

COASTAL CONSERVANCY

Staff Recommendation
Elkhorn Slough Biomass Pilot Project

22-080-01

Project Manager: Tom Gandesbery

RECOMMENDED ACTION: Authorization to disburse up to \$483,600 to the Elkhorn Slough Foundation to use a mobile kiln to sequester carbon by converting non-native invasive tree logs to charcoal.

LOCATION: Unincorporated Northern Monterey County

EXHIBITS

Exhibit 1: [Project Location Maps](#)

Exhibit 2: [Project Photos](#)

Exhibit 3: [Programmatic EIR, Monterey Bay Air Resources District](#)

Exhibit 4: [Project Letters](#)

RESOLUTION AND FINDINGS

Staff recommends that the State Coastal Conservancy adopt the following resolution and findings.

Resolution:

The State Coastal Conservancy hereby authorizes a grant of an amount not to exceed four hundred eighty-three thousand six hundred dollars (\$483,600) to the Elkhorn Slough Foundation (“the grantee”) to use a mobile kiln to sequester carbon by converting non-native invasive tree logs to charcoal.

Prior to commencement of the project, the grantee shall submit for the review and written approval of the Executive Officer of the Conservancy (Executive Officer) the following:

1. A detailed work program, schedule, and budget.
 2. Names and qualifications of any contractors to be retained in carrying out the project.
 3. A plan for acknowledgement of Conservancy funding.
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4. Evidence that all permits and approvals required to implement the project have been obtained.
5. Any other applicable agreements deemed necessary for the project by the Conservancy's Executive Officer.

Findings:

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

1. The proposed authorization is consistent with Chapter 3 of Division 21 of the Public Resources Code, regarding the Climate Ready Program.
2. The proposed project is consistent with the current Conservancy Project Selection Criteria and Guidelines.
3. The Elkhorn Slough Foundation is a nonprofit organization organized under section 501(c)(3) of the U.S. Internal Revenue Code.
4. The Conservancy has independently reviewed and considered the "Proposed Smoke Management Program Final Environmental Impact Report" attached as Exhibit 3 of the accompanying staff recommendation, which was adopted by the Monterey Bay Air Resources District on May 15, 2002 pursuant to the California Environmental Quality Act (CEQA). The Conservancy finds that the project may result in a "significant and unavoidable" impact to Air Quality, but environmental and other benefits of the proposed project as described in the accompanying staff recommendation outweigh or render acceptable this unavoidable adverse environmental impact.
5. Pursuant to the California Environmental Quality Act, the Conservancy adopts the Findings of Significant Effects and Statement of Overriding Considerations set forth in this staff report. (See section titled CEQA Compliance).

STAFF RECOMMENDATION

PROJECT SUMMARY:

Staff recommends that the Conservancy authorize a grant of \$483,600 to the Elkhorn Slough Foundation (ESF) to convert 8,500 tons of stockpiled logs into approximately 213 tons (approximately 15 cubic meters) of a charcoal product (often referred to as "biochar") at two ESF properties. The logs came from a clearing of weedy trees species as part of larger vegetation restoration project throughout the Elkhorn Slough Reserve (Exhibit 1). The goals of the project are to reduce air pollution and greenhouse gas emissions/sequester carbon and to demonstrate that biochar has beneficial uses for agriculture. ESF will use a carbonator-type kiln to pyrolyze (a cleaner method than incineration)) stockpiled eucalyptus, pine, and acacia logs. The kiln incinerates the wood at a very high heat under controlled oxygen conditions that greatly reduce air pollution and carbon dioxide emissions, as compared to open burning or other less sophisticated disposal methods. Feedstock for the operation will be the 8,500 tons of

stockpiled non-native tree logs that resulted from a previous 8-acre tree removal project on ESF property. (See photos in Exhibit 2).

Using funding from other sources, ESF will work with scientists at 1) the Moss Landing Marine Labs (MLML) to test the effectiveness of biochar to improve farmland waste water quality, and 2) University of California Davis and California State University Monterey Bay to test biochar's effectiveness in increasing farmland soil health, such as soil moisture and fertility on a farm where ESF holds a conservation easement. MLML will test the biochar for its effectiveness in trapping polluted runoff from local farms ("tail water"). MLML has built a series of "scrubbing" wetlands and biodigesters as a demonstration of how wetlands can treat runoff that drains to the Moro Cojo Slough (Exhibit 2). ESF will also examine the potential to generate revenue from production of biochar if it successfully improves farmland soil health.

Future work by ESF is likely to include removal of another 20 acres of trees adjacent to the Greenpoint property which could also be changed into biochar if the pilot project is successful.

Site Description: The Elkhorn Highlands Reserve and Greenpoint properties are located in the sandy hills east of Elkhorn Slough and are part of an assemblage of ecologically rich protected properties in the Elkhorn Slough watershed in north Monterey County (Exhibit 1). Both properties are near rural residential development and drain into freshwater wetlands. Greenpoint consists of about ten acres of oak woodland, grassland, and eucalyptus while the Elkhorn Highlands Reserve includes 167 acres of freshwater wetlands, maritime chaparral, oak woodlands, and grasses, in addition to groves of invasive, exotic tree species.

Grant Applicant Qualifications: ESF has an experienced grant administrative staff that processes multiple grants per year from a wide variety of public and private organizations and agencies including several Coastal Conservancy grants. ESF and Elkhorn Slough National Estuarine Research Reserve staff have collaborated to plan and implement many restoration projects and have piloted a variety of restoration techniques.

CONSISTENCY WITH CONSERVANCY'S PROJECT SELECTION CRITERIA:

The proposed project is consistent with the Conservancy's Project Selection Criteria and Guidelines, last updated on September 23, 2021, in the following respects:

Selection Criteria

1. Extent to which the project helps the Conservancy accomplish the objectives in the Strategic Plan.

See the "Consistency with Conservancy's Strategic Plan" section below.

2. Project is a good investment of state resources.

This project is beneficial to California because it will help facilitate the removal of exotic, invasive trees from ESF properties, which will reduce wildfire hazard, increase wetland surface water, and restore environmentally sensitive freshwater wetland and maritime chaparral habitats. For the charcoal production phase, the benefits include carbon sequestration,

farmland waste-water treatment, and farmland soil moisture and fertility improvement. There are 8,500 tons of logs stockpiled on these properties, awaiting processing. This project will avoid the expense and environmental impact of transportation to firewood, landfill, or energy production uses, which will magnify the value of non-native tree removal projects. The central coast, and California in general, desperately need case studies and demonstration projects that reduce the environmental impacts of processing plant waste from fuel management projects. Data and lessons learned from this project will be shared with practitioners and others who are considering similar management of woody biomass.

The use of carbonator technology is fairly new and not widely available. However, ESF has obtained two bids from contractors to perform charcoal production, processing, and packaging work. Both contractors proposed to use the same large mobile kiln that processes up to 15 tons per hour. The project is estimated to take 57 days to complete at that rate.

This project will also study the effectiveness of the biochar product to prove the concept and explore the marketability of biochar charcoal.

The proposed project is consistent with several state plans, and specifically with the following:

- California's Wildfire and Forest Resilience Action Plan (Governor's Forest Management Task Force, January 2021), which calls for activities such as fuels reduction, forest thinning, vegetation management, prescribed fire, shaded fuel breaks, defensible space, and enhancement of fire-prone habitats to reduce fire risk.
- The California Forest Carbon Plan (CNRA, 2018), which calls for restoration of natural fire regime and forest composition through a multitude of approaches including thinning, prescribed burns, invasive vegetation management, and shaded fuel breaks.
- The Community Wildfire Prevention & Mitigation Report (Cal Fire, 2019), which urges state and local agencies to implement the goals of the Carbon Forest Plan and lays out recommendations to agencies to increase the scale and pace of management and mitigation actions to improve forest health and resiliency.

3. Project includes serious effort to engage tribes. Examples of tribal engagement include good faith, documented efforts to work with tribes traditionally and culturally affiliated to the project area.

The removal of seven acres of nonnative trees that started this project was completed in partnership with Ventana Forestry Company which is owned by the chairman of the Esselen tribe and employs tribal members.

4. Project benefits will be sustainable or resilient over the project lifespan.

The proposed project will help increase fire resiliency in the context of anticipated climate change. Fire resilience is a critical issue due to increased average temperatures, reduced marine fog, and longer and more severe droughts. California is facing unprecedented fire risk due to climate change and a growing populace. Both the 2020 and 2021 fire seasons broke numerous records. Charcoal is expected to be very stable after production, stored in barns and

added to farmland soils as biochar. Potential benefits to farmland soils from biochar include increased water holding capacity, enhanced microbial activity, enhanced nutrient availability, and other benefits may similarly have long-lasting effects. Some the lands on which biochar will be applied are owned by the Elkhorn Slough Foundation and maintained by a professional managers and community volunteers and includes 150 acres of certified organic farmland, a sustainably managed cattle ranch and thousands of acres of woodlands and habitat. ESF works with experienced farmers who lease out farms and who have expressed interest in testing biochar on their fields.

5. Project delivers multiple benefits and significant positive impact.

As discussed above, the project benefits likely include carbon sequestration, farmland wastewater treatment, and farmland soil moisture and fertility improvement. 8,500 tons of logs are stockpiled on ESF properties, awaiting processing. The project will create a useful conservation product in a that will magnify the value of non-native tree removal projects.

6. Project planned with meaningful community engagement and broad community support.

ESF works closely with the Elkhorn Slough National Estuarine Research Reserve and shares community volunteers who work on stewardship projects on Reserve and Foundation lands. ESF is a community supported non-profit with 1,500 members. The community has been enthusiastic about our work to reduce fire hazards in the watershed and about ESF’s restoration activities, including wetland restoration and the pursuit of carbon sequestration.

PROJECT FINANCING

Coastal Conservancy	\$483,600
California Department of Transportation	\$210,000
Natural Resource Conservation Service	\$44,025
Project Total	\$785,000

The anticipated source of funding for this project will come from a grant to the Coastal Conservancy from the Department of Conservation’s (DOC) Regional Forest and Fire Capacity Program (RFFCP). The Conservancy is one of the subregional recipients of RFFCP block grants. The goal of the RFFCP is to increase regional capacity to prioritize, develop, and implement projects that improve forest health and fire resiliency, facilitate greenhouse gas emissions reductions, and increase carbon sequestration in forests throughout California. The project is consistent with the funding source because it is a biochar demonstration project that could provide a model for efficiently processing plant waste produced by fuel management activities. Unless specifically identified as “Required Match,” the other sources of funding are estimates. The Conservancy does not typically require matching funds or in-kind services, nor does it require documentation of expenditures from other funders or of in-kind services. Typical grant conditions require grantees to provide any funds needed to complete a project.

CONSISTENCY WITH CONSERVANCY'S ENABLING LEGISLATION:

The recommended project would be undertaken pursuant to Section 31113 of Chapter 3 of Division 21 of the Public Resources Code, which authorizes the Conservancy to address the impacts and potential impacts of climate change on resources within the Conservancy's jurisdiction (Section 31113(a)).

Pursuant to Section 31113(b) and (c), the Conservancy is authorized to award grants to nonprofit organizations and public agencies to undertake projects that include reducing greenhouse gas emissions and addressing extreme weather events, sea level rise, flooding, and other coastal hazards that threaten coastal communities, infrastructure, and natural resources.

Pursuant to Section 31113(c), the Conservancy must prioritize grants for projects that maximize public benefits and have one of several specified purposes, including reducing greenhouse gas emissions.

Consistent with these sections, the proposed project facilitates the reduction of greenhouse gas emissions from processing biomass produced by wildfire fuel reduction treatments. The project maximizes public benefits by converting fuel management waste into a biochar product and conducting a study that is expected to demonstrate that the biochar product can be used to improve water quality and farmland soil health.

The project is within the Conservancy's jurisdiction because it will occur within the coastal zone of Monterey County.

CONSISTENCY WITH CONSERVANCY'S [2018-2022 STRATEGIC PLAN](#) GOAL(S) & OBJECTIVE(S):

Consistent with **Goal 8, Objective C**, the proposed project will implement a project to restore the health and resilience of California forests, grasslands, and natural lands in a manner that reduces fire risk to communities, by piloting a biomass treatment process that could facilitate future wildfire fuel management projects.

CEQA COMPLIANCE:

The proposed project is subject to the Monterey Bay Air Resources District's Smoke Management Program (SMP). The Proposed Smoke Management Program Final Environmental Impact Report (PSMP FEIR) adopted on May 15, 2002 by the Monterey Bay Air Resources District (MBARD), assessed the potential environmental effects of adopting an updated Smoke Management Program.

Findings for Significant Effects that can be Mitigated to Less-Than-Significant Levels

The majority of the potentially significant effects identified in the PSMP FEIR can be mitigated and reduced to less-than-significant levels. Potentially significant effects that can be reduced to less than significant were identified in the areas of Geologic Hazards and Soils; Water Quality; Flooding; Fisheries; Vegetation and Wildlife Resources; and Archeological and Historical

Resources. The potentially significant impacts identified by the PSMP EIR are related to prescribed fire and clearing of vegetation in preparation for prescribed fire. Because this project does not involve prescribed fire, these impacts are not relevant to this project.

Findings for Potentially Significant and Unavoidable Effects

The PSMP FEIR identifies potentially significant and unavoidable effect from prescribed burns in the areas of Safety and Air Quality. These impacts and associated mitigation are summarized below.

Safety

Prescribed fires can occasionally escape their boundaries and cause safety concerns. This impact can be mitigated to less than significant by implementing the following mitigation measures included in the PSMP EIR:

- Only conduct prescribed burns under conditions prescribed by State and federal law.
- Ensure adequate fuel breaks exist, and personnel and equipment are on site during the prescribed fire event.
- Develop safety plans for escaped fire.

The proposed project is not a prescribed fire but classified as an agricultural burn and subject to an agricultural burn permit from the MBARD. Burning will be contained in the carbonator kiln and will remain contained. The potentially significant and unavoidable effect associated with fire safety is not relevant to this project.

Air Quality

Burning vegetation releases nitrogen oxides and volatile organic carbon, both of which are precursors to ozone. The Smoke Management Program maintains a requirement that no burning occur on days when high ozone concentrations are expected, but it provides the Air Pollution Control Officer the discretion to approve prescribed burns that would exceed the emission budgets under circumstances where doing so would avoid other impacts such as closed roadways, multi-day impacts to sensitive receptors and sensitive habitats, and multi-day impacts to air quality. Allowing emission budgets to be exceeded would reduce these impacts but could result in a significant, unavoidable impact on ozone levels.

The EIR identifies one mitigation measure to limit ozone precursor emissions by not approving burns that would result in exceedance of emission limits; however, since the Air Pollution Control Officer would have the discretion to exceed emission limits, the impact remains significant.

Statement of Overriding Considerations

In the event a project has unavoidable significant potential effects, the CEQA Guidelines require the decision-making agency to balance, as applicable, the economic, legal, social, technological, or other benefits of a proposed project against its unavoidable environmental risks when determining whether to approve the project (Title 14 California Code of Regulations Section

15093). If the specific project benefits outweigh the unavoidable adverse environmental effects of the project, a Statement of Overriding Considerations may be adopted and the project approved, despite its adverse environmental effects. The overall environmental benefits of the proposed project, as detailed in the PSMP FEIR, warrant the Conservancy's decision to approve the project even though some of the environmental effects of the project cannot be mitigated and will result in significant and unavoidable effects. The project will provide the following public benefits that justify proceeding with the project despite the environmental cost of the unavoidable significant effects:

- As several studies have confirmed, the use of a carbonator kiln for the disposal of approximately 8,500 tons of biomass will greatly reduce air pollution and carbon dioxide emissions, as compared to other methods of disposal such as open burning or pile burning. The benefits of demonstrating marketable uses of biochar will extend well beyond the project boundary. Regional and state leadership are grappling with identifying effective and carbon-reducing biomass treatment methods. The project, if successful, will demonstrate that use of a carbonator kiln is an effective alternative for processing fuel management waste. In addition, the potentially significant effect on air quality could be avoided if ESF does not operate the carbonator on days that its use would lead to exceedance of emission limits.

For these reasons, the Conservancy staff recommends that the Conservancy find that the project, as mitigated, avoids or reduces to less than significant all potentially significant environmental effects, except Air Quality. With respect to Air Quality, Conservancy staff recommends that the Conservancy find that the environmental, economic, and social (public safety) benefits of the project outweigh the unavoidable environmental effects, thereby warranting its approval.

Upon Conservancy approval of the proposed projects, staff will prepare and file a Notice of Determination.

The biochar research component of the project is categorically exempt from CEQA pursuant to 14 California Code of Regulations Section 15306. Consistent with that section, the research will involve data collection and research activities that will not result in a serious or major disturbance to an environmental resource.