Name**	**Task**	**Task Description**	**Milestone**	**Low End Total**	**High End Total**	**Already Funded?**	**Task Owner**	**How Estimate was Generated**
17	Improve regulatory review, permitting, and monitoring processes for multi-benefit climate adaptation projects	17.1	Identify opportunities and recommendations for improved regulatory processes for multi-benefit flood control and habitat restoration projects through the existing Flood Control 2.0 project.	Regulatory guidance and recommendations, reports, workshops, and podcasts.	$165,000	$165,000	Yes	SF Estuary Partnership	Task is fully funded through existing grant.
		17.2a	Analyze current San Francisco Bay Conservation and Development Commission (BCDC) policies governing fill in the Bay in light of sea level rise and the need for adaptation strategies, and revise as necessary.	At least three workshops to discuss policy issues relating to the Commission's work on rising sea level issues.	$72,500	$72,500	Yes	Bay Conservation and Development Commission	Estimate based on staff time for workshops.
		17.2b	Same as above	Revised BCDC policies.	$350,000	$400,000	Partially	Bay Conservation and Development Commission	Estimate based on staff time.
		17.3a	Analyze current San Francisco Bay Regional Water Quality Control Board regulations and policies governing the permitting of multi-benefit projects designed to address sea level rise. Develop findings, alternatives, and recommendations to support the Board's evaluation of baylands climate adaptation projects. Address concerns about balancing long-term wetlands protection, restoration, and enhancement against short terms losses in ecosystem function.	Complete report with recommendations.	$130,992	$130,992	Yes	SF Bay Regional Water Quality Control Board	Task is fully funded through existing grant.
		17.3b	Same as above	Revised policies as neccessary.	$392,976	$785,592	No	SF Bay Regional Water Quality Control Board	Estimate based on staff time. Higher end includes cost of additional consultant time for analyses and peer review.
		17.4	Bring major permitting and regulatory agencies together with project implementers and other key stakeholders in workshops to facilitate the creation of a more transparent and predictable system for the review and approval of multi-species and multi-benefit projects over the long-term. Design a model process and overall system that reduces time and conflicts while also outlining a roadmap for those entering into this process for the first time. By providing examples and case studies of successful multi-benefit projects, these workshops can share lessons learned and best practices.	Institute a once or twice yearly workshop.	$60,000	$144,000	Partially	Coastal Hazards Adaptation Resiliency Group	Estimate based on range of consultant cost for planning, facilitation and follow up for half-day workshops. Low end is one workshop per year for 4 years at low range, high end is two workshops per year at higher range.

Funding Analysis									
Action	**Action Name**	**Task**	**Task Description**	**Milestone**	**Low End Total**	**High End Total**	**Already Funded?**	**Task Owner**	**How Estimate was Generated**
18	Improve the timing, amount, and duration of freshwater flows critical to Estuary health	18.1	Work with partners to disseminate a report highlighting the contribution of freshwater flows to the health of the lower Estuary, San Francisco Bay.	Disseminate report.	$6,200	$9,200	Partially	SF Estuary Partnership	Estimate based on staff time and printing costs.
		18.2	Assist the State Water Resources Control Board in updating the San Francisco Bay/Sacramento-San Joaquin River Delta Water Quality Control Plan (Bay Delta WQCP) by providing concise, scientifically sound data to the State Board during its deliberations and by keeping the public and local officials informed.	Complete update of the Bay-Delta WQCP with updated flow objectives.	$59,400	$118,800	Partially	SF Estuary Partnership	Estimate based on staff time.
		18.3	Work with relevant partners and agencies to more broadly incorporate integrated freshwater flow and habitat messages and information in public outreach materials or relevant programs.	Add messages to the materials of at least 3 partners.	$1,380	$11,500	No	SF Estuary Partnership	Estimate based on staff time. In-kind partner staff time not included.
19	Develop long-term drought plans	19.1	Fund an assessment that analyzes which retail and wholesale water supply agencies around the Estuary have long-term water supply plans for five to 10 year drought.	Complete assessment.	$2,600	$6,900	No	SF Estuary Partnership	Estimate based on staff time.
		19.2	Working through the multi-agency Bay Area Regional Reliability (BARR) partnership, or through individual water agencies, refine or adaptively manage long-term water supply plans for 5-10 year drought.	Engage at least three water agencies in the region in long-term drought planning.	$69,000	$115,000	No	SF Estuary Partnership	Estimate based on staff time and in-kind partner staff time.
		19.3	Highlight the best of the region's efforts by compiling Best Management Practices for Bay Area and Delta agencies. Gather input from agencies throughout the Estuary region.	Compile and distribute BMPs.	$20,000	$50,000	No	SF Estuary Partnership	Estimate based on current status of information on this topic and typical contract range
20	Increase regional agricultural water use efficiency	20.1	Fund and complete a report assessing one Bay and one Delta area in the Estuary region, evaluating current practices against the range of applicable water use efficiency methods and management practices. Outline the mechanisms by which conserved water could produce great instream flow and groundwater recharge.	Complete report.	$20,000	$250,000	No	SF Estuary Partnership	Estimate based on similar work done in other areas of the West.
		20.2	Facilitate a forum to explore the challenges and opportunities associated with the development of shall offstream storage and modification of small instream impoundments. Forum should include regulatory agencies, resource conservation districts, stakeholder groups, farmers, and other partners. Forum should also identify funding needs, landowner and agency constraints, and barriers to implementation.	Complete three new or modified storage projects.	$750,000	$1,500,000	No	SF Estuary Partnership	Estimate based on input from partners and other public sources: $250,000-$500,000 per project

Funding Analysis									
Action	**Action Name**	**Task**	**Task Description**	**Milestone**	**Low End Total**	**High End Total**	**Already Funded?**	**Task Owner**	**How Estimate was Generated**
21	Reduce water use for landscaping around the Estuary	21.1	Work with water supply agencies, municipalities, the California Department of Water Resources (DWR), the California State Water Resources Control Board, and others to develop a standardized approach to quantifying and reporting on water use for all new and existing landscaped areas. Use the latest available technology, as well as the methodology developed by DWR for the update 2015 Model Water Efficiency Landscape Ordinance (MWELO), and other methods as appropriate.	Ensure standardized reporting in place.	$10,000	$59,800	No	SF Estuary Partnership	Estimates based on assumed consultant and staff time.
		21.2	Working with the partners identified in Task 21-1, develop permanent (i.e., non-drought) performance standards against which progress in reducing landscape water use region-wide will be measured.	Ensure performance standards in place.	$10,000	$59,800	No	SF Estuary Partnership	Estimates based on assumed consultant and staff time.
		21.3	Support expansion of local or regional water efficient landscape maintenance training programs that use the watershed approach. Support use of models such as the California Friendly Landscape Training Program and Bay-Friendly Landscape (Rescape California) Program.	Launch training programs in three new regions around the state.	$304,000	$912,000	Partially	SF Estuary Partnership, Rescape California	Estimate of staff cost to produce 8-24 4-day classes over three years.
		21.4	Collaborate with municipalities, land use agencies, and others to create pilot programs that expand application of efficiency stands to all new and existing landscape projects.	Establish pilot programs in three municipalities.	$315,900	$500,000	No	SF Estuary Partnership	Estimate based on cost of similar pilot programs.
22	Expand the use of recycled water	22.1	Promote existing outreach activities educating the public about recycled water. Encourage the sharing of informational materials, resources, and program models among municipalities, wastewater agencies, and drinking water agencies.	Develop platform for sharing resources	$10,000	$12,300	Partially	Bay Area Clean Water Agencies, SF Estuary Partnership	Estimate based on staff time for website administration. In-kind partner participation costs not included.
		22.2	Collaborate with the Bay Area Clean Water Agencies' Recycled Water Committee and others to: expand incorporation of recycled water in local and regional water resources planning processes; identify opportunities for the broader use of recycled water; overcome funding and planning gaps; and address regulatory and permitting constraints.	Hold three meetings.	$5,070	$8,175	No	Bay Area Clean Water Agencies, SF Estuary Partnership	Estimate based on cost of room/food/materials and staff time for meetings. In-kind partner participation costs not included.

Funding Analysis									
Action	**Action Name**	**Task**	**Task Description**	**Milestone**	**Low End Total**	**High End Total**	**Already Funded?**	**Task Owner**	**How Estimate was Generated**
23	Integrate water into the updated Plan Bay Area and other regional planning efforts	23.1	Organize a regional water summit to help incorporate related water issues in regional planning efforts and Plan Bay Area, in support of Task 23-2. Coordinate staff of the San Francisco Estuary Parternship and the Association of Bay Area Governments to complete this task.	Hold water summit.	$50,000	$80,000	Yes	SF Estuary Partnership, Association of Bay Area Governments	Task funded from existing grant. High end estimate includes companino study.
		23.2	Incorporate water and San Francisco Bay related issues into the Plan Bay Area 2017 update. Consider ways to reduce per capita water use and optimize water recycling in the update, as well as issues such as landscape water use, water quality, stormwater management (low impact development and green infrastructure), and drought preparedness.	Complete an update of Plan Bay Area.	$27,000	$27,000	Yes	SF Estuary Partnership, Association of Bay Area Governments	Estimate based on staff time.
		23.3	Evaluate opportunities to take similar action through state mandated Sustainable Communities Strategies in the Delta region, using the Plan Bay Area update process as a model.	Complete evaluation.	$20,000	$50,000	No	SF Estuary Partnership, Association of Bay Area Governments	Estimate based on similar evaluation.

Funding Analysis									
Action	**Action Name**	**Task**	**Task Description**	**Milestone**	**Low End Total**	**High End Total**	**Already Funded?**	**Task Owner**	**How Estimate was Generated**
24	Manage stormwater with low impact development and green infrastructure	24.1	Develop outreach materials on lessons learned and the current state of LID benefits knowledge.	Develop materials.	$15,000	$15,000	Yes	SF Estuary Partnership, US Environmental Protection Agency	Task funded from existing grant.
		24.2	Improve the San Francisco Estuary Institute's LID tracking tool "GreenPlan-IT." Enhance all components of the LID planning tool, "GreenPlan-IT."	Complete refined GreenPlan-IT.	$200,000	$200,000	Yes	SF Estuary Partnership, US Environmental Protection Agency	Task funded from existing grant.
		24.3	Partner with local jurisdictions to analyze LID and GI potential in select areas using Green Plan-IT and other applicable planning tools, and integrate findings into relevant agency planning mechanisms and policies for adoption and implementation.	Complete identification and analysis.	$400,000	$400,000	Yes	SF Estuary Partnership, US Environmental Protection Agency	Task funded from existing grant.
		24.4	Develop and promote a comprehensive regional road map that identifies key policies, documents, legislation, agencies, and specific actions needed for integrating GI with future climate change, transportation, and other infrastructure investments within the region, including looking for opportunities to implement large regional projects.	Complete work plan.	$120,000	$120,000	Yes	SF Estuary Partnership, US Environmental Protection Agency	Task funded from existing grant.
		24.5	Create and make available to municipalities and other interested parties design tools for LID retrofits, such as: cost-effective, low maintenance standard design details for LID retrofits of typical road configurations; unit cost estimates for both LID retrofit practices and non-LID standard street details; and "lessons learned" reports on previous grant- or local agency-funded LID retrofit projects.	Complete design tools and make available.	$150,000	$150,000	Yes	SF Estuary Partnership, US Environmental Protection Agency	Task funded from existing grant.
		24.6	Create a GIS-based database to track completed LID and GI projects in the public and private realms; coordinate the database with Total Maximum Daily Load (TMDL) accounting systems developed by other local partners to identify and quantify the load reduction benefits of LID and GI.	Launch database.	$140,000	$140,000	Yes	SF Estuary Partnership, US Environmental Protection Agency	Task funded from existing grant.

Funding Analysis									
Action	**Action Name**	**Task**	**Task Description**	**Milestone**	**Low End Total**	**High End Total**	**Already Funded?**	**Task Owner**	**How Estimate was Generated**
25	Address emerging contaminants	25.1	Review and update San Francisco Bay CECs management strategy, action plans, and monitoring strategy every two years.	Complete reviews and updates in 2016, 2018, and 2020	$300,000	$300,000	Yes	SF Bay Regional Water Quality Control Board, SF Estuary Institute	Estimates of staff time for Water Board, SFEI and partners.
		25.2	Support the continuation and evaluate the effectiveness of the regional education program aimed at reducing or eliminating the use of triclosan and triclocarban. Evaluate tools, such as non-purchase agreements, ordinances, or inclusion as a priority product by the California Department of Toxic Substances Control, to reduce personal care products containing triclosan or triclocarban.	Complete evaluations.	$2,300	$4,600	No	Bay Area Pollution Prevention Group, California Product Stewardship Council, SF Estuary Partnership	Estimates based on staff time. In-kind costs of partner participation not included.
		25.3	Support pharmaceutical CECs reduction efforts, like the Alameda County Safe Drug Disposal program and similar ordinances. Expand to other counties around the Bay and Delta. Work with counties to develop unified regional messaging to promote these ordinances.	Pass three additional ordinances in Bay and Delta counties.	$181,400	$362,800	No	Bay Area Pollution Prevention Group, California Product Stewardship Council, SF Estuary Partnership	Estimates based on staff time, including SFEP and County staff.
26	Decrease raw sewage discharges into the Estuary	26.1	Review sewer lateral repair ordinances currently in operation around the region, and target 30 percent of the uncovered jurisdictions for assistance in developing and passing sewer ordinance modeled on existing ordinances such as those of the Berkeley municipal private sewer lateral (PSL) ordinance and the East Bay Municipal Utility District Regional PSL Ordinance.	Complete review and identify jurisdictions.	$5,750	$11,500	No	SF Estuary Partnership	Estimates based on staff time.
		26.2	Produce and promote a white paper that describes existing and potential funding mechanisms for residents to help pay for private sewer line repair and replacement, such as grant programs and financing strategies.	Complete white paper.	$20,000	$150,000	No	SF Estuary Partnership	Estimates based on staff time estimate and cost of similar white papers.
		26.3	Publish an industry-supported, technically vetted sewage management manual for marinas.	Complete sewage management manual for marinas.	$30,000	$30,000	Yes	SF Estuary Partnership	Task funded from existing grant.
		26.4a	Develop a mobile app for boaters to report broken pumpouts, and for marinas to report pumpout use and operational status; pilot a mobile pumpout program for marinas and recreational boaters in the Oakland Estuary. Install 10 new dockside pumpout systems in marinas to increase the size and availability of the pumpout network.	Launch application and pilot program.	$50,000	$50,000	Yes	SF Estuary Partnership	Task funded from existing grant.
		26.4b	Same as above	Install 10 new pumpouts.	included in 26-4a	included in 26-4a	Yes	SF Estuary Partnership	Task funded from existing grant.
		26.5	Work with the Bay Area Pollution Prevention Group (BAPPG) to identify new audiences for outreach messages about reducing non-flushable items to sanitary sewers to reduce sanitary sewer overflows.	Identify new audiences.	$10,000	$18,500	Yes	SF Estuary Partnership	Estimate based on staff time, including BACWA and SFEP.

Funding Analysis									
Action	**Action Name**	**Task**	**Task Description**	**Milestone**	**Low End Total**	**High End Total**	**Already Funded?**	**Task Owner**	**How Estimate was Generated**
27	Implement Total Maximum Daily Load projects in the Estuary, including projects to reduce mercury, methylmercury, pesticides and areas of low dissolved oxygen	27.1	Develop and implement a multi-media outreach campaign aimed at reducing household indoor and outdoor pesticide use.	Complete final report on outreach campaign.	$113,372	$113,372	Yes	SF Estuary Partnership	Task funded from existing grant.
		27.2	Evaluate Best Management Practices (BMPs) in Suisun Marsh to improve marsh water quality and address dissolved oxygen and methylmercury impairment. Characterize managed wetland responses to BMPs through water quality modeling.	Develop water quality model.	$843,982	$843,982	Yes	SF Bay Regional Water Quality Control Board, SF Estuary Partnership, Suisun Resource Conservation District	Task funded from existing grant.
		27.3a	Address the Guadalupe River mercury TMDL by implementing RMP monitoring of mercury loads during flood conditions, and by undertaking remediation projects within the Almaden Quicksilver County Park.	Complete monitoring.	$50,000	$50,000	No	SF Bay Regional Water Quality Control Board, SF Estuary Partnership	Estimate based on staff time and technical work.
		27.3b	Same as above	Complete remediation projects.	$4,465,000	$5,000,000	Partially	SF Bay Regional Water Quality Control Board, SF Estuary Partnership	Estimate based on funds already secured and estimate of additional funds needed for implementation of Jacques Gulch.

Funding Analysis									
Action	**Action Name**	**Task**	**Task Description**	**Milestone**	**Low End Total**	**High End Total**	**Already Funded?**	**Task Owner**	**How Estimate was Generated**
28	Advance nutrient management in the Estuary	28.1	Secure additional funding to ensure continuation of long-term monitoring of nutrient-related parameters in the Bay through the San Francisco Bay Regional Water Quality Control Board's Nutrient Management Strategy.	Secure funding and continue monitoring.	$500,000	$1,000,000	Partially	SF Bay Regional Water Quality Control Board, SF Estuary Institute	Estimate based on staff time for 5 years.
		28.2	Undertake and fund water quality research to attain an improved quantitative understanding of San Francisco Bay's "dose response" to nutrients.	Secure funding and continue research.	$2,500,000	$3,000,000	Partially	SF Bay Regional Water Quality Control Board, SF Estuary Institute	Estimate based on staff time for 5 years of studies.
		28.3	Update the Nutrient Management Strategy for San Francisco Bay based on monitoring and modeling and load reduction study results from Tasks 28-1 and 28-2.	Update Nutrient Management Strategy.	$100,000	$100,000	No	SF Bay Regional Water Quality Control Board, SF Estuary Institute	Estimate based on staff time.
		28.4	Develop a Nutrient Research Plan for the freshwater Sacramento-San Joaquin Delta through the Central Valley Regional Water Quality Control Board. Use the plan to determine whether nutrient objectives are needed to protect beneficial uses in upper Estuary.	Complete Delta Nutrient Research Plan.	$706,000	$706,000	Yes	Central Valley Regional Water Quality Control Board	Estimates include: peer review workshop, expert science panel, white paper, staff time.
		28.5	Synthesize existing data and models in the Delta to update and expand the Department of Water Resources' report entitled, Characterizing and quantifying nutrient sources, sinks and transformations in the Delta: synthesis, modeling, and recommendations for monitoring. Use this synthesis to inform the design of the Delta Regional Monitoring Program and develop assessment questions.	Update report.	$120,000	$120,000	Yes	Central Valley Regional Water Quality Control Board	Estimates from existing funded work.
		28.6	Undertake studies in the Estuary related to developing and evaluating alternatives for nutrient management actions, including initial considerations of costs and environmental effects.	Complete initial studies.	$300,000	$300,000	Partially	Central Valley Regional Water Quality Control Board, SF Bay Regional Water Quality Control Board, SF Estuary Institute	Estimates based on similar work.
29	Engage the scientific community in efforts to improve baseline monitoring of ocean acidification and hypoxia effects in the Estuary.	29.1	Convene scientists from around the San Francisco Estuary, including from leading marine laboratories and universities, to identify potential impacts of ocean acidification and hypoxia on beneficial uses of the state's waters. Build a conceptual model that can inform design and implementation of monitoring approach.	Convene workshop and complete a meeting summary with recommended actions.	$10,000	$25,000	Yes	SF Estuary Institute, SF Estuary Partnership	Task funded from existing grant.
		29.2	Expand monitoring efforts by deploying equipment such as high precision ocean acidification sensors at the Romberg Tiburon Center for Environmental Studies at San Francisco State University as well as by adding complementary sensors across the Estuary. Link monitoring efforts to the outer coast and Bay. Build on existing monitoring efforts.	Deploy and maintain monitoring equipment.	$52,780	$52,780	Yes	SF Estuary Partnership, SF State University's Romberg Tiburon Center for Environmental Studies	Task funded from existing grant.

Funding Analysis									
Action	**Action Name**	**Task**	**Task Description**	**Milestone**	**Low End Total**	**High End Total**	**Already Funded?**	**Task Owner**	**How Estimate was Generated**
30	Reduce trash input into the Estuary	30.1	Partner with municipalities, counties, pollution prevention organizations, and other stakeholders to research and implement effective extended producer responsibility (EPR) strategies for food and beverage packaging in the Estuary. Highlight successful strategies and develop recommendations for regional and well as local approaches.	Implement four new EPR ordinances or other strategies based on recommendations.	$181,400	$362,800	No	SF Estuary Partnership	Estimates based on same cost analysis as Task 25.3.
		30.2	Review trash reduction tracking metrics, currently being developed by the Bay Area stormwater permittees, for use in the next State of the Estuary Report.	Develop a metric for inclusion in the next report.	$10,000	$1,090,000	No	SF Estuary Partnership	Estimates based on existing grant for trash-tracking methodology plus additional reporting out costs.
31	Foster support for resource protection and restoration by providing Estuary-oriented public access and recreational opportunities compatible with wildlife	31.1	Develop and distribute educational materials and maps to boaters and various partners that identify areas where shorebirds, waterfowl, and harbor seals forage, rest, and roost; these materials will help eliminate or minimize intrusion.	Work with stakeholders to develop region-specific maps, signs, and other educational materials; identify two appropriate mechanisms for distributing materials to boaters two to three times per year.	$61,000	$120,000	Partially	CA State Parks' Division of Boating and Waterways, Association of Bay Area Governments, SF Estuary Partnership	Estimates based on staff time for inventory, design, printing and outreach.
		31.2	Add to the San Francisco Bay Trail, closing critical gaps in the main alignment (the “spine”) that links the shoreline of all nine Bay Area counties, while avoiding adverse effects on sensitive resources and wildlife.	Add 40 miles of new trail segments to the Bay Trail spine.	$145,217,000	$1,614,000,000	Partially	Association of Bay Area Governments	Estimates based on most likely trail projects over next five years and includes design, permitting, engineering, and construction.
		31.3	Add to the San Francisco Bay Area Water Trail, creating or enhancing high quality public water access every three miles, and paddle-in camping opportunities every eight miles. Access should be designed to avoid adverse impacts to sensitive resources and wildlife.	Complete six new or enhanced San Francisco Bay Area Water Trail sites, including two new or enhanced kayak-in campgrounds.	$1,362,000	$5,720,000	No	Association of Bay Area Governments	Estimates based on historical similar projects. Costs vary depending on existing site conditions and types of facilities constructed. Estimates do not include land side improvements such as parking and staging areas.

Funding Analysis									
Action	**Action Name**	**Task**	**Task Description**	**Milestone**	**Low End Total**	**High End Total**	**Already Funded?**	**Task Owner**	**How Estimate was Generated**
32	Champion and implement the CCMP	32.1	Educate and engage targeted audiences in Estuary protection and restoration. Expand communication avenues for the San Francisco Estuary Partnership, including social media presence. Provide educational materials to boaters and boating facilities. Leverage existing programs to support public outreach efforts on the CCMP.	Provide communication materials to public audiences one to three times annually.	$5,000	$100,000	Partially	SF Estuary Partnership	Estimates based on social media, print campaign and full outreach campaign.
		32.2a	Educate the regional community by hosting the biennial State of the Estuary conference, supporting the biennial Bay-Delta Science Conference, and supporting ESTUARY NEWS magazine.	Estuary NEWS (ongoing to 2021)	$350,000	$500,000	Partially	SF Estuary Partnership	Approximately $70/year for 4 issues over the next five years = low estimate. High estimate is based on more funding towards increasing distribution and subscriptions, expanding audiences with different products.
		32.2b	Same as above	State of the Estuary Conferences in 2017, 2019, and 2021	$930,000	$1,200,000	Partially	SF Estuary Partnership	Estimate based on historical costs of conferences.
		32.2c	Same as above	Delta Science Conferences in 2016, 2018, and 2020	$1,140,000	$1,410,000	Partially	SF Estuary Partnership	Estimate based on historical costs of conferences.
		32.3a	On a five-year cycle, provide current information about the health status of the Estuary through an updated State of the Estuary Report. Continue to gather data for current indicators, and develop new indicators that provide needed information regarding Estuary health and align with actions in the CCMP.	Develop a strategy for updating the 2015 State of the Estuary Report, including advancing new indicators.	$5,000	$10,000	Partially	SF Estuary Partnership	Estimate based on staff time. In-kind partner staff time not included.
		32.3b	Same as above	Update State of the Estuary Report.	$275,000	$340,000	Partially	SF Estuary Partnership	Estimate based on staff and consultant time, based on cost of 2015 report. In-kind partner staff time not included. High estimate includes developing additional indicators.
		32.4a	Create and implement an online CCMP reporting process to track progress being made on each of the CCMP actions and provide compiled reporting information twice per year. Update the CCMP on a five-year cycle based on assessed progress and updated scientific information in the State of the Estuary Report, and in response to emerging issues.	Report on CCMP progress twice per year (ongoing from 2017-2021)	$23,000	$46,000	Partially	SF Estuary Partnership	Estimate based on staff time. In-kind partner staff time not included.
		32.4b	Same as above	Initiate CCMP update.	$30,000	$60,000	Partially	SF Estuary Partnership	Estimate based on staff time for 6 months.
		32.5	Engage local community organizations in implementing the CCMP. Share information with, and coordinate, professionals and community members working to protect local watersheds through the Bay Area Watershed Network (BAWN). Secure funds to promote community-based watershed stewardship efforts through a small grants program.	Maintain the BAWN webpage and email newsgroup, and host or co-host a BAWN annual meeting. Design and implement a small grants program on a biennial schedule. (ongoing until 2021)	$250,000	$330,000	Partially	SF Estuary Partnership	Estimate for small grants program based on $100k for grants, plus staff time to manage program. Estimates for BAWN includes staff time to manage website and plan and host annual meetings over next five years.

Funding Analysis									
Action	**Action Name**	**Task**	**Task Description**	**Milestone**	**Low End Total**	**High End Total**	**Already Funded?**	**Task Owner**	**How Estimate was Generated**
		32.6	Identify and expand funds available to partners at all levels to implement the CCMP. This includes tracking, commenting, and sharing information on existing and emerging grant programs, legislation, and other funding mechanisms.	Maintain and distribute matrix of available funding programs. (ongoing until 2021)	$11,500	$23,000	Partially	SF Estuary Partnership, SF Bay Joint Venture	Estimates based on staff time coinciding with Task 32.4a. In-kind costs of partner participation not included.