ATTACHMENT A

Measure M2
Environmental Mitigation Program
Restoration Funding Guidelines

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August 26, 2010

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1 INTRODUCTION & BACKGROUND

1.1 INTRODUCTION

The Orange County Transportation Authority's (OCTA) Mitigation and Resource Protection Program (Mitigation Program) provides for allocation of at least five percent of the total Renewed Measure M (M2) freeway budget for comprehensive environmental mitigation for the impacts from freeway improvements.

The Mitigation Program was approved by Orange County voters under the M2 half-cent sales tax for transportation improvements in 2006. In August 2007, the OCTA Board of Directors (Board) approved a five-year M2 Early Action Plan, covering the years 2007 to 2012, to advance the implementation of key M2 projects, including the freeway mitigation program. The mitigation program will be implemented under a master agreement between OCTA, Caltrans, and state and federal resources agencies.

This will offer higher-value environmental benefits such as habitat protection, connectivity and resource preservation in exchange for streamlined project approvals for the 13 M2 freeway projects. The Environmental Oversight Committee (EOC), subcommittee created by the OCTA Board of Directors (Board), is responsible for making recommendations to the Board on matters related to the Mitigation Program, including the Master Agreement. Comprised of 12 members, the EOC has been meeting on a monthly basis since November 2007. In March 2009, the EOC and the Board approved the draft Master Agreement and draft Planning Agreement to establish the process, roles, responsibilities and commitments for the preparation of the Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP). The Master Agreement and Planning Agreement were approved by the Board in November 2009. The NCCP/HCP process examines habitat resources within broad geographic areas and identifies conservation and mitigation measures to protect habitat and species. This process could take 18 to 24 months to complete. However, the Master Agreement includes an "advance credit" provision that could allow funds to be allocated prior to completion of the NCCP/HCP.

1.2 RESTORATION PROJECT FUNDING

The M2 Mitigation Program will provide approximately $27.5 million for acquisition and restoration projects for the first tranche of funding, available beginning in Fiscal Year 2009/10. With a current allocation goal of 80 percent of funds for acquisition and 20 percent for restoration over the life of the freeway mitigation program, the first tranche of funding will yield approximately $5.5 million towards restoration projects.

The second tranche of funding is approximately $25 million for acquisition and restoration and is expected to be available during Fiscal Year 2011/12. Future tranches of funding have yet to be determined beyond the second tranche.

The Project Sponsor shall disclose in the Restoration Plan any and all other funding sources which have been utilized for current maintenance and/or will be used for the restoration of the proposed project.

1.3 SUMMARY OF OVERALL PROJECT

In conjunction with Caltrans, California Department of Fish and Game (CDFG), and United States Fish and Wildlife Service (USFWS), all restoration proposals have been evaluated based on biological merits. There were 25 restoration proposal submittals during the first tranche of funding, including those within core habitat areas. The evaluation of these restoration properties resulted in four hierarchical groups with the following characteristics:

Group 1	typically possess the highest potential to support similar vegetative communities lost to freeway projects, restore habitat for species that are considered sensitive, and provide connectivity/contiguity opportunities
Group 2	typically possess good potential to support similar vegetative communities lost to freeway projects, restore habitat for species that are considered sensitive, and provide connectivity/contiguity opportunities
Group 3	generally possess lower potential to support similar vegetative communities lost to freeway projects, fewer sensitive species, and fewer connectivity/contiguity opportunities
Group 4	generally possess very low potential to support vegetative communities lost to freeway projects, very few species considered sensitive, and very low connectivity/contiguity opportunities

See Attachment—Preliminary Results Restoration Proposals: Biological Factors

Through preliminary discussions with CDFG and USFWS (Wildlife Agencies), restoration proposals within the first two groups (11 total proposals) possess the necessary biological value that would enable OCTA to obtain mitigation credits for the M2 freeway projects.

1.4 GOALS AND OBJECTIVES OF THE NCCP

The M2 Mitigation Program has the potential to minimize or reduce regulatory delays in the implementation of the 13 M2 freeway improvement projects. The specific type of mitigation will be determined by OCTA working in conjunction with various stakeholders. The various forms of mitigation may include acquisition and/or restoration of land for conservation.

OCTA is developing a NCCP/HCP Joint Programmatic Environmental Impact Report/Environmental Impact Statement (EIR/EIS), which is to include a Master Streambed Alteration Agreement (MSAA) for the 13 freeway improvement projects under M2.

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The EIR/EIS/MSAA will be prepared to ensure that the following planning goals are met:

- Conservation and management of covered species within the planning area;
- The preservation, restoration and enhancement of aquatic, riparian and terrestrial natural communities and ecosystems that support covered species within the planning area;
- A means to implement Covered Activities in a manner that complies with applicable state and federal fish and wildlife protection laws and other environmental laws, inclusive of the California and Federal Endangered Species Acts (CESA and ESA), the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA);
- A basis for permits necessary to lawfully take covered species;
- A comprehensive means to coordinate and standardize mitigation and compensation requirements for covered activities within the planning area;
- An accounting process that will document net environmental benefit from regional, programmatic mitigation in exchange for net benefit in the delivery of transportation improvements through streamlined and timely approvals an permitting;
- A less costly, more efficient project review process that results in greater conservation values than project-by-project, species-by-species review; and
- Clear expectations and regulatory assurances regarding covered activities occurring within the planning area.

2 RESTORATION PLAN OVERVIEW

The Project Sponsor(s) shall submit a Restoration Plan to OCTA for review and written approval at least 30 days prior to commencing restoration activities. Plans shall be prepared by persons with expertise in restoration and monitoring of Southern California ecosystems. Restoration plans shall include the following elements:

- Land ownership/land management
- Property Analysis Record
- Restoration strategy
- Goals and objectives
- Success criteria
- Site assessment
- Planting plan
- Source materials
- Species protection
- Site preparation and installation
- Maintenance program
- Monitoring program
- Contingency measures
- Reporting and documentation

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2.1 LAND OWNERSHIP AND LAND MANAGEMENT

The Project Sponsor(s) shall provide a description of the land ownership status including the name and address of the land owner(s), the total acreage of the property, the proposed restoration acreage. Where the property is managed by a different entity than the land owner, the Project Sponsor(s) shall include the name, address, and organizational status (e.g., private company, non-profit organization) of the land management entity, including years of experience managing habitat lands and/or conducting habitat restoration.

The protection status of the land shall also be provided including any documentation indicating the land owner has permission to restore habitat with the appropriate conservation easement or deed restrictions (see Section 7.1).

2.2 PROPERTY ANALYSIS RECORD

The Property Analysis Record (PAR), developed by The Center for Natural Lands Management (http://cnlm.org/), is a tool to allow land managers identify long-term land management tasks and associated costs, including site monitoring, maintenance, and administrative fees. Assigning realistic costs allows establishment of an estimate of the level of effort required to successfully complete and maintain the restoration. Prior to project funding, the Project Sponsor(s) shall prepare a site-specific PAR, or PAR-like equivalent analysis, for review and approval by OCTA and the Wildlife Agencies.

2.3 RESTORATION STRATEGY

The Project Sponsor(s) shall provide a description of the restoration strategy or strategies to be used for the proposed project. Restoration strategies include habitat enhancement, restoration, or creation, and can be defined as follows:

- *Enhancement* refers to improving the functions and values of existing (but marginal or degraded habitat) to benefit species and/or landscape integrity or connectivity. Enhancement typically does not result in a net gain in habitat acres, but has a high potential for success.
- *Restoration* focuses on re-establishing or rehabilitating former or degraded habitat so that it is capable of supporting native species and/or landscape functions. Restoration may or may not result in a net gain in habitat acres.
- *Creation* creates habitat where none currently exists, and often involves site manipulations such as grading. Creation may result in a net gain in one or more types of habitat acres, but may have a lower potential for success than enhancement or restoration. Creation also has the potential to impact existing habitats.

Although all strategies will have similar goals of improving the structure, composition, and overall function of the system, they will vary in methods, cost,

potential for success, and possibly, maintenance and monitoring requirements. In the following sections, these strategies are referred to collectively as 'restoration.'

2.4 GOALS AND OBJECTIVES

The Project Sponsor(s) shall identify specific goals and objectives for the proposed project. Establishing goals and objectives is an essential component of any restoration effort. Goals and objectives provide a framework against which to measure the overall success of the project and ensure that implementation and monitoring is sufficiently tailored to assess project progress. Goals and objectives should be clear, understandable, measurable, feasible, and sufficiently detailed to avoid interpretation regarding the intent of the project. Goals focus on overall project results, while objectives list the steps or tasks that will be used to attain the goal(s). An example of an appropriate project-specific restoration goal with objectives might be:

- Goal: Improve habitat quality for riparian birds by increasing native plant species diversity, density, and structure within XX feet (acres) of a streambed channel.
    - Objective 1: Remove XX acres of fill within the restoration area to improve hydrological flows (specify timeframe)
    - Objective 2: Remove XX acres of the non-native, invasive Pampas grass (*Cortaderia selloana)* within the restoration area (specify timeframe)
    - Objective 3: Plant XX acres of willows, cottonwoods, and sycamores within the restoration area at a density of XX trees per acre (specify timeframe)

2.5 SUCCESS CRITERIA

The Project Sponsor(s) shall identify appropriate success criteria prior to project implementation. Success criteria provide a standard by which to (1) measure the progress of the restoration effort and (2) allow for remedial actions or adaptive management if milestones are not achieved. Criteria should evaluate specific attributes of the target habitat or ecosystem that are tied to ecological functioning *and* linked to the project-specific goals and objectives. In addition, species responses to habitat improvements will also be evaluated, where appropriate.

General and selected habitat-specific criteria are provided in Sections 2.5.1 and 2.5.2, below. However, OCTA recognizes that there may be instances where site conditions and/or operational or ecological parameters preclude attainment of these success criteria. Therefore, the Project Sponsor(s) may establish alternative site-specific success criteria based on historic and/or existing conditions at reference sites on or near the restoration site(s). In these cases, proposed alternative success criteria must be scientifically defensible and supported by scientific evidence, including but not limited to published reports or papers, quantitative field studies, or long-term monitoring data that is relevant to the proposed effort. Documentation to

support alternative success criteria must be included in the Restoration Plan and will be subject to approval by OCTA.

2.5.1 General Success Criteria

Success criteria are often defined in terms of percent cover by native and non-native species and species diversity within restored habitat. For restoration projects that involve planting trees, the survival rate of individual trees is also a success criterion. Habitat-specific success criteria are included below. If survival and/or cover requirements have not been met, the Project Sponsor(s) shall be responsible for replacement plantings or additional weed control efforts to achieve these results. Replacement plantings shall be subject to the same survival, growth, and monitoring requirements as initial plantings, and the monitoring period shall begin *after* re-planting. Irrigation shall stop two years prior to achieving the success criteria.

2.5.2 Habitat-specific Success Criteria

Oak, Walnut and Sycamore Woodlands Orange County supports a variety of oak, walnut, and sycamore woodlands, and these habitats may be included in restoration projects. The monitoring period for oak and walnut restoration will be a minimum of 10 years, and the monitoring period for sycamore restoration will be a minimum of 5 years. For these and other tree-dominated woodlands, the following success criteria shall be used.

Restoration plantings shall attain a minimum of 80% survival the first year, 95% the second year, and 100% survival thereafter. By the end of the monitoring period, cover by non-native species will be less than 5%, and none of the non-native invasive species identified in Section 2.10.3 will be present within the restoration site. Because non-native annual grasses have become naturalized in upland environments in Southern California, the performance criteria for non-native annual grasses will be less than 10% cover at the end of the monitoring period.

All tree plantings should achieve measurable annual growth in height and trunk girth and no loss of the primary growth leader. Loss of the primary growth leader shall require tree replacement if this occurs in years 1-3. Replacement plantings shall be subject to the same survival, growth, and monitoring requirements as initial plantings, and the monitoring period shall begin *after* re-planting (e.g., 5 years after replanting for sycamores, 10 years for oaks and walnuts).

The planting plan for woodlands (Section 2.6.1) should specify the targeted planting density. Surviving trees should be well-distributed spatially across the planting area and any area greater than 400 square feet lacking surviving trees with measurable growth in years 1-3 shall receive replacement plantings. The maintenance and monitoring period shall be extended an additional 5 years *after* replacement plantings for sycamores, and 10 years for oaks and walnuts.

If survival and/or cover requirements have not been met, the Project Sponsor(s) shall be responsible for replacement plantings to achieve these results. Replacement plants shall be monitored with the same survival and growth requirements for 5 years after replacement planting for sycamores and 10 years after replacement planting for oaks and walnuts. Irrigation shall be stopped two years prior to achieving the success criteria (minimum of 5 years prior to achieving the success criteria for oak and walnut restoration sites).

Willow Woodland and Riparian Scrub Restoration plantings shall attain a minimum of 75% native cover after 3 years and 90% cover after 5 years with less than 5% cover by non-native species and 0% cover by non-native invasives. The site shall have 90% of the species diversity of a nearby reference site.

Coastal Sage Scrub Restoration plantings shall attain 50% native shrub cover after 3 years, and 75% native shrub cover after 5 years, with less than 5% cover by non-native species (except annual grassland, which will have less than 10% cover), and 0% cover by non-native invasives. The site shall have 90% of the species diversity of a nearby reference site.

Native Grasslands If the proposed restoration site will include native grasslands, success criteria should be proposed by the Project Sponsor in the Restoration Plan for concurrence by OCTA and the Wildlife Agencies.

Open Water and Emergent Wetland If the proposed restoration site will include open water and/or emergent wetlands, success criteria should be proposed by the Project Sponsor in the Restoration Plan for concurrence by OCTA and the Wildlife Agencies.

2.5.3 Species Success Criteria

Assessing species responses to habitat restoration will focus on demonstrating upward trends in presence, abundance, nesting/breeding activity, and/or diversity of selected target species or groups of species (e.g., riparian birds). Target species selection shall focus on species that are indicators of habitat conditions, and may include covered species (as appropriate) and/or non-sensitive common species.

2.6 SITE ASSESSMENT

A site assessment shall be conducted to (1) identify the basic opportunities and constraints for successful restoration and (2) establish existing or baseline conditions *prior* to initiation of restoration activities. The latter will allow for a comparison of pre- and post-restoration conditions and thus, a measure of the overall success of the restoration effort. The assessment of baseline conditions may assist in establishing realistic success criteria.

In many cases, existing data will be available for use in completing all or a portion of this assessment. It is anticipated that the site assessment will utilize a combination

of existing data and surveys, including (but not limited to) technical reports, plant and animal surveys, vegetation and species mapping, field sampling, aerial photography, photos of existing conditions, and historic records. At a minimum, the site assessment shall document:

- Existing and historic habitat conditions on the restoration site(s)
- Sensitive species mapping (distribution) on or near the restoration site(s)
- Invasive species mapping (abundance and distribution) on the restoration site(s)
- Soil suitability, as appropriate to the specific restoration effort
- Topography
- Hydrology
- Reference sites for alternative success criteria (if applicable)

2.7 PLANTING PLAN

For those projects that propose to introduce plant materials into restoration sites, the Project Sponsor(s) shall include a detailed planting plan in the Restoration Plan. At a minimum, the planting plan shall include:

- Location (with map) of the restoration site(s)
- Schematic depicting the restoration site(s), including identification of suitable planting locations based on soils, aspect, and other site features
- Detailed irrigation plan (if applicable)
- Plant palette (list of all species proposed to be used in the restoration area)
- Size and number of container plantings or cuttings (by species) and amount of seed (by species)
- Planting density (including on-center spacing for each tree and shrub species)
- Planting methodology
- Planting schedule
- Plant protection methods (e.g., invasive species control, herbivory control)
- Photos of existing condition
- Videography (if possible) of existing condition

The following guidelines are provided for additional clarification on the planting plan.

2.7.1 Woodlands

Woodland habitats with multiple canopy layers shall include detailed plans for both the canopy (tree) layer and the associated understory layers (including early successional native species); all structural layers shall be monitored to ensure restoration of viable habitat, and all layers shall be subject to general or habitat-specific success criteria, as outlined sections 2.5.1 and 2.5.2.

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2.7.2 Tree Relocation

Tree relocation is not anticipated for most restoration projects; however, the following conditions must be met where tree relocation is deemed feasible and appropriate.

- Prior to relocation, the Project Sponsor(s) shall prepare a complete inventory of trees to be relocated, including species and diameter-at-breast-height (dbh); results of this inventory shall be included in the Restoration Plan.
- The Project Sponsor(s) shall only relocate trees that are in good health, less than 30 inches dbh, *and* that will otherwise be removed as a result of project activities. The trees shall be boxed and relocated to an appropriate location within the restoration site. If a tree is damaged or destroyed during boxing or relocation, it will not be suitable for use in the restoration area.
- Relocation of trees shall be conducted by a certified arborist experienced with transplanting oaks and other native trees.
- If tree relocation is tied to mitigation credit, any damaged or destroyed trees shall be replaced onsite and in-kind. For oak and walnut trees that are less than 5" dbh, replacement ratios shall be 3:1; for trees from 5-12" dbh, the replacement ratio shall be 5:1; and for trees that are 12" or greater dbh, the replacement ratio shall be 10:1. All sycamores shall be replaced in-kind at a 10:1 ratio.
- In the event that relocated trees need to be replaced, Project Sponsor(s) shall use acorns or walnuts, plants rooted in liners, or one gallon containers to increase the likelihood of survival.
- Relocated trees shall be monitored for survival annually by a biologist according to the schedule in Section 2.5.2. Any relocated tree that does not survive shall be replaced in-kind, at the ratios specified above. Any relocated trees that do not survive or appear unhealthy due to transplanting during the 10 year monitoring period shall be replaced. Replacement plantings shall be monitored with the same survival and growth requirements as initial plantings, for 10 years *after* re-planting.
- All replacement tree stock shall be obtained from a native plant nursery, using locally adapted stock, and shall not be inoculated to prevent heart rot.

2.8 SOURCE MATERIALS

While source materials typically refer to materials used for restoration plantings, guidelines are also provided to ensure that plant materials used in areas adjacent to the restoration site(s) are compatible with the restoration program.

2.8.1 Restoration Plants

Appropriate selection of restoration plant materials (seed, cuttings, container stock) will have a direct bearing on the overall success of the restoration effort. Locally collected material will be better-adapted to site conditions and thus, have a greater potential for survival. Equally important is maximizing genetic diversity of restoration

materials; genetically diverse populations are better able to adapt to changing conditions.

In many cases, procurement of source materials from the restoration site or general vicinity will provide adequate material if the source population(s) is large and collection methods include an adequate number of parental plants. In some cases (e.g., relatively common plants or plants with small, local populations), collection from a wider zone (e.g., South Coast ecoregion) may be appropriate. The Project Sponsor(s) shall include a list of all plant sources in the Restoration Plan. The plant source refers to the geographic area where the material was collected, which may be different from the nursery or facility where the restoration material is grown.

2.8.2 Invasive Plants

The use of invasive plants in or adjacent to restoration area(s) is prohibited. The Project Sponsor(s) shall not plant, seed, or otherwise introduce invasive plant species into the restoration area(s) *or* into adjacent landscaped areas. Invasive plant species include those on the California Native Plant Council's (Cal-IPC) California Invasive Plant Inventory (Cal-IPC 2006) and updates (e.g., Cal-IPC 2007). The Invasive Plant Inventory replaces the earlier Exotic Pest Plants of Greatest Ecological Concern in California (Cal-EPPC 1999).

2.8.3 Landscape Plants

The Project Sponsor(s) shall not use plants that require intensive irrigation, fertilizers, or pesticides in landscaped areas adjacent to restoration area(s). In addition, runoff from adjacent areas shall be routed away from restoration site(s) unless specifically intended to augment flows onsite. Any runoff allowed into the restoration area(s) shall be treated prior to entering the site to remove debris or pollutants. The Project Sponsor(s) shall submit a list of plants proposed for use in areas adjacent to the restoration site to OCTA for review and approval. This list shall be submitted with the Restoration Plan or at least 30 days prior to acquiring and/or use of any plant materials in adjacent areas.

2.9 SPECIES PROTECTION

A key objective of restoration projects is to improve habitat for the benefit of native species, including sensitive plants and animals. However, the process of restoration has the potential to directly or indirectly impact species during implementation. For this reason, the Restoration Plan shall incorporate sensitive species protection measures. Species protection measures include (1) focused surveys to identify sensitive species that may be impacted during project implementation, (2) permits and authorizations for take of listed species and Species Protection Plans for listed species, and (3) restoration activities restrictions to limit or minimize impacts to sensitive species.

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2.9.1 Sensitive Species Surveys

Where the site assessment indicates the presence or potential for occurrence of sensitive species and these species may be directly or indirectly impacted by restoration activities, the Project Sponsor(s) or a qualified biologist under direction of the Project Sponsor(s), shall conduct appropriately timed surveys prior to initiation of restoration activities. Where sensitive species are documented, the Project Sponsor(s) shall adhere to conditions in sections 2.9.2 and 2.9.3, as applicable.

Focused surveys may include (but are not limited to) surveys for threatened, rare, or endangered species, breeding/nesting birds, southwestern pond turtle, and bats. The Project Sponsor(s) shall use survey guidelines provided below or agency-approved survey protocols. Findings shall be included in the Restoration Plan (if timing allows) or documented in a letter report to OCTA prior to the onset of restoration activities.

Federally or state-listed species. The restoration site(s) (or suitable habitat within the restoration site[s]) shall be surveyed for listed species prior to the onset of restoration activities to ensure that no direct or indirect impacts will occur from project implementation. Surveys shall be conducted by a qualified biologist using agency-approved, species-specific survey protocols. If listed species are detected, the Project Sponsor(s) shall adhere to conditions in sections 2.8.2 and 2.8.3, as appropriate, including the preparation of a Species Protection Plan.

If restoration activities occur subsequent to site preparation (e.g., remedial grading in year 2 or 3), a qualified biologist shall re-survey for listed species using agency-approved, species-specific survey protocols. If listed species are detected, the Project Sponsor(s) shall adhere to conditions in sections 2.8.2 and 2.8.3, as appropriate, including the preparation of a Species Protection Plan.

Breeding/nesting birds. If vegetation removal or other activities that may result in the destruction of nests and death or injury of nestlings and fledglings will be conducted during the bird breeding season (March 15th to September 15th in riparian habitat and February 15th through August 31st in upland habitat), breeding bird surveys will be conducted. These surveys will consist of at least three surveys conducted the week prior to conducting activities, with the last survey occurring within 2 days prior to commencement of work activities. If no breeding/nesting birds are observed and concurrence has been received from OCTA, work activities may begin. If breeding/nesting birds are observed, the measures described in 2.9.3 will be implemented.

Southwestern pond turtle. Suitable habitat within the restoration site(s) (i.e., drainages that contain standing water and adjacent uplands) shall be surveyed for southwestern pond turtle (*Actinemys marmorata)* prior to the onset of restoration activities to ensure that no direct or indirect impacts will occur from project implementation. Presence/absence surveys shall be conducted by a qualified turtle

biologist. The biologist shall survey both aquatic habitat and potential breeding areas or existing nests in adjacent uplands.

Bats. If the restoration project includes any work at a bridge site, a qualified bat biologist shall survey the bridge structure for bats prior to the onset of restoration activities. The biologist shall conduct a minimum of 3 surveys, 7 days apart; unless a positive presence is determined, the surveys can be ended.

2.9.2 Permitting

If federally or state-listed species are documented on or adjacent to the restoration site(s) during the site assessment and/or focused surveys, the following conditions shall apply:

- The Project Sponsor(s) shall consult with the appropriate agencies, as prescribed in Federal and State Endangered Species Acts, and obtain any necessary federal and/or state permits/authorizations prior to the onset of any restoration activities. Any unauthorized take of listed species may result in prosecution.
- The Project Sponsor(s) shall be required to prepare a Species Protection Plan that contains specific measures to avoid, minimize, or mitigate impacts to listed species. The plan shall be submitted to OCTA with the Restoration Plan (if timing allows) or prior to initiation of any restoration activities, and will require OCTA review and approval prior to commencing work.

If federally and/or state-listed species are found on or near the restoration area *after* the project has been initiated, the following conditions shall apply:

- The Project Sponsor(s) shall cease work in the affected area and consult with the appropriate agencies, as prescribed in Federal or State Endangered Species Acts.
- If the work requires that the species be removed, disturbed, or otherwise impacted, the Project Sponsor(s) shall obtain the appropriate federal and/or state permits/authorizations prior to re-starting work in the affected area. In addition, the Project Sponsor(s) shall submit a Species Protection Plan to OCTA for review and approval.

The Project Sponsor(s) shall also be responsible for obtaining any other resource agency permits applicable to any work related to restoration activities. Such permits may include compliance with CDFG Section 1600, and/or Army Corps of Engineers (ACOE) and Regional Water Quality Control Board Sections 401 and 404.

2.9.3 Restoration Activities Restrictions

Where sensitive species may be directly or indirectly impacted by project implementation, the following species protection measures shall be implemented, as appropriate:

- If threatened or endangered bird species are present in or adjacent to the restoration area, no work shall occur during the breeding season (March 15th through September 15th in riparian habitat and February 15th to August 31st in upland habitat) to avoid direct or indirect (e.g., noise) impacts to listed species *except* as authorized by state and/or federal threatened/endangered species permits/authorizations which may be required prior to commencing restoration activities.
- If breeding activities and/or active bird nests of unlisted bird species are located and concurrence has been received from OCTA, the breeding habitat/nest site shall be fenced or otherwise marked a minimum of 50 feet (250 feet for raptors) in all directions, and this area shall not be disturbed until the nest becomes inactive, or the young have fledged, are no longer being fed by the parents, have left the area, or will no longer be impacted by the project.
- Where restoration activities may disturb nesting swallows on bridges, the Project Sponsor(s) shall avoid work March 15th through September 15th. If such a condition cannot be met, then prior to March 1st of each year, the Project Sponsor(s) shall remove all existing nests which would be impacted by the project. The Project Sponsor(s) shall continue to discourage new nest building in places where they would be disturbed using methods approved by OCTA. Nest removal and hazing must be repeated at least weekly until restoration activities begin or until a swallow exclusion device is installed. The exclusion device must provide a space of four to six inches for the passage of snakes at the bottom edge. Nests must be discouraged throughout the restoration implementation phase. At no time shall occupied nests be destroyed as a result of project implementation.
- If southwestern pond turtles are present in or adjacent to the restoration area, impacts to turtle habitat in wetlands or uplands from project implementation shall take place outside the breeding period (April-August).
- If bats are present in or adjacent to the restoration area, OCTA shall be notified and provisions for their protection/conservation will be discussed. If loss of significant bat roosting habitat occurs due to the implementation of the project, the Project Sponsor(s) shall institute protection measures including the installation of roosting structures below the deck at OCTA approved locations.
- If work is performed within any stream channel during the winter storm period, the Project Sponsor(s) shall monitor the five day weather forecast. Where the forecast indicates precipitation, the Project Sponsor(s) shall secure the site to prevent materials from entering the stream or washing downstream. The site shall be completely secured one day prior to precipitation, unless prior written approval has been provided by OCTA. During precipitation events, restoration activities are prohibited *except* for those activities necessary to secure the site. No work shall occur in areas containing flowing water until the flows have receded and the soil moisture content has stabilized.

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2.10 SITE PREPARATION AND INSTALLATION

2.10.1 Grading

Where grading is necessary to achieve an appropriate planting surface for restoration, the Project Sponsor(s) shall prepare a pre-grading plan which will include final contours, hydrological testing and anticipated flow regime (as appropriate), and schedule for implementation. The pre-grading plan shall be included in the Restoration Plan.

Grading activities shall be subject to the following conditions:

- Grading of restoration sites(s) shall be completed no later than December 31st. To the extent feasible, grading should be conducted when soil moisture is relatively low.
- Heavy machinery used in grading may result in soil compaction. Therefore, grading activities shall avoid the dripline of oaks and other areas where compaction may limit restoration success. If necessary, protective fencing shall be placed around the oak dripline to prevent compaction of the root zone from equipment.

2.10.2 Soil Testing

For restoration strategies that focus on restoring or creating habitat, soil testing may be required prior to and during installation to determine soil suitability and prescribe appropriate soil amendments (if necessary) to ensure adequate growing conditions. Soil testing may occur during the site assessment, site preparation, or restoration monitoring phases, and shall include an assessment of soil texture, nutrients, pH, and compaction, among other factors.

2.10.3 Pre-planting Weed Control

Weed control at restoration sites must be addressed at least 3 months before planting activities are initiated. Sites with a significant weed population may require one or more seasons of weed control before native plantings can be installed. While many methods of weed control are available, weed control strategies shall be site-specific and consider target weed species (including extent and abundance of infestation), existing native vegetation, presence of sensitive species, proximity to water sources, and in some cases, importance of maintaining an intact soil profile.

Methods for controlling many perennial invasive weeds (e.g., Pampas grass, tamarisk, eucalyptus) are relatively standard and include removal and/or herbicide treatment. Refer to Cal-IPC (http://www.cal-ipc.org/ip/management/index.php) for sources on specific treatment methods. In all cases, treated plant material shall be removed from the site and disposed of at an appropriate offsite facility.

Effective herbaceous weed eradication requires initial stimulation of weed growth. This allows a larger crop of weeds to be eradicated and reduces the weed seed

bank in the soil. This 'weed farming' method of removal is recommended for restoration sites where target herbaceous weeds are established *and* where irrigation is feasible. Weed farming includes a cycle of irrigation, weed germination, and weed removal that may be repeated up to 12 times or more as a means of reducing the weed seed bank. Mechanical clearing, mowing, and non-residual herbicides (e.g., Rodeo and/or Roundup) may be used to remove weed and exotic species, either in combination with weed farming or as an alternative where weed farming is not feasible. The weed farming process is described below:

- The site will be cleared of weeds by mechanical mowing. Cut vegetation (including stems and flowering heads) will be removed from the site and disposed of at an appropriate offsite facility.
- In the absence of natural rainfall, the restoration area will be irrigated two times per week for a two week period using a temporary irrigation system. Soils shall be saturated to a depth of at least 3 inches during each irrigation cycle.
- Germinated weeds will be mowed and/or treated with an appropriate post-emergent herbicide at the end of the first two week irrigation cycle. Dead vegetation will be removed from the site and disposed of at an appropriate offsite location.
- The cycle of irrigation and weed removal, as described above, will be repeated at least 3 times, including the initial cycle. The cycle will be repeated during different seasons to ensure the removal of both annuals and perennials. The Project Sponsor(s) shall determine if further treatment is required to reduce the weed seed bank.

At the time of planting, the Project Sponsor(s) shall assess whether any undesirable vegetation has become established in the restoration area(s) and whether additional eradication is necessary. Wherever feasible, pre-planting weed control will use mechanical methods such as removal by hand or string trimmers. If effective weed control cannot be attained through mechanical means, appropriate systemic non-residual herbicides may be applied by a licensed applicator under the supervision of the Project Sponsor(s). In some cases, herbicide application may be preferable to mechanical control, particularly where the latter results in excessive impacts to the soil profile. Weed species to be removed may include, but are not limited to the following species listed in Table 1:

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Table 1
Invasive Species

Common Name	Scientific Name
Tamarisk	*Tamarix ramossissima*
Eucalyptus	*Eucalyptus* spp.
Castor Bean	*Ricinus communis*
Pepper trees	*Schinus* spp.
Mustards	*Brassica* spp.
Tree tobacco	*Nicotiana glauca*
Fennel	*Foeniculum vulgare*
Arundo	*Arundo donax*
Ailanthus	*Ailanthus altissima*
Perennial pepper weed	*Lepidium latifolium*
Russian thistle	*Salsola tragus*
Mexican fan palm	*Washingtonia robusta*
Italian thistle	*Carduus pycnocephalus*
Milk thistle	*Silybum marianum*
Non-native weedy thistles	*Cirsium* spp.
Non-native annual grasses: Wild Oats Slender wild oats Foxtail chess Ripgut brome Soft chess Mediterranean barley Italian ryegrass Annual beard grass	 *Avena fatua* *Avena barbata* *Bromus madritensis* ssp. *rubens* *Bromus diandrus* *Bromus hordeaceus* *Hordeum murinum* *Lolium multiflorum* *Polypogon monspeliensis*
Non-native perennial grasses: Pampas grass Bermuda grass Fountain grass Smilo grass	 *Cortaderia selloana* *Cynodon dactylon* *Pennisetum setaceum* *Piptatherum miliaceum*

It should be noted that some non-native species (e.g., annual grasses) are naturalized in southern California and reducing their levels to <5% cover may not be practicable in all situations.

Invasive species consisting of, but not limited to, Arundo (*Arundo donax*), tree tobacco (*Nicotiana glauca*), pepper tree (*Schinus* sp.), Ailanthus (*Ailanthus altissima*), tamarisk (*Tamarix* sp.), perennial pepperweed (*Lepidium latifolium*),

Russian thistle (*Salsola tragus*), Mexican fan palm (*Washingtonia robusta*), and castor bean (*Ricinus communis*) shall comprise 0% of the cover at the end of the 5-year monitoring period.

2.10.4 Irrigation

Many (but not all) restoration projects will require a supplemental source of irrigation for following plant installation. The irrigation system utilized will depend on site conditions (including access and sources of water) and target plant species. Potential irrigation systems include (but are not limited to) drip or bubbler systems, or water trucks. The Project Sponsor(s) shall include a detailed irrigation plan in the Restoration Plan. The irrigation plan shall identify the irrigation system and materials, water source, and irrigation schedule.

2.10.5 Planting

All plantings shall occur between October 1st and April 30th to take advantage of winter rains. If supplemental irrigation will be provided for container stock, planting (but not seeding) may occur into early spring. Container stock shall be installed no later than April 30th, cuttings shall be installed no later than February 1st, and seed shall be planted no later than December 31st. The plant palette, as well as planting density and methodology, shall follow specifications set forth in the detailed Planting Plan (Section 2.6).

3 RESTORATION MAINTENANCE PROGRAM

Maintenance of the restoration site(s) shall be performed by the Project Sponsor(s) or a qualified restoration contractor ('Maintenance Contractor') under direction of the Project Sponsor(s). The individual conducting maintenance inspections shall be a professional (e.g., biologist, landscape architect, horticulturist) knowledgeable of the physical requirements of native vegetation and experienced in the installation and maintenance of native habitats.

3.1 SCHEDULE AND DURATION

Restoration site(s) shall be maintained on a regular basis throughout the maintenance period. The frequency of maintenance activities will depend on a variety of factors, including (but not limited to) restoration site size, type of plantings, use of irrigation, weed control requirements, and herbivore issues. Typically, maintenance will occur more frequently in the year following plant installation and will taper off as plantings become established and success criteria are met. The maintenance period shall begin upon completion of plant installation.

During the maintenance period, sufficient personal and equipment shall be allocated to perform maintenance of all planted areas. Maintenance of the restoration site(s) shall occur for 5 years (10 years for oak and walnut restoration sites) following plant installation (sections 2.5.1 and 2.5.2). Maintenance visits shall be conducted a minimum of once monthly during the first year after installation and quarterly

thereafter. The need for additional maintenance visits shall be determined by OCTA and the Wildlife Agencies depending on site conditions.

3.2 MAINTENANCE ACTIVITIES

The Project Sponsor(s) or Maintenance Contractor shall be responsible for implementing maintenance activities in Sections 3.2.1-3.2.9, as appropriate, according to the schedule and duration in Section 3.1.

3.2.1 Erosion Control

Drainage and sedimentation control devices shall be routinely cleaned, maintained, and repaired, as necessary. The Project Sponsor(s) or Maintenance Contractor shall install additional erosion control devices where necessary, as indicated by OCTA. Once sufficient vegetative cover has developed to prevent erosion, the erosion control devices shall be removed at the direction of OCTA.

3.2.2 Weed Control

Weeds shall be controlled in the restoration area(s) for a minimum of 5 years (10 years for oak and walnut restoration sites). Weeds shall be removed mechanically, to the degree feasible. Where mechanical removal is ineffective or detrimental to the soil profile, herbicides shall be applied utilizing appropriate methodologies and application rates, as determined by the Project Sponsor(s) and/or Maintenance Contractor.

Follow-up foliar application of herbicide shall be applied to any resprouting stems of invasive species in the restoration area(s) approximately 5 to 7 weeks after the initial treatment. At a minimum, quarterly inspections and reapplication of herbicide, if necessary, shall be conducted for a period of 5 years (10 years for oak and walnut restoration sites) to ensure weed control.

Weed control activities shall occur prior to seed set to prevent weed seed from contributing to the soil seed back. Care should be taken to avoid native plantings during weed control activities. Spraying shall not be done under windy conditions to avoid herbicide drift.

3.2.3 Plant Protection

In restoration areas where plant loss or damage from herbivores (e.g., rabbits, gophers, ground squirrels, deer) is high, individual plants may need protective barriers. The need for plant protection shall be assessed on a site-specific basis. Plant protection may include (but is not limited to) wire cages lining planting holes for root protection (e.g., oaks, walnuts); shields or protective sleeves around trunks (trees) or entire plants (e.g., herbaceous perennials, shrubs) for sapling or shoot protection; or fencing of all or a portion of the restoration site(s) to exclude herbivores completely. Above-ground plant protectors shall be removed once plants

are sufficiently large to withstand herbivore damage. After removal, plant protection devices shall be disposed of at an appropriate offsite facility.

3.2.4 Trash and Debris Removal

Although trash and debris will be removed from the restoration area during initial site preparation, it is anticipated that ongoing trash and debris removal will be required (e.g., following rain events or weed control activities). The Project Sponsor(s) or Maintenance Contractor shall be responsible for removing trash and debris during the maintenance period. Garbage, debris, and noxious weed biomass shall be removed from the restoration site(s) and disposed of at an appropriate offsite facility. Dead or downed wood of native species shall not be removed except as required for safety or flood control purposes.

3.2.5 Irrigation

The Project Sponsor(s) or Maintenance Contractor shall be responsible for ensuring proper irrigation of plantings and maintaining all components of the temporary irrigation system at the restoration site(s). The irrigation system shall be maintained and repaired as necessary during the period of use. When irrigation is discontinued, all irrigation equipment shall be removed from the site and disposed of at an appropriate offsite facility.

For restoration projects that use supplemental irrigation, irrigation shall be discontinued 2-5 years before the end of the maintenance period. Projects with a 5-year maintenance program may utilize irrigation for a maximum of 3 years after planting, while projects with a 10-year program may utilize irrigation for up to 5 years following planting. For 5-year projects, it is anticipated that in the first year following installation, plants will be irrigated at a frequency sufficient to keep soil within the root zone moist during the active growing season. In year 2, irrigation is anticipated to lessen, with frequency based on specific plant requirements. In year 3, it is anticipated that little to no irrigation shall be required. This schedule shall be tailored, as appropriate for 10-year projects. In all cases, the timing and frequency of irrigation shall be adjusted, as necessary, based on climatic conditions.

3.2.6 Vandalism

The Project Sponsor(s) or Maintenance Contractor should note any instance of vandalism and report occurrences to OCTA within 24 hours. Recommendations for the replacement of damaged plants and their protection shall be developed by the Project Sponsor(s) and submitted to OCTA for review and approval. Remedial measures will be undertaken in a timely manner by the Project Sponsor. A description of all remedial actions will be included in the annual reports.

3.2.7 Replacement Plantings

Any portion of the restoration area that is bare or exhibits cover significantly below the success criteria due to low seed germination or establishment shall be reseeded.

Prior to reseeding, soil compaction and soil chemical analyses may be required to identify site-specific characteristics that may inhibit plant establishment and thus, require specialized site preparation methods or seed mixes.

Dead container plants shall be recorded by the Maintenance Contractor and replaced on an annual basis to ensure that project success criteria are met. Prior to replanting, the Project Sponsor(s) shall assess the cause of mortality to determine whether the same or alternative (native) species shall be re-installed. All reseeding and replanting shall be conducted from October through December of each year, unless irrigation is provided.

3.2.8 Fire Suppression

Wildfires are an integral component of the Mediterranean ecosystem of southern California and will likely affect some restoration sites. Although native vegetation is generally fire-dependent, recovery from fire depends on a variety of factors, including the age and health of pre-fire native vegetation, presence of an established native species soil seed bank, and fire intensity and frequency. Preventing overly frequent fires (particularly for young or establishing vegetation) will assist in achieving a diverse age structure of vegetation, while promoting natural fire cycles will prevent habitat from becoming too mature and dense. This, in turn, will reduce the fuel load and the chances of large, uncontrollable fire events.

Although prevention of fire is not possible, the damaging effects can be minimized by maintaining the overall health of the restoration plantings *and* reducing invasive species to the degree feasible. Many invasive species, such as grasses, are highly flammable and capable of spreading fire quickly across the landscape. Further, they often exhibit higher post-fire establishment rates than native species, thereby perpetuating the cycle of increased fire frequency and intensity at the expense of native plant establishment.

In addition to appropriate site maintenance, the Project Sponsor(s) shall develop a Fire Management Plan that addresses wildland fire suppression and pre-fire vegetation management for the restoration site(s). If the restoration site(s) is part of a larger property for which a Fire Management Plan already exists, it shall be subject to guidelines in the existing plan. The Fire Management Plan shall identify the following elements:

- Fire management objectives and general guidelines
- Fire management units (if appropriate, depending on size of site)
- Restricted uses onsite to help prevent catastrophic wildfires
- Prevention and suppression tactics, including fuelbreaks and targeted fuel management
- Sensitive resource areas to be avoided
- Staging areas for trucks and equipment
- Road repair and maintenance requirements for specified fire access roads

In developing the Fire Management Plan, the Project Sponsor(s) shall coordinate with the appropriate fire agencies (e.g., CalFire, Orange County Fire Authority).

3.2.9 Flood Control

Flooding is a natural occurrence along stream channels. However, severe flooding that uproots establishing vegetation within restoration site(s) and causes excessive erosion may hinder achievement of restoration-specific success criteria. The Project Sponsor(s) shall implement erosion control measures (Section 3.2.1) in advance of flooding events to minimize damage.

4 RESTORATION MONITORING PROGRAM

The purpose of restoration monitoring is to evaluate progress towards achieving success criteria and ultimately, project goals and objectives, through repeated observations or measurements. Where monitoring indicates that the project is under-performing, maintenance or management activities can be modified or adapted in a timely fashion to correct the deficiency (i.e., adaptive management).

4.1 FREQUENCY AND DURATION

Restoration monitoring shall begin prior to project implementation with the establishment of baseline conditions during the site assessment. Thereafter, monitoring to assess project success shall commence subsequent to installation of plant materials or initiation of specific maintenance activities (e.g., invasive weed control). At a minimum, restoration monitoring will be conducted yearly during the life of the restoration project (e.g., 5- or 10-year maintenance and monitoring period plus any extensions due to replacement plantings).

4.2 ADAPTIVE MANAGEMENT PLAN

Adaptive management is a structured approach to resource management that includes (1) establishing objectives, (2) monitoring to determine whether objectives have been met, and (3) using monitoring results to update and/or alter management activities to achieve objectives. The Project Sponsor(s) shall develop an Adaptive Management Plan for restoration monitoring which will:

- Document the ranges of natural variation within the targeted restoration habitats (i.e., baseline conditions)
- Collect and continuously update information that will inform adaptive management (e.g., qualitative and quantitative data collection)
- Measure the success of specific restoration activities (e.g., vegetative growth, non-native species removal)
- Measure species response to restoration activities (e.g., distribution and abundance of target species)

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Sections 4.2.1 – 4.2.4 identify potential monitoring methods, with the understanding that these may be refined or altered based on expert input and monitoring results. In general, monitoring for restoration success should focus on assessing both habitat condition and species responses to restored habitat.

4.2.1 Photo-monitoring

The Project Sponsor(s) or designated biologist(s) under direction of the Project Sponsor(s) shall establish photo-monitoring stations (points, plots), as appropriate, within the restoration site(s). Photo stations allow a photographic record to be developed over time, and are a valuable tool for monitoring change, as well as re-locating transect or plot locations. For monitoring change, the ability to replicate conditions (e.g., location, direction, camera lens and angle) between years is particularly important; therefore, photo stations and photographs need to be well-marked and documented, as follows:

- Photo stations shall be marked in the field with metal stakes or posts, and triangulated or otherwise referenced to permanent landmarks (e.g., large boulders, roads, structures) so that the photo station can be reestablished if the marker is lost or destroyed.
- Photo station locations shall be recorded using a GPS device; in addition, the location shall be marked on a map and included with the annual and final reports.
- A photo log form shall be used for all photo documentation. The log shall include (but is not limited to) the following information:
  - Photographer name
  - Date of photo documentation
  - Photo station location (including GPS point)
  - Camera type and lens
  - Film type
  - Compass direction for each photograph
  - Height and angle or camera for each photograph
- Both the photo log for each photo station and all photographs taken at the station shall be included in the annual and final reports. Photographs shall be labeled and cross-referenced to the photo log.

As an option, video-monitoring to demonstrate the restoration progress and to make comparisons between before and after conditions is also recommended.

4.2.2 Habitat Monitoring

This section provides general guidelines on monitoring methodologies for those habitats expected to be the focus of most restoration efforts. Additional habitats not included here (e.g., coastal wetlands) may require alternative methodologies. In those cases, the Project Sponsor(s) shall develop habitat-specific monitoring methods for review and approval by OCTA.

Habitat monitoring methods outlined below are largely quantitative in nature, and shall be supplemented by plant survival data collected by the Maintenance Contractor (Section 3.2.7). When developing or refining methodologies for habitat monitoring, the Project Sponsor(s) shall:

- Define the type and number of sampling units (e.g., transects, plots, points)
- Describe the sampling unit size and shape
- Determine the placement of sampling units and whether they will be temporary or permanent
- Provide sample data collection forms

Oak, Walnut, and Sycamore Woodlands. The Project Sponsor(s) or designated biologist(s) shall establish permanent vegetation transects within the restoration site(s), and collect quantitative data on species composition and structure (e.g., cover, height, development of multiple vertical layers) along each transect. Monitoring should quantify recruitment of trees and shrub species within 2 x 2-m plots along each transect, and measure heights and girths for the dominant tree and shrub species along each transect. In addition, the biologist(s) should qualitatively assess trees for evidence of damage or disease.

Riparian Habitat. The Project Sponsor(s) or designated biologist(s) shall establish permanent vegetation transects perpendicular to the riparian corridor, and collect quantitative data on species composition and structure (e.g., cover, height, development of multiple vertical layers) along each transect. Monitoring should measure foliage volume at 1-m height intervals within 2 x 2-m plots, identify species contributing to the foliage volume, quantify recruitment of woody riparian tree and shrub species within 2 x 2-m plots along each transect, and measure heights and girths for the dominant riparian tree and shrub species along each transect.

Coastal Sage Scrub. The Project Sponsor(s) or biologist(s) shall establish transects within scrub habitat, and collect quantitative data (e.g., species richness, cover) along each transect and in quadrats. Number and size of transects/plots may vary depending on the site; however, a relatively efficient and effective sampling design has been demonstrated using a combination of 10 50-m point-intercept transects with 1 m x 1-m quadrats placed on alternate sides of the transect at 5 m intervals. Cover data is collected at 1 m intervals along the transect line; species richness data is collected within the quadrats and should be correlated with climatic conditions, particularly for annual species (Deutschman and Strahm 2009).

Grasslands. The Project Sponsor(s) or biologist(s) shall collect quantitative data on vegetation species distribution, abundance, composition, and structure (e.g., cover, height, amount of thatch), using randomly allocated transects and/or randomly placed 1-m^2 quadrats. Monitoring shall record percent vegetative cover (categorized by native versus non-native species cover), species abundance, and amount of thatch for each quadrat. Quadrat size may need to be adjusted based on the size of the restoration area and/or results of initial monitoring studies.

4.2.3 Native Species Monitoring

While habitat monitoring provides an indication of the structure and composition of restored habitat, species monitoring can determine the functionality of the habitat for wildlife species. Species monitoring shall focus on sensitive and/or non-sensitive species, as appropriate. Although some sensitive species (e.g., California gnatcatcher, least Bell's vireo) can act as indicators of habitat condition, these species are not always present, even if suitable habitat is available. Therefore, monitoring increases or changes in species diversity (including common species), particularly where these changes can be correlated to habitat improvement or successional stages, may be a more useful measure of restoration success.

Based on restoration goals and objectives, the Project Sponsor(s), in coordination with OCTA and the wildlife agencies, shall identify suitable target species or species groups for monitoring (e.g., California gnatcatcher, arroyo toad, riparian birds, coastal sage scrub birds). The Project Sponsor(s) or designated biologist(s) shall monitor target species annually to assess their distribution, relative abundance, and/or breeding activity. Surveys shall be conducted according to standard survey protocols, where available.

Surveys for riparian birds shall be conducted along systematic survey routes, monitoring all portions of the riparian habitat. Monitoring shall identify species using the habitat and their relative abundance, and quantify the number of nesting pairs of any sensitive riparian bird species (e.g., least Bell's vireo, southwestern willow flycatcher, yellow-breasted chat, Cooper's hawk) using the habitat for nesting. Surveys shall be conducted at varying times of day between visits. The stream reach shall be monitored three times during January through mid-March, with at least a 7-day interval between site visits. Surveys shall begin within 1 hour after sunrise and end by noon, and should not be conducted under extreme conditions (i.e., during heavy rain or when the temperature is >95°F or <40°F or with winds >10 mph). Taped vocalizations shall be used, as needed. Territories (singing males) and nest locations shall be mapped, and the nest fate recorded (i.e., determine number of eggs laid, nest parasitism rates, eggs or nests lost to nest predators, and number of chicks fledged).

Surveys for upland birds (exclusive of those conducted using protocol surveys) shall be conducted by point counts 4 times per year (according to season), with each site visited 2 times per season. Point count monitoring shall record species and relative abundance within a given area, and counts shall begin at dawn.

4.2.4 Invasive Species Monitoring

Invasive Plant Species. Invasive plant species shall be monitored by the Project Sponsor(s) or Maintenance Contractor as part of the Maintenance Program (Section 3.2.2) and by the Project Sponsor(s) or designated biologist during habitat monitoring (Section 4.2.2). Where invasive plant species are determined to pose a

threat to restoration success, remedial actions will be implemented, as discussed in Sections 3.2.2, and documented in the appropriate reports.

Invasive Animal Species. The Project Sponsor(s) or biologist(s) shall survey annually for bullfrogs, cowbirds, and other invasive animal species that have the potential to significantly and negatively affect native wildlife. Surveys shall be conducted by walking through suitable habitat and mapping their distribution and relative abundance. Where invasive animals are determined to pose a threat to native species, recommendations for management will be included in the appropriate reports.

5 CONTINGENCY MEASURES

If at any time, the restoration project appears to be under-performing according to the established success criteria, the Project Sponsor(s) shall conduct remedial actions in a timely fashion to ensure that goals and objectives of the project are met. In addition, the Project Sponsor(s) may consult with the agencies regarding adaptive management that may result in alterations to the Restoration Plan. Potential remedial actions have been addressed throughout this document and include (but are not limited to):

- Replacement plantings
- Remedial reseeding
- Soil testing
- Invasive control
- Supplemental irrigation

In the event of a major fire or flood or other disturbance that substantially damages the restoration project, post-disturbance site conditions will be assessed as soon as the area is safe to access (e.g., the threat has passed). This site assessment shall be conducted by the Project Sponsor(s) and results shall be documented in a letter report to OCTA with accompanying photographs. At a minimum, invasive species abatement practices will likely be initiated or increased to encourage natural recovery processes. If evidence of natural recovery, as defined by native species regeneration (e.g., seedlings, stump sprouting), is not observed within three months or one growing season of the disturbance, or if the recovery is deemed inadequate to meet the stated goals and objectives of the project, the Project Sponsor(s) shall prepare an analysis detailing the cause of the failure and shall enter into consultation with the agencies to determine an appropriate course of action, including (but not limited to) remedial actions, adaptive management, and/or modified project goals and objectives.

Where fire or flood damages the restoration site(s), the Project Sponsor(s) shall work with OCTA and the Wildlife Agencies to develop an adaptive management strategy that allows the restoration effort to move forward. This strategy may include

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(but is not limited to) post-disturbance monitoring, re-planting, and modified success criteria.

6 REPORTING AND DOCUMENTATION

Reporting is an important tool to assess project success and determine the need for remedial actions or adaptive management. Documentation provides a permanent record of the restoration project, and informs long-term site management and/or other restoration or research efforts.

6.1 REPORTS

The Project Sponsor(s) shall be responsible for submitting reports to OCTA for review and approval according to the schedules below. In addition, the Project Sponsor(s) shall be responsible for any other reporting requirements necessitated by federal or state permits or authorizations.

6.1.1 Maintenance Reports

The Project Sponsor(s), with input from appropriate contractors, shall be responsible for preparing maintenance reports during the entire maintenance period. Maintenance reports shall be prepared and submitted to OCTA and the Wildlife Agencies following each maintenance visit. As set forth in Section 3.1, maintenance visits shall be conducted a minimum of once monthly during the first year after installation and quarterly thereafter. Maintenance reports shall be letter reports (unless specific issues dictate a longer report) and shall include:

- Person or person(s) conducting the maintenance
- Date(s) of maintenance visits
- General site conditions
- Description of maintenance activities (e.g., irrigation maintenance, weed control, trash removal) and actions taken
- Issues or problems requiring follow-up attention
- Recommendations

Maintenance activities shall be summarized in the annual status report (Section 6.1.2) and final report (Section 6.1.3). In addition, those reports shall review the Maintenance Program budget, project schedule, and restoration site viability. Any proposed changes and/or recommendations shall be subject to review and approval by OCTA.

6.1.2 Annual Status Reports

The Project Sponsor(s) shall provide OCTA and the Wildlife Agencies with an Annual Status Report (ASR) no later than January 31 of every year after project initiation and continuing until OCTA accepts the Final Report. The ASR shall present an overview of the restoration effort, focusing on year-to-date activities, and

shall specifically address maintenance activities, monitoring methodologies and results, success criteria (as measured by plant survival, percent cover, or other parameters), remedial actions (including but not limited to replanting or reseeding), and recommendations for the following year. The ASR shall include the following:

- a list of names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year
- a description of the existing conditions of the site
- the results of focused wildlife surveys
- an analysis of all qualitative and quantitative vegetation monitoring data
- the method used to assess these parameters
- the number by species of plants replaced
- copies of all photo documentation
- maps identifying monitoring areas, transects, and planting zones
- GPS points of all transect locations and photo documentation points
- discussion and recommendations
- copies of all permits, and any special conditions or letters modifying the original permit conditions
- a description of the status of the restoration site and restoration activities, including actual or projected completion dates, if known
- a table showing the implementation status of each restoration task
- an assessment of the effectiveness (e.g., success criteria) of each completed or partially completed restoration task

6.1.3 Final Report

Upon completion of the maintenance and monitoring programs, the Project Sponsor(s) shall prepare a Final Report that summarizes methods, results, remedial actions, and adaptive management from all monitoring years (see elements in Section 4.2, above); appendices shall include all pertinent data and photo documentation. The Final Report shall serve as the complete record of the restoration project. The Final Report shall also include recommendations for long-term management of the restoration site(s).

6.1.4 Data Documentation

The Project Sponsor(s) shall be responsible for maintaining and submitting project documentation to OCTA with all reports. Data to be submitted shall include maps (including GIS-generated maps where possible), quantitative monitoring data (including forms and field notes), photo documentation (photographs and accompanying photo logs) and video documentation (if applicable). Data shall be provided in an electronic format, to the degree feasible.

The Project Sponsor(s) shall maintain a record of maintenance and monitoring activities to assist in evaluating changes in resource status, and responses to remedial or adaptive management actions. Restoration status should be reviewed

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annually to inform the next year's restoration maintenance and management activities.

7 LONG-TERM RESTORATION SITE PROTECTION

While the restored habitat will be presumed to be self-sufficient once maintenance and monitoring obligations are met, some level of post-restoration site protection and monitoring may be required to ensure long-term habitat viability. In the Final Report, the Project Sponsor(s) shall document site-specific conservation mechanisms and long-term land management tasks and costs.

7.1 SITE CONSERVATION MECHANISMS

The Project Sponsor(s) shall provide information on site-specific strategies for long-term land protection of restoration site(s). Strategies should include conservation easements or Deed restrictions.

Prior to sign off, the Project Sponsor will place a conservation easement, or other Wildlife Agencies approved conservation mechanism, in favor of the Wildlife Agencies (or an approved third party), over the project site specifying that the area will be retained in perpetuity as open space for the sole purpose of native habitat conservation. The conservation easement or mechanism language should be approved by the Wildlife Agencies and OCTA prior to its execution. The conservation easement or mechanism shall disclose the obligations of future owners/tenants of the property.

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Preliminary Results Restoration Proposals: Biological Factors*

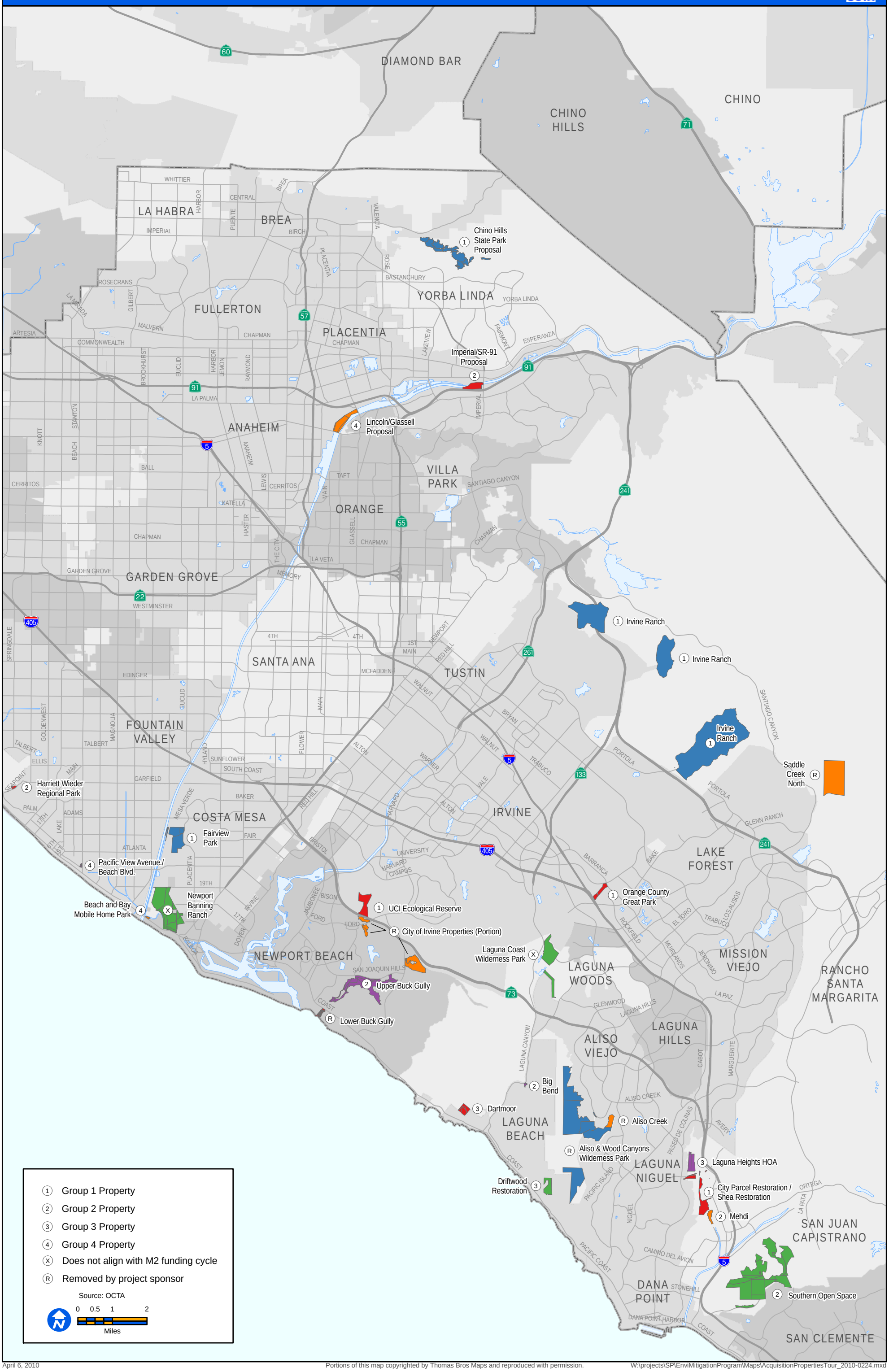
Property Number	Acquisition / Restoration	Property	Sponsor	Geographic Area	Watershed	Acreage	Project Information	Cost / Acre	Est. Total Cost		
8	Restoration	Chino Hills State Park	Chino Hills State Park	Chino Hills State Park	Lower Santa Ana River	180.0	150 acres of CSS & cactus scrub	$50,000	$7,500,000	GROUP 1	General Biological Characteristics: high potential to support similar vegetative communities lost to freeway projects, restores habitat for species that are considered sensitive under the California Natural Diversity Database (CNDDB), high potential net benefit in ecological value for target species, and high connectivity/contiguity opportunities
								$75,000	$11,250,000		
							30 acres of sycamore/willow riparian	$25,000	$750,000		
								$35,000	$1,050,000		
10/74	Restoration	City Parcel Restoration (aka as Shea Restoration)	San Juan Capistrano	San Juan Capistrano	San Juan Creek	53.0	Riparian corridor, upland CSS, oak woodlands, native grassland habitats, artichoke thistle, mustard invasives, arundo	$25,000	$1,325,000		
								$35,000	$1,855,000		
21	Restoration	Fairview Park	Costa Mesa	Costa Mesa	Talbert Channel/Greenville Banning	23	6 acres Wetland Pond Planting	$107,666	$646,000		
							5 acres Native Grasslands Planting	$20,000	$100,000		
							9 acres Coastal Sage Scrub, Willow Scrub	$26,666	$240,000		
							3 acres Oak Woodland	$28,333	$85,000		
							Total request (23 acres of restoration, water deliver system, amenities, and plant est.)	**$139,130**	**$3,200,000**		
36	Restoration	Irvine Ranch	Irvine Ranch Conservancy	Irvine	Santa Ana River	500.0	2.2 acres chaparral, 362.4 CSS, 138.4 CSS/native grassland mix, 108.3 native grassland, 47.4 oak/sycamore woodland, 81.5 passive restoration (est. total of 740.5 acres, but proposing 500 acres for restoration)	$11,000	$5,500,000		
57	Restoration	Orange County Great Park	Orang County Great Park Corporation	Irvine	San Diego Creek	176.4	88 acres of CSS, 45 acres of grasslands, 34 acres of riparian thickets and wetlands, 5.4 acres of oak, 4 acres of cactus scrub	sponsor assumes prevailing market rate per acre			
89	Restoration	UCI Ecological Reserve	Nature Reserve of Orange County	Irvine	San Diego Creek	8.5	8.5 acres cactus scrub	$38,235	$325,000		
6	Restoration	Big Bend	Laguna Beach	Laguna Beach	Laguna Canyon Channel	5.0	3.5 acres of native habitat	$20,000	$70,000	GROUP 2	General Biological Characteristics: good potential to support similar vegetative communities lost to freeway projects, restores habitat for species that are considered sensitive under CNDDB, good potential net benefit in ecological value for target species, and good connectivity/contiguity opportunities
								$25,000	$87,500		
27	Restoration	Harriett Wieder Regional Park (aka Bolsa Chica Conservancy)	Bolsa Chica Conservancy	Bolsa Chica	Los Alamitos/E Garden Grove/Bolsa Chica	25.0	coastal wetlands, coastal dune, upland/mesa habitats	$50,000	$1,250,000		
35	Restoration	Imperial/SR-91 Proposal	Anaheim	Anaheim	Lower Santa Ana River	5-10	Est. five to ten acres to establish riparian, transitional, and upland native plan communities	$45,000	$225,000		
								$45,000	$450,000		
80	Restoration	Southern Open Space (OS) Restoration	San Juan Capistrano	San Juan Capistrano	San Juan Creek	39.7	Upland CSS	$27,000	$812,927		
90	Restoration	Upper Buck Gully	Newport Beach	Newport Beach	Los Trancos/Muddy Creek	68.3	Active restoration (47.7 acres)	$7,000	$333,900		
							Passive restoration (20.6 acres)	$1,500	$30,900		
								$5,400/acre avg.			
							Total request ($500,000 [BARRIERS] & $367.000 [RESTORATION])		**$867,000**		
13	Restoration	Dartmoor	Laguna Beach	Laguna Beach	Los Trancos/Muddy Creek/Laguna Canyon Channel	39.7	High quality CSS, sensitive plants	$27,000	$812,927	GROUP 3	General Biological Characteristics: lower potential to support similar vegetative communities lost to freeway projects, fewer species that are considered sensitive under CNDDB, lower net benefit in ecological value for target species, and fewer connectivity/contiguity opportunities
19	Restoration	Driftwood Restoration	Laguna Beach	Laguna Beach	Laguna Canyon Channel/Aliso Creek/Salt Creek	6.0	ESHA replanting, monitoring; high quality CSS	$120,000	$720,000		
39	Restoration	Laguna Heights HOA	San Juan Capistrano	San Juan Capistrano	San Juan Creek	20-30	Upland CSS, native grasslands	$27,000	$540,000		
									$810,000		

* The restoration proposals are based primarily on the biological criteria. It may be possible their placement will change upon further information that are obtained for the non-biological factors. For instance, the type of habitats to be restored; price per acre for restoration; and leveraging partnership may change the overall ranking of the restoration proposals.

Preliminary Results Restoration Proposals: Biological Factors*

Property Number	Acquisition / Restoration	Property	Sponsor	Geographic Area	Watershed	Acreage	Project Information	Cost / Acre	Est. Total Cost		
5	Restoration	Beach and Bay Mobile Home Park	Newport Beach	Newport Beach		3.0	purchase and/or habitat improvement			GROUP 4	General Biological Characteristics: very low potential to support similar vegetative communities lost to freeway projects, very few species that are considered sensitive under CNDDB, very low net benefit in ecological value for target species, and very low connectivity/contiguity opportunities
43	Restoration	Lincoln/Glassel Proposal	Anaheim	Anaheim		1.6	Est. one acre to establish ruparian, transitional, and upland native plan communities				
59	Restoration	Pacific View Avenue/Beach Blvd.	Huntington Beach	Huntington Beach		1.0	Wetland retoration				
60	Restoration	Pacific View Avenue/Beach Blvd.	Huntington Beach	Huntington Beach		2.0	Wetland retoration				
38	Restoration	Laguna Coast Wilderness Park	Laguna Beach	Laguna Beach	Laguna Canyon Channel	6,000.0	Laguna Lakes/wetlands, upland habitat meadows			DOES NOT ALIGN WITH M2 FUNDING CYCLE	
55	Restoration	Newport Banning Ranch	Newport Beach	Newport Beach	Santa Ana River	80.0	coastal mesa, bluffs, arroyos, and wetlands; cactus wren, maritime succulent scrub, southern coastal bluff scrub, tidal coastal salt marsh, southern willow forest, vernal pools, southern tarplant				
2	Restoration	Aliso & Wood Canyons Wilderness Park	County of Orange	Laguna Niguel	Aliso and Sulphur Creeks	4,000.0	CSS; riverine habitat			REMOVED BY PROJECT SPONSOR	
3	Restoration	Aliso Creek	County of Orange	Laguna Niguel	Aliso and Sulphur Creeks	4.0	ecosystem restoration and streambed stabilization				
9	Restoration	City of Irvine Properties	Irvine	Irvine		203.0					
49	Restoration	Lower Buck Gully	Newport Beach	Newport Beach		50.0	habitat improvements				
65	Restoration	Saddle Creek North	Conservation Fund	Trabuco (Unincorporated County)		30.0	upland and riparian restoration	$24,733	$741,990		

Restoration Proposals



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