COASTAL CONSERVANCY

Staff Recommendation
February 14, 2013

INVASIVE SPARTINA PROJECT

99-054-01
Project Manager: Marilyn Latta

RECOMMENDED ACTION: Authorization to disburse up to $3,490,000, of which $1,500,000 will be reimbursed by the Wildlife Conservation Board, for 2013 and 2014 planning, management, treatment, revegetation, and monitoring to implement the Invasive Spartina Project Eradication Program within the San Francisco Estuary.

LOCATION: The baylands and lower creek channels of the nine counties that bound the San Francisco Bay.

PROGRAM CATEGORY: San Francisco Bay Area Conservancy

EXHIBITS

Exhibit 1: March 17, 2011 Staff Recommendation

Exhibit 2: Change in Net Non-native *Spartina* cover since 2004

Exhibit 3: Summary Chart of Conservancy and outside funding sources to date

Exhibit 4: Site-specific plans for activities for the 2013 and 2014 treatment season

Exhibit 5: Regional Map of 2013 and 2014 Treatment Sites

Exhibit 6: Pictures of Treatment, Revegetation, and Enhancement Islands

Exhibit 7: Project Letters

RESOLUTION AND FINDINGS:

Staff recommends that the State Coastal Conservancy adopt the following resolution pursuant to Chapter 4.5 of Division 21 of the Public Resources Code:

"The State Coastal Conservancy hereby authorizes the disbursement of up to a total of $3,950,000 (three million nine hundred fifty thousand dollars, allocated as follows:

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1. Approximately $100,000 (one hundred thousand dollars), for ongoing invasive and hybrid *Spartina* treatment and eradication projects through 2014 (or subsequent). The grant funds for treatment and eradication projects may be used to augment existing grants to the California Wildlife Foundation, the Friends of Corte Madera Creek Watershed, the East Bay Regional Park District, the City of Alameda, the City of Palo Alto, the San Mateo County Mosquito Abatement and Vector Control District, the Alameda County Flood Control and Water Conservation District, and the California Department of Parks and Recreation. Any grant of funds for treatment and eradication shall be subject to the following conditions:

   a. Prior to implementing any treatment and eradication project and prior to disbursement of any funds to the grantee, the grantee shall submit for review and approval of the Executive Officer a plan detailing the site-specific work for 2013 and 2014, based on the outcome and extent of the 2012 and 2013 treatment, and including a list of identified mitigation measures, a work program for 2013 (per the 12/17/12 2013 Amendment to the U.S. Fish and Wildlife Service (FWS) Biological Opinion) and 2014 treatment (pending the 2014 FWS Biological Opinion) and 2015 planning activities, if applicable, including a schedule and budget, and evidence that the grantee has obtained all necessary permits and approvals for the project.

   b. In carrying out any treatment and eradication project, the grantee shall comply with all applicable mitigation and monitoring measures that are set forth in the approved site-specific plans, that are required by any permit, the amended Biological Opinions or any other approval for the project, and that are identified in the "Final Programmatic Environmental Impact Statement/Environmental Impact Report, San Francisco Estuary Invasive *Spartina* Project: *Spartina* Control Program" (FEIS/R), adopted by the Conservancy on September 25, 2003.

2. Approximately $3,390,000 (three million three hundred ninety thousand dollars), of which $1,500,000 (one million five hundred thousand dollars) will be reimbursed under a grant awarded to the Conservancy by the Wildlife Conservation Board (WCB), pending authorization at the May 30, 2013 WCB board meeting, for planning, management, treatment, revegetation, and monitoring activities for the ISP Eradication Program. Prior to disbursement of any WCB funds, the Conservancy shall enter into a Grant Agreement with WCB, permitting the Invasive *Spartina* Project (ISP) Eradication Program work and describing the budget and work to be performed, and providing for reimbursement of the Conservancy's expenditures for the work."

Staff further recommends that the Conservancy adopt the following findings:

"Based on the accompanying staff report and attached exhibits, the State Coastal Conservancy hereby finds that:

1. Disbursement of additional funds for the ISP Control Program treatment and eradication projects, and planning and management, remains consistent with Public Resources Code Sections 31160-31165.
2. The proposed authorization is consistent with the Project Selection Criteria and Guidelines last updated by the Conservancy on November 10, 2011.

3. The California Wildlife Foundation and Friends of Corte Madera Creek Watershed are nonprofit organizations existing under Section 501(c)(3) of the United States Internal Revenue Code, and whose purposes are consistent with Division 21 of the California Public Resources Code."

PROJECT SUMMARY:

The Invasive *Spartina* Project (ISP) Control Program, the purpose of which is to eradicate invasive *Spartina* in order to protect the long-term health of the native marsh ecosystem and restore the affected habitats of the San Francisco Estuary, is comprised of two primary funding components: 1) consulting services to provide program planning, management, revegetation, and monitoring activities, including permit acquisition and compliance, and 2) grants to existing grantees to carry out treatment activities.

This authorization would enable the Conservancy to continue ongoing planning, management, revegetation, monitoring, and permit compliance activities needed to support treatment activities through March 31, 2015 and to carry out treatment and eradication work by grantees through the 2014 treatment season, as follows:

1. Planning and Management Consulting Services:

These services were initiated in 2003 and are ongoing under existing contract(s). Conservancy staff recommends continuing services necessary to plan and support invasive *Spartina* treatment and eradication, from April 1, 2013 through March 31, 2015, including the following:

- Planning, coordinating, and managing invasive *Spartina* treatment at all sites that the United States Fish and Wildlife Service (FWS) has approved for treatment (currently 24 sites with 199 sub-areas, including overseeing and monitoring treatment to efficiently locate and kill remaining plants and achieve eradication at each site;
- Conducting annual surveys for endangered California clapper rails at 146 sub-areas to provide data required by FWS and to assess the effect of invasive *Spartina* eradication on the rail population;
- Planning and managing an aggressive tidal marsh revegetation program to enhance habitat for California clapper rail, which will ultimately allow treatment to be resumed and completed at 11 sub-areas where treatment is currently not authorized (see below for more information);
- Conducting annual inventories of potential invasive *Spartina* habitat, including collecting and analyzing plant samples to determine genetic composition where needed, to map the location of remaining invasive *Spartina* plants at treated sites and to assure that new populations of invasive *Spartina* are identified and treated as quickly as possible and prevent further spread;
- Collecting and analyzing water samples at 10-15 representative sites to confirm that there is no impact to water quality from herbicide residue and to comply with state and federal regulations (e.g., Non-Point Discharge Elimination System permits required by the U.S. Environmental Protection Agency)

Total proposed funding for these activities is $3,390,000 of which $1,500,000 will be reimbursed under a grant to the Conservancy by the Wildlife Conservation Board (WCB). WCB will consider this grant at their May 30, 2013 meeting.

2) Treatment and Eradication:

The Conservancy authorized funding for treatment and eradication activities starting in 2003. Existing grantees will continue to implement site specific control plans (see Exhibit 13) prepared under consulting services at sites as authorized by FWS. Treatment methods employed may include, singly or in combination, and as authorized by State and Federal regulatory agencies: manual removal (hand digging and covering of plants); mechanical removal (discing); herbicide application via manual methods (accessing wetland sites by foot, truck, or amphibious vehicle and applying herbicide via backpack sprayers and direct application to plants), broadscale herbicide application techniques via mechanical methods (application of herbicide via amphibious vehicles, airboats, and helicopter spraying); and a combination of sub-lethal mechanical removal plus herbicide application (seed suppression).

The proposed authorization would enable the grantees to undertake two additional years of treatment, extending the available funding to cover the 2013 and 2014 treatment activities.

Total proposed funding for these activities is $100,000, which will be added to the approximately $500,000 remaining from the March 17, 2011 authorization (See Exhibit 1).

PROJECT HISTORY

The Conservancy first approved funding for the ISP Eradication Program in September 2003 (see Exhibit 1), as it also certified a Programmatic Environmental Impact Report (PEIR) for the project. The PEIR analyzed the project and concluded that controlling invasive *Spartina* was "critical to the long-term health of the San Francisco Estuary, and to the species which inhabit and rely upon the salt marshes and tidal flats along it's perimeters," and that the unchecked spread of invasive *Spartina* in the Estuary could cause failure of tidal restoration efforts underway by the Conservancy and others (e.g., the South Bay Salt Pond Restoration Project).

Since its initial authorization, the Conservancy has authorized a total of $5,620,742 in Conservancy funds (see Exhibit 3). The project has received almost three times that amount ($16,096,468) from other sources, including the Wildlife Conservation Board ($8,536,260), CALFED Bay Delta Program ($3,980,657), the National Oceanic and Atmospheric Administration under the American Recovery and Reinvestment Act of 2009 ($1,734,522), the Port of Oakland ($684,412), the U.S. Minerals Management Services Coastal Impact Assistance Program ($661,679), the U.S. Environmental Protection Agency/Association of Bay Area Governments ($165,464), and other grant sources ($333,474). These outside fund sources have specifically included approximately $330,000 in additional funds for Conservancy staff time to provide support for the project. Conservancy staff time has been critical to ensure thoughtful and strong technical oversight of such a complex regional project that is being implemented by multiple contractors, grantees, and dozens of regional collaborators bay-wide. Conservancy staff provides leadership on technical planning, permit application and compliance, stakeholder communication, and information-sharing with a variety of scientists, agencies, landowners, and

non-profits in San Francisco Bay; as well as to ensure coordination with other critical Conservancy projects, such as the South Bay Salt Pond Restoration Project. The Conservancy has dedicated 40% of one full-time project manager's time to ISP since its inception 10 years ago, has increased the staff time dedicated to ISP over the past two years to approximately 60%, and has successfully secured approximately $330,000 in outside fund sources to cover portions of this staff time.

This invasive species eradication project has become a successful, region-wide model for treating an invasive species with multiple landowner and agency participants in all nine counties of the San Francisco Bay Area. The first few years of the project efforts focused on preparing environmental compliance documents, finding and mapping invasive *Spartina* populations, acquiring permits, developing an extensive network of participating entities, testing treatment methods, and developing site specific plans. Full-scale treatment was initiated in 2005, by which time the invasion had spread to over 800 net acres. Between 2005 and 2010, the project successfully eliminated more than 752 net acres (94%) of invasive *Spartina* from more than 25,000 acres of infested tidal marsh and 20,000 acres of mudflats bay-wide.

In 2011, FWS became concerned that rapid removal of invasive *Spartina* from some areas may have contributed to a decline in populations of the California clapper rail, an endangered bird which had come to use tall, dense stands of hybrid *Spartina*. As a result, the 2011 and 2012 Biological Opinions issued by FWS did not authorize treatment at all sites, imposed timing and method restrictions at other sites, and required the Conservancy to develop and implement a plan to rapidly enhance California clapper rail support at treated sites through aggressive revegetation and other means. In 2011 the Conservancy authorized $1,000,000 for the effort, and it was implemented throughout 2011 and 2012, and ongoing. The Conservancy has also received Port of Oakland mitigation funds to aid in this work and has applied for grant funds.

CURRENT STATUS:

Non-native *Spartina* Eradication:

Exhibit 2 summarizes the reduction in the area of non-native *Spartina* since the first full season of effective treatment eight years ago. Draft survey data from 2012 shows that 17 previously substantially-invaded sub-areas had zero invasive *Spartina* detected, and 45 additional sub-areas had less than 25 square feet remaining. The net area of invasive *Spartina* is currently down to 39 net acres, a reduction of 35% since the previous year, and 96% since the peak in 2005.

As with any weed eradication effort, the steps to find and remove the last remaining stands of the plant are expected to be the most difficult and costly. This is because individual plants and small patches are hard to discern on a vast mudflat or within a complex marsh, and doing so is quite labor intensive. However, to fail to do so results in a regrowth of the remaining plants with rapid spread back into the previously eradicated areas.

In addition to this more typical weed-management challenge, the ISP contends with complexities related to the hybrids that formed between the introduced *S. alterniflora* and the native *S. foliosa*, as these hybrids are the most invasive and environmentally damaging of the introduced *Spartina*. The hybrids demonstrate a very wide range of physical characteristics, sometimes appearing distinctly different from the native, but sometimes appearing nearly identical to it. Unfortunately, experience has demonstrated that, while the hybrid plants may appear physically similar to the natives, they still have the ability to grow extremely aggressively, overrunning areas that the

native would not populate (e.g., open mudflat and vegetated mid-level marsh). The hybrids account for nearly all of the remaining 39 net acres of invasive *Spartina*. ISP managers have consulted with *Spartina* genetics and invasive weed experts and built on project experience over the past eight years, to develop highly effective methods, including field identification methods, search and mapping techniques, and genetic analysis, to efficiently locate and eradicate the remaining hybrid plants. As efficient as these methods are, they are by nature labor intensive, and therefore costly in the short term.

A final challenge stems from the FWS actions in the interest of California clapper rails. Greater than half of the remaining invasive *Spartina* mapped in 2012 (20 net acres of 39 net acres remaining) occurred at sites that were not authorized for treatment in 2011 or 2012. The FWS provided the Biological Opinion for the 2013 season in December 2012, nine months earlier than the previous season. The Biological Opinion once again did not authorize treatment at 11 sub-areas, and imposed timing and method restrictions at other sites, identical to the 2012 authorization. FWS staff indicates that treatment at these sites may again be authorized once ISP monitoring data shows an increase in California clapper rail numbers, with the current target increase being 80 birds bay-wide. Areas where treatment cannot be implemented are a special management concern for ISP, as they continue to produce seed which may spread on-site or to nearby marshes, and they further attract more California clapper rails which might be affected by treatment. ISP consultants have developed a plan for these sites that will enable a strategic, phased approach to treatment as soon as possible, to minimize spread and reduce the long-term residual effect of this lapse in treatment.

The timely receipt of the Biological Opinion for 2013 has allowed planning for the season to move forward rapidly and efficiently, and it will similarly allow more efficient implementation of treatment, revegetation, and monitoring activities than in the past two seasons. With this, Conservancy staff anticipates that 2013 should be a very successful year for sites where treatment can be conducted.

California Clapper Rail Monitoring:

The ISP has continued to conduct annual bay-wide surveys for California clapper rails in collaboration with FWS, PRBO Conservation Science, and others. The ISP's report for surveys conducted in 2012 detected a range of 325 to 422 California clapper rails at 48 of 146 sub-areas surveyed. This confirmed a stable population level for the third year in a row since 2009, in spite of significant continued reduction in invasive *Spartina*. Conservancy staff and consultants are optimistic that these results combined with the successful revegetation program described below, will support a FWS decision to allow ISP to resume *Spartina* control at all sites, consistent with a strategic, phased plan.

Revegetation and Enhancement:

The Conservancy launched an aggressive California clapper rail habitat revegetation and enhancement program in 2011, and has been working closely with FWS and an esteemed technical advisory committee to optimize the success of the program for supporting and increasing clapper rail numbers. The program successfully planned and implemented installation of 70,000 native tidal marsh plants at 24 sub-areas the first year, and an additional 70,000 plants at a total of 35 sub-areas the second year. The project will continue this work in 2013, 2014, and

2015, with an ultimate expectation of enhancing up to 43 marshes with 250,000 total native plants, enhancing approximately 650 acres of habitat to benefit California clapper rails.

In addition to the revegetation work, the program is developing and implementing innovative techniques to replace the lost structure of the non-native and hybrid *Spartina* forms, and enhance habitat through the installation of artificial floating nesting islands and construction of high tide refuge islands to provide better high tide habitat for California clapper rail amongst sea level rise and other climate change impacts. The program worked with U.S. Geological Survey researchers to design and install 100 floating nesting islands between 2011 and 2013, and worked with FWS to design earthen high tide refuge islands, acquire permits, and construct and plant six pilot earthen high tide refuge islands in December 2012 and January 2013. It is expected that the project will construct 18 more earthen high tide refuge islands in 2013 and 2014 (See Exhibit 4). The current funding proposal does not include support for island construction and revegetation, which is funded via the prior $1,000,000 Conservancy authorization, a secured $684,412 grant from the Port of Oakland; and the Conservancy has a pending proposal for $1,000,000 to the FWS National Coastal Wetlands Conservation Grant Program. Conservancy staff expects to do additional outside fundraising to support ongoing restoration activities.

Support for Invasive *Spartina* Eradication:

The Conservancy initiated the Invasive *Spartina* Project in 2000 in response to widespread concerns that not only was the existing native marsh ecosystem at risk from invasive *Spartina*, but the extensive wetland restoration that was underway or planned in the San Francisco Bay would be severely compromised if the invasion was not stopped. The Conservancy took up the project on behalf of the wetland stakeholders of the San Francisco Bay, and has been the solid leader since then. These and other interests continue to support the invasive *Spartina* eradication effort, and express gratitude to the Conservancy for its commitment in spearheading the project. Exhibit 7 includes letters of support from stakeholders affected by invasive *Spartina*, including:

FWS: Environmental Services and Don Edwards San Francisco Bay National Wildlife Refuge; San Francisco Bay Joint Venture; West Coast Governor's Agreement on Ocean Health, *Spartina* Action Team; Washington State Department of Agriculture; California Department of Fish and Wildlife; East Bay Regional Park District (grantee); Alameda County Flood Control Agency (grantee); Save San Francisco Bay Association; San Francisco Estuary Partnership; San Mateo Mosquito Abatement District (grantee); Friends of the Estuary; Marin Audubon Society; Golden Gate Audubon Society; Marin County Department of Agriculture; California Invasive Plant Council; State Senator Loni Hancock; State Senate Majority Leader Ellen Corbett; State Assemblymember Rich Gordon; and State Assemblymember Bob Wieckowski.

The Invasive *Spartina* Project has also been recognized as a model for a rapid response weed eradication program. The California Invasive Plant Council recognized the project and the Conservancy in October 2012, as the "Wildland Stewardship Organization of the Year: For exceptional contributions to wildland weed management and the protection of California ecosystems".

2013-2014 Project Efficiencies:

Even with the challenges described in the sections above, the Conservancy has reduced the budget for management and treatment by approximately 33% from the previous budget for 2011 and 2012. This cost savings was accomplished by critically reviewing each program area, eliminating or reducing tasks where feasible, combining or re-visioning tasks where efficiency could be gained, and ultimately reducing the amount of consultant time needed to complete the work. To name a few specific cost efficiency examples, annual treatment and monitoring reports, which currently are produced as individual, full volumes by separate teams, will be combined into one condensed report, produced by a single small team; a specialist will be hired for a short time to modify the workflow and customize programs used for management of the Geographic Information System (GIS) so that time-intensive data management tasks required prior to and following field work can be substantially reduced or eliminated; and new policies requiring coordination of transportation and reduced billing for mileage will be instated. In addition, all non-critical expenses, such as research that would not provide near-term benefit, have been removed from the budget.

Eradication Goals:

It is the goal of the State Coastal Conservancy and the ISP to eradicate non-native *Spartina* to a zero level at 85% (approximately 169 sub-areas) of the 199 treatment sub-areas by the end of the treatment season in 2016. At a limited number of sub-areas, this may not be confirmed until monitoring is completed in 2017. In addition, some percentage of these sites is likely to have plants discovered in one or more of the subsequent monitoring years. This is due to the fact that invasive *Spartina* can spread into extremely remote flood channels and marsh areas, and new populations continue to be identified in tidal marsh restoration projects opened within the past 2-10 years and in future restoration projects. Thus, for these sites, the zero year starting point would be reset to that year and monitoring would continue for three more years.

Due to various site-specific issues, including the suspension of treatment for two or more years, 15% of the sub-areas (approximately 29) will probably not achieve zero detection by the end of 2016 treatment, and these sites will require ongoing low-level treatment over one to several additional seasons to achieve the first zero year, with three years of monitoring to confirm eradication. At sites where treatment was suspended for two or more years, the first year of zero detection would be expected within 3-5 years of reinitiating of full treatment at the site. Sites that are certain to be among the 15% of sites in this category include: Arrowhead Marsh (Oakland)*, MLK New Marsh (Oakland)*, Damon Marsh (Oakland)*, Fan Marsh (Oakland)*, Citation Marsh (San Leandro)*, North Marsh (San Leandro)*, Bunker Marsh (San Leandro)*, San Lorenzo Creek North (Hayward)*, Cogswell Marsh Quadrants B and C (Hayward)*, Bair Island B2 North (Redwood City), Cooley Landing (East Palo Alto), Calaveras Point Marsh (Alviso), Creekside Park Marsh (Corte Madera), Southhampton Marsh (Benicia).

* Sites where treatment was suspended for 2011, 2012, and 2013 treatment seasons.

Among the unknowns at this time is the impact that suspension of treatment at the (currently 11) sub-areas will have on spread of hybrid *Spartina* seed to previously eradicated or nearly eradicated sites. Seed life is typically 1 to 1.5 years, so it is expected that the effect of suspension of treatment should be relatively short term, once treatment is reinitiated, assuming all disburse seedlings are found before going to seed themselves.

Therefore, Conservancy staff anticipates that funding needs will stay consistent at existing levels through 2016, and that funding will be needed at a reduced level from 2016-18, with a primary focus on site monitoring and search for seedlings from newly disbursed seed. Funding is expected to end after 2018, after a positive confirmation that the non-native and hybrid *Spartina* have been completely eradicated from the estuary.

Continued funding for the ISP is critical at this stage of the project as we approach the 2016 goal of zero non-native *Spartina* at 85% of sub-sites, and the 2019 monitoring goal for eradication. The Conservancy will seek external grant funding for future years, in keeping with past fundraising efforts and the Conservancy intends to rely heavily on partners and landowners in the outlying years for the final stages of eradication.

PROJECT FINANCING

State Coastal Conservancy funds	$1,990,000
Wildlife Conservation Board funds	$1,500,000
Total Authorization	**$3,490,000**

The proposed disbursement of up to $3,950,000 under this authorization will derive from State Coastal Conservancy and Wildlife Conservation Board (WCB) bond funds.

It is anticipated that $1,990,000 of the proposed funding will come from appropriations to the Conservancy from the "Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006" (Proposition 84). This funding source may be used for the protection of bays and coastal waters, including projects to protect and restore the natural habitat values of coastal waters and lands, pursuant to the Conservancy's enabling legislation, Division 21 of the Public Resources Code. The proposed project serves to restore natural habitat values of the San Francisco Bay watershed. In addition, as discussed below, the project is consistent with Chapter 4.5 of Division 21.

Proposition 84 also requires that for restoration projects that protect natural resources, the Conservancy assess whether the project meets at least one of the criteria specified in Public Resources Code Section 75071(a)-(e). The ISP Control Program satisfies 3 of the specified criteria, as follows: (a) Landscape/Habitat Linkages: the areas that are restored through the removal of invasive *Spartina* are areas that link to, or contribute to linking, existing protected areas with other large blocks of protected habitat; (b) Watershed Protection: the project serves to protect and restore the natural resources of the San Francisco Bay and Estuary, a priority watershed as identified by the Resources Agency; and (c) Under-protected habitats: the project is focused on relatively large areas of intertidal mudflats, tidal marshes and wetlands that are under-protected major habitat types.

The balance of the funding is expected to be provided under a new grant agreement (pending approval at the May 30, 2013 WCB board meeting) by which WCB may provide funds to the Conservancy. Under the grant agreement with WCB, the Conservancy may use these funds for habitat restoration projects that meet the priorities of the Conservancy as described in Section 31162 of the Public Resources Code.

The breakdown of costs for planning, management and monitoring and for treatment and eradication projects under the proposed authorization is as follows:

A. Planning, Management and Monitoring through March 31, 2015

State Coastal Conservancy	$1,890,000
Wildlife Conservation Board	$1,500,000
TOTAL	**$3,390,000**

B. Breakdown by Grantee of Expected Financing for Ongoing Treatment Projects through 2014:

Depending on the respective efficacy of the 2012 treatment found at the various project sites, the funding each grantee will receive may be adjusted among grantees, but with no increase to the total amount authorized. Each grantee will contribute in-kind services to the project through staff time and use of equipment. The Conservancy staff expects to contribute funding approximately as follows:

Grantee	State Coastal Conservancy
San Mateo Co. Mosquito Abatement District	$60,000
East Bay Regional Park District	$40,000
City of Palo Alto	$10,000
Friends of Corte Madera Creek Watershed	$10,000
TOTAL	**$100,000**

CONSISTENCY WITH CONSERVANCY'S ENABLING LEGISLATION:

As described in previous staff recommendations (See Exhibit 1) and associated Conservancy resolutions, the ISP and implementation of the Control Program serve to carry out the objectives for the San Francisco Bay Area Conservancy Program mandated by Chapter 4.5 of Division 21 of the Public Resources Code, Sections 31160-31165. The ISP and its Control Program continue to protect and restore tidal marshes, which are natural habitats of regional importance.

The proposed project will continue to be undertaken pursuant to Chapter 4.5 of the Conservancy's enabling legislation, Public Resource Code Sections 31160-31165, which states that the Conservancy may award grants in the nine-county San Francisco Bay Area to help achieve the goals of the San Francisco Bay Area Conservancy Program. The proposed project is located in all nine San Francisco Bay Area counties. The following goals of the San Francisco Bay Area Conservancy Program are achieved by this proposed project:

Section 31162(b) authorizes the Conservancy to award grants to "protect, restore, and enhance natural habitats and connecting corridors, watersheds, scenic areas, and other open-space resources of regional importance". This project entails the restoration and enhancement of tidal and wetland and mudflat habitats of San Francisco Bay and is consistent with the restoration and enhancement of natural habitats.

Section 31162(c) authorizes the Conservancy to "assist in the implementation of the policies and programs of the California Coastal Act of 1976, the San Francisco Bay Plan, and the adopted plans of local governments and special districts". The San Francisco Bay Plan and other regional government plans recommend the removal of invasive species and this Project helps to implement that goal.

The proposed project satisfies all of the criteria for determining project priority under Section 31163(c) as follows: 1) the proposed Project is supported by adopted regional plans including the Baylands Ecosystem Habitat Goals Report (1999), San Francisco Bay Subtidal Habitat Goals Report (2010), San Francisco Bay Joint Venture Implementation Strategy (2011), San Francisco Estuary Comprehensive Conservation and Management Plan (2007), Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California (Draft, 2010), San Francisco Bay Basin Water Quality Control Plan (2007), and EBRPD Master Plan (1996); 2) the proposed project serves a regional constituency by creating habitat for endangered species; 3) the proposed project can be implemented in a timely manner; 4) the proposed project provides benefits to migratory birds, endangered species, and the Bay ecosystem that would be lost if the project is not quickly implemented; and 5) the proposed project will include in-kind matching funds from the grantees.

CONSISTENCY WITH CONSERVANCY'S
2013 STRATEGIC PLAN GOAL(S) & OBJECTIVE(S)

The ISP and implementation of the Control Program carry out the goals and objective of the 2013 Strategic Plan, adopted by the State Coastal Conservancy Board on December 6, 2012.

Consistent with Goal 7, Objective D of the Conservancy's 2013 Strategic Plan, the proposed project will install high tide refuge islands and artificial floating nesting islands for California Clapper Rail, which helps to implement adaptation pilot projects that reduce hazards from sea level rise and extreme storm events, and which protect natural resources and maximize public benefits.

Consistent with Goal 11, Objective G of the Conservancy's 2013 Strategic Plan, the proposed project will develop plans to eradicate non-native invasive species that threaten important habitats in the San Francisco Bay Area.

Consistent with Goal 11, Objective H of the Conservancy's 2013 Strategic Plan, the proposed project will eradicate non-native invasive species that threaten important habitats in the San Francisco Bay Area.

CONSISTENCY WITH CONSERVANCY'S PROJECT SELECTION CRITERIA & GUIDELINES:

The proposed authorization, which provides additional funding for the ISP Control Program is consistent with the Conservancy's Project Selection Criteria and Guidelines, adopted November 10, 2011, in the following respects:

Required Criteria

1. **Promotion of the Conservancy's statutory programs and purposes:** See the "Consistency with Conservancy's Enabling Legislation" section above.
2. **Consistency with purposes of the funding source:** See the "Project Financing" section above.
3. **Support of the public:** The 2013 and 2014 ISP Control Program, and its management through spring 2015, are strongly supported by multiple regional scientists and landowners, the California Department of Fish and Wildlife, the FWS Don Edwards San Francisco Bay National Wildlife Refuge, the San Francisco Bay Joint Venture, the West Coast Governors Agreement Spartina Task Force (see Exhibit 15); and the findings of both the Third International Invasive *Spartina* Conference (November, 2004) and the Forum on Hybrid Spartina (March, 2011). Renowned scientists from the San Francisco Bay Area, other coastal states, and around the world agree that the Conservancy should continue its aggressive actions to eradicate invasive *Spartina* from the San Francisco Estuary. The objective of eradication of invasive *Spartina* is also specifically supported in the Baylands Ecosystem Habitat Goals Report and by more than 50 regional partners including landowners, agencies, and municipalities who support the project. Furthermore, in the published Comprehensive Conservation Management Plan for the San Francisco Estuary, San Francisco Estuary Project stakeholders have identified control of invasive species as the top priority for the restoration and protection of the Estuary.
4. **Location** This project is located in the nine San Francisco Bay Area Counties.
5. **Need:** Augmentation of funding for ISP's existing grants for treatment and eradication of invasive *Spartina* are needed because of the aggressive eradication strategy planned for

2013/14. Without funding, treatment will come to a haltor be limited in nature and the invasive *Spartina* will quickly recolonize already treated areas of marsh and mudflat, impacting Bay ecosystems and increasing costs of the overall effort to eradicate invasive *Spartina*.

6. **Greater-than-local interest:** Introduced *Spartina* threatens to move up stream in the San Francisco Bay-Delta, and down the coast to southern California. Recent 2012 drift card studies show that seeds can travel as far south as Fitzgerald Marine Reserve in Moss Landing, and as far north as Tomales Bay. In the San Francisco Bay, introduced *Spartina* threatens to displace state and federally listed species, such as the endangered California clapper rail, California black rail, and the salt marsh harvest mouse.
7. **Sea level rise vulnerability:** This project does not involve the construction or placement of any structures that may be vulnerable to sea level rise. Indeed, the advent of global-warming induced sea level rise may give invasive *Spartina,* which has greater salinity tolerance, yet another competitive advantage over the native. This would argue for the ongoing effort to eradicate non-native *Spartina* prior to when significant sea level rise occurs. In addition, improving the resiliency of existing habitats is a key recommended action to help combat the effects of sea level rise.

Additional Criteria

8. **Urgency:** As confirmed at the Third International Invasive *Spartina* Conference, experts from the region and around the world believe that if the spread of introduced *Spartina* is not controlled within the near-term, the greater than exponential spread of the plants and extensive hybridization with the native *Spartina foliosa* will preclude any chance for successful control in the future. If the Conservancy and its partners can address the problem with the appropriately stepped up level of treatment in the short-term, long-term maintenance expenses can be avoided.
9. **Readiness:** In 2012, the ISP treated 19 net acres of invasive *Spartina*. Environmental service consultants and grantees are already fully engaged in the pre-treatment season planning, including updating the existing Site-Specific Plans, and are eager to continue treatment in 2013.
10. **Leverage:** The ISP depends on a large, regional network of more than 50 entities that assist with treatment, provide permissions and access, and partner with the project because it helps to fulfill their organizational goals for tidal wetland protection in the Bay Area. These partners provide in-kind support and matching funds.

12. **Innovation:** The ISP has developed innovative techniques in GIS mapping, hybrid identification, and treatment methods. This data is regularly shared with multiple agencies and partners in the San Francisco Bay Area, including academic institutions and organizations conducting similar invasive eradication projects.

13. **Readiness:** The ISP is operating under a well-established eradication plan, with multiple partners who have been trained on treatment techniques, have specialized equipment available and prioritized for this project, and are ready to continue treatment activities.

14. **Realization of prior Conservancy goals:** The ISP is a key step in the restoration of native tidal wetland habitat in the San Francisco Bay Area. The Conservancy has put substantial resources into the project to date, and this next phase builds on the continued success of the project. In addition, the Conservancy is leading multiple large-scale wetland restoration projects (South Bay Salt Pond Restoration Project, Hamilton Field, Napa Sonoma Marshes, etc.) that would be at risk of invasion of hybrid *Spartina* if the ISP did not continue.

16. **Cooperation:** The eradication plan was developed with significant input from many organizations, including the US Fish and Wildlife Service, Bay Conservation and Development Commission, State Water Resources Control Board, California Invasive Plant Council, and the San Francisco Bay Joint Venture.

17. **Minimization of Greenhouse Gas Emissions**:

Carbon Sequestration:

The remaining invasive *Spartina* in the San Francisco Estuary consists of approximately 39 net acres of plants scattered throughout the Bay's edges and streams draining into the Bay. There will be a loss of carbon sequestration greater than that generated by the return of native vegetation, including, eventually, the return of native *Spartina foliosa*. However, the difference will be negligible, since the removal of invasive *Spartina* from the marsh areas will enable the re-establishment of the native cordgrass. Further, as has been observed in many areas where invasive *Spartina* has been eradicated, other native plants, which have been displaced by the non-native *Spartina*, including *Sarcocornia, Grindelia, Frankenia, Jaumea*, and *Distichlis*, re-inhabit that area and flourish.

To the extent that re-vegetation does not completely replace the invasive *Spartina* that has been removed, the FEIS/R already provides for required project mitigation that will further offset this impact. The FEIS/R requires the replanting of various sites with native vegetation, as part of the project. The ISP is growing native marsh plants offsite to ensure an adequate supply of appropriate native vegetation for multiple restoration sites that have been cleared of invasive *Spartina*. In light of these forms of re-vegetation, the loss of carbon sequestration is considered not a significant impact.

Carbon Dioxide Caused by Vehicle Miles Traveled:

Green house gas emissions will result from vehicle usage during treatment and monitoring activities. During treatment boats and helicopters will be utilized for the application of herbicide to remove invasive *Spartina*. For monitoring activities small cars will be used by field biologists to travel to all sites around the estuary, and an airplane will be used to take aerial photography. On an annual basis, at maximum 1,469 gallons of fuel will be used by helicopters (for travel of approximately 800 miles) and an airplane (for 160 miles), and 1,126 gallons of fuel for boats (800 miles) and small automobiles (20,000 miles). Based on fuel

usage, the total emissions equal 24.50336 "carbon dioxide equivalent units", or the global warming equivalent of less than 25 metric tons of CO_2 per year. This was determined by applying the CARROT 3.1 general reporting protocol for greenhouse gas emissions (GHG's) provided by the Climate Registry for aviation fuel and motor fuel. This level of emissions will persist for only two more years under the proposed authorization and, in the following two years for the project as a whole, the annual total will decrease substantially, as the remaining acreage of non-native *Spartina* shrinks, until zero presence at 85% of sub-areas, expected in 2016.

To establish context in which to consider the order of magnitude of these project-generated GHG's, it may be noted that the California Air Resources Board has proposed a threshold of 7,000 metric tons of CO_2/year, below which the effects of a project would be deemed "not significant", for industrial projects that result in stationary, continuous sources of GHG emissions. Likewise, the South Coast Air Quality Management District has adopted a threshold of 10,000 tons of CO_2 per year for similar industrial projects. Further, the South Coast Air Quality Management District has proposed for consideration, but not adopted, a threshold of 3,000 metric tons per year for residential and commercial projects. It should be noted that each of these thresholds are based on the annual emission each year throughout the project's useful life.

By contrast the GHG's anticipated under this authorization are less than 25 tons per year and will persist for only two years, with future ISP Control Program GHG's to dwindle each year to near zero in 2016, when it is anticipated that invasive *Spartina* will be predominantly eradicated. In order to further reduce the comparatively minor GHG impact of the proposed actions, the Conservancy ISP contractors have agreed to require that field biologists engaging in monitoring activities carpool to the extent possible. The Conservancy will also negotiate with its ISP contractors to allow for a monetary incentive for any project travel by contractors or their subcontractors if travel is done by public transportation or bicycle.

In light of the low carbon dioxide equivalent generated by the project and the proposed further reduction of automobile miles traveled, this is also considered not a significant impact.

18. **Vulnerability from climate change impacts other than sea level rise:** This area is subject to cool wet winters and warm dry summers. With climate change, the period of precipitation is anticipated to become shorter and summer drought periods longer and warmer. Some areas may be subjected to more intense short-duration storms resulting in flashy flows from the upper Watershed into San Francisco Bay. Culverts and bridges in the area may require more frequent maintenance to remove accumulated sediment (increased by hybrid *Spartina*) to prevent over topping or flooding of adjacent areas. There are no structures in flood prone areas that might be at risk of damage from increased runoff or flooding. Plant communities in coastal California are well adapted to fluctuations in climatic patterns and can withstand wetter and dryer periods.

CONSISTENCY WITH SAN FRANCISCO BAY PLAN:

The ISP Control Program remains consistent with the San Francisco Bay Plan, Policy 3(c), found in the section entitled "Marshes and Mudflats" (page 9), that states: "the quality of existing marshes should be improved by appropriate measures whenever possible." The main purpose of this project is to remove invasive *Spartina* to improve the long-term quality of existing marsh habitat in the baylands of the San Francisco Estuary.

COMPLIANCE WITH CEQA:

As detailed in the March 17, 2011 Conservancy staff recommendation (See Exhibit 1), at its June 16, 2005 meeting the Conservancy authorized initial funding for 22 of the treatment and eradication projects that are proposed for additional funding under this authorization and, subsequently, through August 2, 2012, has authorized funding for treatment and eradication projects at all of the sites now being proposed for future activities.

Based on this information, in each instance, staff recommended and the Conservancy found that the environmental effects associated with each of these treatment projects and the required mitigation to reduce those effect to less than significant level had been fully considered under the Conservancy-certified programmatic "Final Programmatic Environmental Impact Statement/Environmental Impact Report, San Francisco Estuary Invasive *Spartina* Project: *Spartina* Control Program" (FEIS/R), prepared for the ISP Control Program pursuant to the California Environmental Quality Act (CEQA). The Conservancy also found as to each site and project that no new mitigation measures were required.

The two-year updated site-specific plans and mitigation matrices for activities for the 2013 and 2014 treatment seasons for all of these 24 sites (original treatment sites plus Petaluma River site plus North San Pablo Bay site plus Marin Outliers site, with one earlier site incorporated into another) are attached (See Exhibit 4). These plans have not changed substantially in nature, extent, duration or scope since 2005 for the original treatment sites, since 2007 for the Petaluma River site or since 2008 for the North San Pablo Bay site or since 2009 for the Marin Outliers site, with the exception of some additional sub-areas added as new plants were found. Overall, treatment and potential impacts are reduced because of successful treatment in the prior years.

Since the projects, including potential environmental effects and mitigation measures, remain unchanged, the proposed authorization remains consistent with the CEQA findings adopted by the Conservancy in connection with the June 16, 2005 authorization for the 22 original treatment sites and with the May 24 2007 authorization for the Petaluma River site and with the April 24, 2008 authorization for the North San Pablo Bay site and with the 2009 authorization for the Marin Outliers site. No further environmental documentation for these treatment activities is required.