



**EXHIBIT A
PROPOSAL COVER PAGE**

Proposal Type

Concept Proposal for Demonstration Projects and Processes

Organization Name (Lead Applicant)

California Land Stewardship Institute _____

Organization Type

Federally recognized Indian Tribe

California State Indian Tribe

Public agency

Local or state agency/special district

Resource Conservation District

Non-profit organization

Public utility

Other: _____

Contact Name/Title

Name: Laurel Marcus

Title: Executive Director

Email: laurelm@fishfriendlyfarming.org

Phone Number (include area code): 707 253 1226 x1

Organization Address (City, County, State, Zip Code):

550 Gateway Dr Suite 106 Napa Ca. 94558

Authorized Representative (if different from the contact name)

Name: _____

Title: _____

Email: _____

Phone Number (include area code): _____

Certification of Authority

By signing below, the person executing the certificate on behalf of the proposer affirmatively represents that s/he has the requisite legal authority to do so on behalf of the proposer. Both the person executing this proposal on behalf of the proposer and proposer understand that the NCRP is relying on this representation in receiving and considering this proposal. The person signing below hereby acknowledges that s/he has read the entire Request for Proposals document and has complied with all requirements listed therein.

Official Authorized to Sign for Proposal



Signature

3/7/2020

Date

ORGANIZATION STATEMENT OF QUALIFICATIONS

California Land Stewardship Institute

The mission of the California Land Stewardship Institute (CLSI) is to help public and private landowners implement land management practices and ecological restoration projects for the long-term benefit of the environment. Our staff includes scientists as well as experienced administrators. CLSI has carried out a broad set of projects. The Fish Friendly Farming and Fish Friendly Ranching Certification programs have enrolled over 270,000 acres (1250 farms and ranches) and allow landowners to comply with a number of regulations. We collaborate with landowners to produce farm and ranch plans that implement water quality and habitat improvements while supporting agricultural land uses. CLSI has also developed a Climate Adaptation Certification. CLSI completed numerous erosion control, invasive plant removal and native revegetation projects (www.fishfriendlyfarming.org). We have received several grants with the North Resource Coast Partnership to help construct the Recycled Water Project in Ukiah to reuse 870 AF of municipal wastewater (Sean White, swhite@cityofukiah.com). CLSI has administered over 200 grants and completed many successful planning and implementation projects. CLSI has completed grants with the US Dept. of Agriculture-Natural Resources Conservation Service, National Marine Fisheries Service (Joe Dillon, joseph.j.dillon@noaa.gov) Environmental Protection Agency, Regional Water Quality Control Board (Leslie Ferguson Leslie.Ferguson@waterboards.ca.gov and Michele Fortner, Michele.Fortner@waterboards.ca.gov) State Water Resources Control Board (Jodi Pontureri, Jodi.Pontureri@waterboards.ca.gov) Ca. Dept. of Fish and Wildlife, Ca. Coastal Conservancy. Dept. of Conservation, Sierra Nevada Conservancy, Delta Conservancy and many foundations and local governments. Rates: \$85.00-65.00/hour

Subconsultants

L. D. Ford, Consultants in Rangeland Conservation Science

LD Ford, Consultants in Rangeland Conservation Science was founded by Dr. Larry Ford in 2000. Clients ask for a scientific approach to understanding how biodiversity in California's Mediterranean grassland and savanna landscapes is dependent on effective and sustainable grazing, including a sustainable grazing industry. His small team of experts specialize in grazing management planning to graze effectively with minimal negative effects, maximize benefits, and assure sustainable grazing operations. LD Ford's team has extensive experience monitoring the effects of grazing on Coast Range grasslands, including Residual Dry Matter (RDM) monitoring (sampling, mapping, and remote sensing). For example, we have monitored the Alameda Creek Watershed for the San Francisco Public Utilities District's 20 grazing leases on 31,000 acres since 2009 (Katherine Boxer, 925-371-0154 x3861, katherine.boxer@acrdd.org). We also have extensive experience in grazing program evaluation. For example, we recently completed an audit of the Santa Clara County Parks Department's grazing program, to improve resource conditions and program effectiveness on 16,000 acres (Michael Rhoades, 408-355-2206, michael.rhoades@PRK.SCCGOV.ORG). This experience informs our current planning and monitoring work (including both improved methodologies, data management, and delivery of results), ensuring that our products are useful and timely for managers, and applicable to adapt management strategies. We are leaders in the field of conservation-oriented rangeland management. Our experience and expertise includes the ability to effectively communicate with agency staff, ranchers and other stakeholders. We have scholarly expertise in rangeland management effects, practical knowledge of ranch stewardship and operations, and familiarity with the needs of public landowners and regulatory agencies. Our approach is to bring these threads together in a clearly communicated and scientifically sound manner. Rate: \$130-\$80/hr

Western Resource Strategies LLC (WRS)

Jack Rice principal of WRS provides experienced advice for farmers and ranchers in natural resource management and regulation. He has a thorough understanding of the agricultural community based on more than a decade working in agricultural law and policy for Ca Farm Bureau Federation and a lifelong involvement in production agriculture. Jack has assisted many ranchers in the project area and will be focusing on involving large number of livestock operators. Rate: \$100/hr.

Subconsultant for Fire Risk Reduction Analysis

We are currently reaching out to several academic scientists who can join the team. This fire ecologist/management specialist will help develop risk scenarios of grassland fire ignition and spread in various grazed and ungrazed landscape types, and advise about the uses and effects of grazing to reduce herbaceous fuels on the North Coast.

California Land Stewardship Institute
LAUREL MARCUS, EXECUTIVE DIRECTOR

EXPERIENCE

Laurel Marcus has over 40 years of experience in environmental analysis, feasibility analysis, wetland and watershed restoration, erosion control projects, public outreach and education programs, permitting and negotiation and project implementation. Ms. Marcus has worked in most areas of California including: coastal wetlands and watersheds in southern California, the San Francisco Bay estuary, Sierra Nevada and Central Valley freshwater systems, and northern California estuaries and watersheds. For the last 25 years she has focused on working with private landowners to sustain economic uses of farm and ranch land while improving water quality and fish and wildlife habitats.

EMPLOYMENT HISTORY

- In 2004 Ms. Marcus, working with a Board of Directors, helped to create the nonprofit organization, California Land Stewardship Institute (CLSI) to operate the Fish Friendly Farming program and watershed restoration and management plans and projects. She became Executive Director in 2005. CLSI focuses on working with private landowners to improve water quality and habitats.
- From 1996-2006, Ms. Marcus managed her own business, Laurel Marcus and Associates, to focus on environmental analysis, habitat restoration planning, mitigation, project implementation, information services for technical subjects, and community outreach, education and mediation.
- From 1983 -1996, she was a senior analyst for the State Coastal Conservancy where she directed numerous wetland and watershed restoration projects from concept to completion.
- From 1981 through 1984, she was an associate at Environmental Science Associates where she directed numerous projects including the preparation of EIRs.

REPRESENTATIVE PROJECTS

- Developed the Climate Adaptation Certification
- Developed the Fish Friendly Farming Certification program for the Sacramento-San Joaquin Delta
- Developed the Fish Friendly Ranching Certification Program
- Coordinates the Russian River Mendocino Frost Program
- Wrote and implemented the Suisun Creek Watershed Enhancement Program, Solano and Napa Counties
- Watershed Stewardship Program-Developing community stewardship groups for tributary watersheds, Sonoma and Mendocino Counties
- Developed and implemented the Fish Friendly Farming Environmental Certification Program, Sonoma, Mendocino, Solano, El Dorado, Amador and Napa Counties. Completed over 1200 farm conservation plans
- Assessments of the Maacama, Copeland and Austin Creek Watersheds
- King Ranch Floodplain Wetland Restoration Project, Mendocino County
- Sonoma Baylands Tidal Marsh Restoration Project, Sonoma County

EDUCATION

B.A. Biology with honors
B.A. Natural History with honors
University of California, Santa Cruz

AWARDS: One of six recipients nationwide of the 1993 National Wetlands Protection Award for Outstanding Individual Achievement in Wetland Conservation

Under Ms. Marcus's leadership the Ca. Land Stewardship institute was awarded the Governors Economic and Environmental Leadership Award in 2011.

California Land Stewardship Institute

Barry Hill, Project Manager/Hydrologist

Mr. Hill has worked as a hydrologist and geologist in California and Hawaii. His work has focused on effects of land uses on streamflow, sediment transport, water quality, and channel morphology. He has worked on grazing allotments on federal lands and their permitting and environmental effects.

EXPERIENCE

Mr. Hill began working at CLSI in March 2019. He has participated in farm plan development for vineyards in the North Bay area, assisted with hydrologic data collection, and analyzed streamflow and water temperature records for fish-bearing streams.

EMPLOYMENT HISTORY

April 2017 to March 2019: Park Ranger Supervisor, County of Solano Parks and Recreation Division, Fairfield, California

Provided for public safety, maintenance of facilities, hazard tree safety program, and riparian restoration projects.

September 2014 to April 2017: Natural Resource Program Supervisor, County of Santa Clara Parks and Recreation Department, Los Gatos

Supervised monitoring and management of grazed parklands, hazard tree safety program, and trail construction.

April 2007 to September 2014: Regional Hydrologist, USDA Forest Service Pacific Southwest Region, Vallejo, California

Developed, implemented, and monitored best management practices for forestry, range management, and outdoor recreation.

February 1997 to April 2007: Supervisory Hydrologist (Data Section Chief), U.S. Geological Survey Pacific Islands Water Science Center, Honolulu, Hawaii

Managed hydrologic data collection and analysis program, including streamflow, groundwater, sediment, rainfall, and water quality.

February 1994 to February 1997: Supervisory Geologist (Geologic Services Branch Chief), National Park Service, Redwood National and State Parks, Arcata, California

Supervised watershed restoration, hydrologic monitoring, timber harvest reviews, and review of park development projects.

November 1989 to February 1994: Hydrologist, U.S. Geological Survey Pacific Islands Water Science Center, Honolulu, Hawaii

Monitored a major highway construction project on the island of Oahu and analyzed effects on streamflow, sediment transport, and water quality.

EDUCATION

University of California, Santa Cruz, B.A., Biology

Humboldt State University, M.S., Watershed Management

California Land Stewardship Institute

Brandyn Balch, Project Manager/Geospatial Scientist

Mr. Balch began working at CLSI in March 2020. He has participated in farm plan development for vineyards in the North Bay area, assisted with hydrologic data collection, and analyzed land use, vegetation and fire risk in several north coast watersheds.

EMPLOYMENT HISTORY

2019-Present: GIS & Remote Sensing Intern. E. & J. Gallo Winery. Automated weekly analyses and cut processing time by 80% (Python, ESRI ArcMap ModelBuilder); investigated spatiotemporal relationships between satellite-derived evapotranspiration and grape chemistry (R); conducted ground truthing (Trimble GPS).

2017-2019: Research Assistant. Remote Sensing Lab, Department of Geography, West Virginia University.

Processed and analyzed three years of LiDAR data over the New Jersey Pine Barrens (MARS, ERDAS IMAGINE, TIFFs); automated post-processing workflows (Python); reviewed pyrogeography literature.

2017: Remote Intern. USAID GeoCenter. Interpreted 2,000+ square miles of satellite imagery in support of the President's Malaria Initiative and other HotOSM-hosted projects, in collaboration with YouthMappers.

2015-2016: Research & Teaching Assistant. Department of Geography, SUNY Geneseo.

2016: Conservation Steward. New York State Office of Parks, Recreation and Historic Preservation.

Surveyed, mapped, and removed invasive plant species; designed a long-term management plan.

2015: GIS Intern. Genesee Valley Conservancy. Engaged with stakeholders to prioritize conservation easement acquisitions across 27,000+ parcels in five western New York counties.

EDUCATION

2017-2019: MA Geography. GIS specialization. West Virginia University.

2014-2017: BA Geography. Environmental Studies & Geology. State University of New York Geneseo.

L. D. Ford, Consultants in Rangeland Conservation Science
5984 Plateau Dr, Felton, CA 95018
www.rangelandconservation.com

Resume for Lawrence D. Ford, PhD

Dr. Lawrence Ford is Senior Rangeland Conservation Scientist and principal for the firm. He specializes in planning, monitoring, and research to define beneficial management of conservation lands. Earlier, he was a Science Advisor to the U.S. Agency for International Development (AAAS Fellowship, 1991-94) and Manager of the Landels-Hill Big Creek Reserve, UC Natural Reserve System (1978-84). He has consulted about rangeland ecology and grazing management in the western states (CA, AZ, HI, and TX), serving military bases, land trusts, municipalities, ranchers, rangeland management agencies, developers, other consulting firms, and law firms since 1995. He has prepared grazing and related management prescriptions, monitoring plans, and mitigation enhancement specifications for numerous special resources, including habitat for carnivores, small mammals, birds, amphibians, reptiles, plants, riparian woodlands, wetlands, oak woodlands, native grasslands, and other natural communities as well as controlling fire hazards and pest plants. He has assessed and monitored impacts, contractual and regulatory compliance, ecosystem health, and management effectiveness for a wide variety of rangeland projects. Notable recent products include protocols for the "Indicators of Sustainable Rangeland Stewardship" monitoring program for the Natural Resources Conservation Service in California and the Central Coast Rangeland Coalition, modeling of site potential for native grass enhancement, and innovative grazing leasing to incentivize stewardship and support a sustainable livestock operation. Research has focused on guidelines for grazing management of upland habitat for the California red-legged frog and California tiger salamander, fire ecology of Northern Coastal Scrub, grazing effects on oak woodlands, and control of pest plants.

Ph.D. in Vegetation Ecology at UC Berkeley, 1991

M.S. Rangeland Ecology and Management, UC Berkeley, 1986

B.A. Biology and B.A. Environmental Studies, UC Santa Cruz, 1978

Certified Rangeland Manager, Calif. Board of Forestry and Fire Protection, License #M70

Certified Professional in Rangeland Management, Society for Range Management, #CP99-07

Certified Range Management Consultant, Society for Range Management #C05-02

Certified Senior Ecologist, Ecological Society of America

Technical Service Provider, U.S.D.A. Natural Resources Conservation Service (TSP-03-1600 for grazing/forages services, CA and HI)

Rangeland Manager of the Year, 2012, California-Pacific Section, Society for Range Management

Recent Publications:

- Barry, S., S. Larson, **L. Ford**, and P. Brownsey. 2020. "A Guide to Livestock Leases for Annual Rangelands." Univ. of CA Agriculture and Natural Resources, Publication 8679.
- **Ford, L.D.**, H.S. Butterfield, P.A. Van Hoorn, K.B. Allen, E. Inlander, C. Schloss, F. Schuetzenmeister, and M. Tsalyuk. (2017). Testing a Remote Sensing-Based Interactive System for Monitoring Grazed Conservation Lands. *Rangelands* 39(5):123-132.
- Bartolome, J., B. Allen-Diaz, S. Barry, **L. Ford**, M. Hammond, P. Hopkinson, F. Ratcliff, S. Spiegel, and M. White. 2014. Grazing for Biodiversity in Californian Mediterranean grasslands. *Rangelands* 36(5):36-43.
- **Ford, L.D.** and P. Van Hoorn (Tech Editors), D.R. Rao, N. Scott, and P. Trenham, and J.W. Bartolome. 2013. Managing Rangelands to Benefit California Red-Legged Frogs and California Tiger Salamanders. Livermore, CA: Alameda County Resource Conservation District.

NCRP DEMONSTRATION PROJECT AND PROCESSES CONCEPT PROPOSAL BUDGET AND SCHEDULE

Project Name: Developing a tool to test and demonstrate the feasibility of livestock grazing for fuel reduction and ecosystem enhancement

Major Tasks	Task Description	NCRP Task Budget	Funding Match *	Total Task Budget	Scaled NCRP Budget **	Start Date	End Date
Project Administration	In cooperation with the County of Humboldt sign a sub-grantee agreement for work to be completed on this project. Develop invoices with support documentation.	\$2,550	\$2,000	\$4,550	\$0	4/1/20	7/31/21
Project Reporting	Data collection, performance measures, and project reporting of outcomes/lessons learned	\$1,700	\$2,000	\$3,700	\$0	4/1/20	7/31/21
Develop GIS Data base	Develop a spatial database for these areas including: vegetation types, agricultural uses, historic and present land uses, parcels, creeks, water sources, historical wildfire areas, roads, grazing potential, lands no longer grazed, list of owners	\$16,400	\$2,000	\$18,400	\$16,000	4/1/20	5/1/20
Cooperator Group meetings	Convene at least 3 meetings of a Cooperators Working Group to discuss the costs, willingness to graze in rural residential areas, potential revenue of grazing for fuel load reduction, define needed grazing infrastructure and costs, public and private land constraints, local capacity and actions needed to increase capacity	\$43,890	\$2,000	\$45,890	\$40,000	4/1/20	6/30/21
Define opportunities and constraints	From the GIS analysis and cooperators meetings we will define a set of opportunities and constraints for both public and private lands and potential solutions to constraints	\$14,000	\$2,000	\$16,000	\$13,000	10/1/20	11/1/20
Grazing prescriptions	Prepare up to 6 grazing prescriptions that include: kind of grazing animals, estimated herd size, management requirements, protection of creek corridors and other special habitats, water facility development, grazing period, deferments, costs and revenues	\$47,400	\$3,000	\$50,400	\$44,000	7/1/20	5/1/21
Fire risk reduction analyses	Fire ecologist/management specialist will help develop risk scenarios of grassland fire ignition and spread in various grazed and ungrazed landscape types, and advise about the uses and effects of grazing to reduce herbaceous fuels on the North Coast	\$10,000	\$0	\$10,000	\$0	7/1/20	3/1/21
Cost and revenue analysis	Grazing costs and revenues will be compared to other methods: prescribed burning, herbicides and mechanical clearing.	\$14,000	\$0	\$14,000	\$0	7/1/20	5/1/21
Final development of tool and report	From these tasks we will produce a tool for a rapid analysis of the feasibility of grazing to reduce fuel loads compared to other methods and the comparative costs and benefits.	\$32,750	\$0	\$32,750	\$30,000	1/1/21	7/1/21
Project Closeout		\$2,000	\$0	\$2,000	\$0	7/1/21	7/31/21
Total NCRP 2020 Demonstration Project Request		\$184,690	\$13,000	\$197,690	\$143,000		

NCRP DEMONSTRATION PROJECT AND PROCESSES CONCEPT PROPOSAL BUDGET AND SCHEDULE

Project Name: Developing a tool to test and demonstrate the feasibility of livestock grazing for fuel reduction and ecosystem enhancement

* List the sources and status of matching funds:

CLSI and L. D. Ford, Consultants in Rangeland Conservation Science will provide inkind services for \$13,000

** Is Requested Budget scalable? If yes, indicate scaled totals; if no leave as \$0.

Project scalability information for the reviewers (optional): We can reduce the geographic area covered in the demonstration project, we can remove public lands from inclusion in the project and we can remove one of the grazing prescriptions. The final tool would not be applicable to public lands which have greater regulatory restrictions to fire fuel management.

Exhibit C Concept Proposal for Demonstration Projects and Processes

Project Name: Developing a tool to test and demonstrate the feasibility of livestock grazing for fuel reduction and ecosystem enhancement

1. Project Description

The eastern half of the coastal ranges includes large areas of grassland/oak savannah intermixed with hardwood and conifer forest. Nonnative vegetation has grown thick and dense compared to historical conditions. These dense fuels rapidly spread fire to adjacent forest, homes and evacuation routes. Grazed lands (fall RDM 300-800 lbs./acre) can act as fire breaks and reduce fire ignitions and spread. This project will develop a tool that evaluates the cost and feasibility of using grazing for fuel reduction. We will develop a spatial database for the project area. We will convene a Cooperators Working Group to discuss the costs, willingness to graze in rural residential areas, potential revenue of grazing for fuel load reduction, define needed grazing infrastructure and costs, public and private land constraints, local capacity and actions needed to increase capacity. Infrastructure and management requirements, such as livestock water, fencing, handling facilities and protection vary for cattle, sheep, and goats. We will use the Fish Friendly Ranching management practices for sites with creeks to protect water quality endorsed by the Regional Water Quality Control Board. From the GIS analysis and cooperators meetings we will define a set of opportunities and constraints for both public and private lands and potential solutions to constraints. Dr Ford will prepare 6 grazing prescriptions that include: kind of grazing animals, estimated herd size, management requirements, protection of creek corridors and other special habitats, water facility development, grazing period, deferments, costs and revenues. From these tasks we will produce a tool for a rapid analysis of the feasibility of grazing to reduce fuel loads compared to other methods and the comparative costs and benefits. This project will support the NCRP RRFC objectives to control invasive plants and sustain meadows and grasslands, avoid GHG emissions from fires and improve local economic vitality.

2. Goals:

- Evaluate the feasibility of local ranchers completing prescribed grazing in a strategic approach to reduce fuel loads in key areas, and to improve long term ecosystem health.
- Compare the cost effectiveness of grazing to other methods of reducing fuel loads.
- Determine the needed grazing infrastructure and the potential for local revenue generation.
- Define the difference in opportunities and constraints of grazing on private and public lands, and in bringing grazing back to lands close to residential zones
- Develop an analytical tool that can be used in other regions of the north coast

3. This project is consistent with the goals and objectives of the NCRP and the Block Grant. It will conserve and improve the economic benefits of working landscapes by supporting the increased use of grazing for fuel load reduction (Objective 5). Grazing has been shown to reduce invasive plants and support native plants in the grassland ecosystem, enhancing watersheds (Objective 6). A lack of vegetation management results in dense tall herbaceous plants with a far higher fuel load. Including local livestock operations in the effort to reduce fuel loads increases community resiliency to fires, can be used near rural residential and urban interfaces to protect homes and to maintain fire breaks and clearing along evacuation routes to increase public safety (Objective 13). There are several possible approaches to reducing fuel loads in grassland/oak savannah areas – grazing, burning, herbicide and clearing with mechanical equipment. Of these four approaches grazing has the lowest energy use and produces a sought-after agricultural product – grass-fed meat and other animal products. This project will demonstrate grazing methods that are protective of water quality, and address climate concerns

and fire risks (Objective 11). Additionally, this project will incorporate the local knowledge of livestock operators (Objective 1).

This project will increase the capacity of local ranchers to manage vegetation to reduce fuel loads, create local economic opportunities, address regulatory barriers, improve ecosystem functions and create a tool for use throughout the region and is consistent with the intent of the Block Grant.

4. The results of the project will be applicable throughout the north coast and provide a tool for policy makers and land managers to use in determining the usefulness of grazing for fuel reduction in different circumstances and landscape types. The project can be scaled to include fewer grazing prescriptions or fewer geographic areas. The project is designed to produce a tool that allows for the analysis to be replicated in different locations and produce measurable reductions in fuel loads in grassland/oak savannah areas. Reducing these fuels will reduce the rapid spread of wildfire into forests and communities.

5. The eastern side of the coastal ranges is a mosaic of grassland/ oak savannah intermixed with hardwood and coniferous forest. Much of this landscape was grazed historically, but with the increase in vineyard, cannabis and rural residential uses in these areas, grazing has been reduced. Without grazing fuel loads increase from the uncontrolled growth of grasses and invasion of nonnative pest plants, such as black mustard and thistle. This higher fuel load can rapidly spread fire to forest areas as well as homes and roads. Both the Tubbs and Kincade fires started in grassland/oak areas. Using grazing to reduce fuel loads utilizes local operators on an annual basis to create fire breaks and reduce fire ignitions and spread. Grazing can be highly efficient in removing dense vegetation while also producing an economic commodity. This annual sustainable approach driven by local economic interest is a better approach than depending on projects that must seek grant funds to mechanically remove fuel or spray it with herbicide. These types of projects are not consistently funded and implemented and cannot be relied upon to remove this annual fuel load. Local sustainable and annual solutions such as grazing is a more reliable answer to climate change. In higher or lower rainfall years more or less grazing can be conducted and thus this method can be adapted to the effects of extreme weather.

6. The project will focus on the grassland/oak savannah areas in the watersheds of Anderson Valley, Redwood Valley, Potter Valley, Hopland Valley, Alexander Valley and Knights Valley; many of these areas have seen large wildfires recently. The communities served include Geyserville, Windsor, Healdsburg, Cloverdale and Knights Valley in Sonoma County and Ukiah, Potter Valley, Redwood Valley, Boonville, Philo and Hopland in Mendocino County as well as numerous rural residential areas in both counties.

7. Our team is a partnership of the nonprofit Ca. Land Stewardship Institute (CLSI), which developed the Fish Friendly Ranching Certification program and completes comprehensive ranch plans to address habitats and water quality, and two consulting firms - Western Resource Strategies, LLC that will assist with outreach to the ranching community and grazing analysis and Certified Rangeland Manager Dr. Larry Ford, License #M70 and other staff with LD Ford, Consultants in Rangeland Conservation Science who will coordinate with ranchers and complete the grazing analyses and prescriptions. We will invite: the UC Cooperative Extension Mendocino County Livestock Advisor, Sonoma and Mendocino County Farm Bureaus, US Forest Service – Mendocino Forest, Sonoma and Mendocino Cattlemen’s Association, Mendocino County, Ca. Cattlemen’s Association, Woolgrowers, CalFire including staff of State Demonstration Forests that use grazing and numerous local ranchers to be part of the Cooperators Working Group. CLSI and Western Resource Strategies has long term relationships with many ranchers, private landowners and agricultural organizations. We have presented this project to our cooperators

and all are enthusiastic supporters. We will also invite tribal representatives to join the Cooperator group.

8. The proposed project will produce the following benefits:

1. Establish a focus for the community of stakeholders and cooperators, and a representative Cooperators Working Group on management of grasslands of the North Coast region to strategically reduce fire fuels (to help minimize catastrophic wildfire frequency and damage) while maintaining or enhancing the value of grassland resources for cultural, economic, watershed water quality and quantity, and conservation of biodiversity purposes. This group will provide a focus for discussion of these issues, identification of sources for information and cooperating landowners and managers, identification of the human communities that will be affected (including economically disadvantaged communities), and recommendations for best choices among the options for project direction and eventual fire risk management strategies. The establishment of a functioning inclusive working group will benefit both the successful completion of this project as well as current and future community efforts to share relevant information and strategies to best manage grasslands of the North Coast. Our performance measure for this benefit will be number of organizations attending meetings including individual ranchers.
2. Compile documents and digital layers representing the ecology, management (including traditional knowledge), and the positive and negative impacts of fire management options on communities of wildfire and burning of North Coast grasslands. Additional documentation will address cultural and economic uses (including by economically disadvantaged communities), water quality and quantity, and biodiversity conservation values of grasslands. This information will be categorized and summarized in a digital library for use by the stakeholder community. The resulting reference library will form the basis for assessing and determining strategic options and the best options to reduce herbaceous fire fuels while maintaining or enhancing the value of grassland resources for the multiple purposes noted above, and to minimize damages of wildfire.
3. Prepare and post GIS-derived maps showing both the grassland resources and their uses and values, and the results of this project. These maps will illustrate the discussions of North Coast grassland fire management by the working group as well as provide GIS files for the assessments in this project, and for other concurrent or future projects on these topics. Our performance measure for this benefit will be number of posted maps.
4. Develop an analytical method that will be useful for application to grasslands/oak savannah in other regions of the North Coast and will include: key characteristics of grasslands relevant to fire management; locate key grasslands that provide the herbaceous fuels and that may be part of a fire risk management strategy, including their current and historical levels of fire fuels, their owners and managers, and their importance in various options for fire risk management strategies; assess the cost effectiveness and expected impacts on GHG emissions and air quality of grazing treatments to other methods of reducing fuel loads in grassland; provide the framework for implementing the best options to reduce herbaceous fire fuels while maintaining or enhancing the value of grassland resources for the multiple purposes noted above, and to minimize wildfire damage. This analysis will define the required grazing infrastructure and the potential for local revenue generation; define the difference in opportunities and constraints of grazing on private and public lands, and in bringing grazing back to

lands close to urban zones where grazing was abandoned. The performance measure for this benefit will be production of an analytical tool.

Ultimately, the recommended fuel reduction strategy will be designed to target the key kinds of fuels using efficient grazing operations on the key locations at the best timing to reduce fire fuels while maintaining or enhancing the value of grassland resources for the multiple purposes noted above, and to minimize damages of wildfire and support ecosystem health.

9. The following relevant scientific studies and other reports were reviewed:

- Barry, S. 2019. personal communication about the relative GHG emissions expected from wildfire compared to grazing on grasslands
- Bartosh, H. et al. 2018. Fire Recovery Guide. California Native Plant Society. Sacramento.
- Coppoletta, M., H. Safford, B. Estes, M. Meyer, S. Gross, K. Merriam, R. Butz, and N. Molinari. 2019. Fire Regime Alteration in Natural Areas Underscores the Need to Restore a Key Ecological Process. *Natural Areas J.* 39(2):250-263.
- Fischer, A. and S. Charnley. 2013. Managing Wildfire Risk in Fire-Prone Landscapes: How Are Private Landowners Contributing? Science Findings 154. USDA Forest Service. Pacific Northwest Research Station.
- Keeley, J. 2017. Why were California's wine country fires so destructive? The Conversation blog. Published on: October 27, 2017.
- Macon, D. 2018. Fire Season is Here: Is Your Ranch Ready? UCANR Ranching in the Sierra Foothills blog. Published on: June 8, 2018.
- Macon, D. 2018. Fire Preparation for Ranchers - Writing Down Your Plan. UCANR Ranching in the Sierra Foothills blog. Published on: July 11, 2018.
- Marcus, Laurel and Larry Ford. 2013. Fish Friendly Ranching™ Environmental Certification Program, Beneficial Management Practices Workbook. Dropbox link provided as addendum to this proposal.
- Moritz, M. 2017. California needs to rethink urban fire risk after wine country tragedy. The Conversation blog. Published on: October 23, 2017.
- Prichard, S. 2016. Learning to live with wildfires: how communities can become 'fire-adapted'. The Conversation blog. Published on: July 6, 2016.
- Pyne, S. 2016. Recreating forests of the past isn't enough to fix our wildfire problems. The Conversation blog. Published on: May 26, 2016.
- Simon, G. 2017. Don't blame California wildfires on a 'perfect storm' of weather events. The Conversation blog. Published on: October 25, 2017.
- Syphard, A., J.E. Keeley, A. Pfaff, and K. Ferschweiler. 2017. Human presence diminishes importance of climate in driving fire activity across the United States. *PNAS* 114(52):13750-13755.
- Syphard, A., J. Keeley, J. Abatzoglou. 2017. Trends and drivers of fire activity vary across California aridland ecosystems. *J. Arid Environments* 144:110-122.
- Syphard A., J. Keeley, A. Massada, T. Brennan, and V. Radeloff. 2012. Housing Arrangement and Location Determine the Likelihood of Housing Loss Due to Wildfire. *PLoS ONE* 7(3): e33954. doi:10.1371/journal.pone.0033954.
- Watershed Collaborative. 2018. Living in a Fire-Adapted Landscape: Priorities for Resiliency. Sonoma County Natural & Working Lands.

- Westerling, A. 2016. Wildfires in West have gotten bigger, more frequent and longer since the 1980s. The Conversation blog. Published on: May 23, 2016.

10. After receipt and summary of advice from the Cooperators Working Group, we will review the relevant documents and interview key informants and cooperators. Most of this project will then be based on GIS analyses, using current and historical aerial imagery. We will coordinate our GIS data collection with the broader effort done as part of the Block Grant.

Field work will be performed to validate the GIS-based classifications of grassland fuel loads (vegetation), grazing infrastructure, and other characterizations of sites. This step will require the assistance of all cooperators, and permission from the property owners and managers.

Our performance measure for the Cooperators Working Group will be the number of organizations attending meetings including individual ranchers. Agendas and minutes of each meeting will be prepared. These meetings will allow for detailed discussion of all topics, problems encountered, assistance needed, and clarification of results.

Our performance measure for providing regional information on the project will be the number of posted maps.

Our performance measure for the overall project will be production of an analytical tool.

A final report will describe the project results and quantify the measurable benefits. Additionally, through the Cooperators Group we will test the acceptance and reported value of the tool in several circumstances, including ranchers who would provide the grazing, various landowners where the tool would be applied, and local government agencies who would support the implementation. The results of the trail will be incorporated into the tool.

Addendum:

For supporting documents to this proposal go to the following dropbox link:

