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## UPPER FEATHER RIVER IRWM PROJECT INFORMATION FORM

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### PROJECT INFORMATION FORM

Please submit by 5:00 p.m. on August 3, 2015, to [UFR.contact@gmail.com](mailto:UFR.contact@gmail.com)

Please provide information in the tables below:

#### I. PROJECT PROPONENT INFORMATION

<b>Agency / Organization</b>	Sierra Valley RCD / UC Cooperative Extension
<b>Name of Primary Contact</b>	Rick Roberti , Kristi Jamason
<b>Name of Secondary Contact</b>	Tom Getts (UCCE Weed Ecologist/Cropping System Farm Advisor), Holly George
<b>Mailing Address</b>	Sierra Valley RCD, PO Box 3562, Quincy, CA 95971  UC Cooperative Extension, Attn: Holly George, 208 Fairgrounds Road, Quincy, CA 95971  UC Cooperative Extension, Attn. Tom Getts, 707 Nevada Street, Susanville, CA 96130
<b>E-mail</b>	<a href="mailto:sierravalleyrcd@gmail.com">sierravalleyrcd@gmail.com</a> , <a href="mailto:market.ready.k.jamason@gmail.com">market.ready.k.jamason@gmail.com</a> , <a href="mailto:hageorge@ucanr.edu">hageorge@ucanr.edu</a> , <a href="mailto:tjgetts@ucanr.edu">tjgetts@ucanr.edu</a>
<b>Phone</b>	Rick: 530-249-4988; Holly: 530-283-6262; Tom: 530-251-2650
<b>Other Cooperating Agencies / Organizations / Stakeholders</b>	UC Davis, willing producers in Sierra Valley (TBD)
<b>Is your agency/organization committed to the project through completion? If not, please explain</b>	Yes

#### II. GENERAL PROJECT INFORMATION

<b>Project Title</b>	ALS-12: Alfalfa Alternative
<b>Project Category</b>	<input checked="" type="checkbox"/> <b>Agricultural Land Stewardship</b> <input type="checkbox"/> <b>Floodplains/Meadows/Waterbodies</b> <input type="checkbox"/> <b>Municipal Services</b> <input type="checkbox"/> <b>Tribal Advisory Committee</b> <input type="checkbox"/> <b>Uplands/Forest</b>
<b>Project Description</b> (Briefly describe the project, in 300 words or less)	In Sierra Valley, and possibly other groundwater basins in the UFRW, alfalfa production is prevalent and is currently a lucrative crop. (Water-intensive alfalfa hay represents 30-40% of field crops (by value) grown in Plumas and Sierra Counties, according to the <a href="#">2011 Crop Report</a> .) It is also a water-intensive crop grown in an arid region. With less snowpack (and therefore less water predicted to be available), and in view of

	<p>prolonged drought, climate change and dropping groundwater levels and overdraft observed in the monitored Sierra Valley basin*, alternative production possibilities that maintain the agricultural heritage of the watershed without increasing risks to producer viability, community values and natural resources, need to be explored. This concept proposal includes feasibility research and systematic exploration and experimentation (pilot testing) of alternative crops and methodologies to existing alfalfa production and methods employed in Sierra Valley that could be accomplished without too much upset to the operations and viability of producers.</p> <p>This project supports the following UFR IRWM Goals:</p> <ul style="list-style-type: none"> <li>✓ Protect and improve the economy of the region and provide healthy and adequate water and wastewater treatment for all citizens, including disadvantaged communities and Native Americans.</li> <li>✓ Protect and enhance the health and economic viability of working landscapes.</li> </ul> <p>*During 2005-2011, metered pumpage averaged about 7,800 acre-feet per year, and in 2012-14, 12,200 acre-feet, well over the estimated safe yield: "Metered pumpage records indicate that the safe yield is about 6,000 acre-feet per year in the part of the valley now tapped by large-capacity supply wells" – <i>Technical Reports on Hydrogeologic Evaluation for Sierra Valley – 2003-5, 2005-11 and 2012-14.</i></p>
<p><b>Project Location Description</b> (e.g., along the south bank of stream/river between river miles or miles from Towns/intersection and/or address):</p>	<p>Sierra Valley – on the property of willing ranchers (TBD). Once preliminary feasibility possibilities (crops/methods) have been explored with UCCE/UC Davis, one or more ranchers will be recruited to participate in the pilot study. These ranchers could be located in Sierra County or Plumas County in Sierra Valley.</p>
<p><b>Latitude:</b></p>	<p>TBD</p>
<p><b>Longitude:</b></p>	<p>TBD</p>

**III. APPLICABLE IRWM PLAN OBJECTIVES ADDRESSED**

For each of the objectives addressed by the project, provide a one to two sentence description of how the project contributes to attaining the objective and how the project outcomes will be quantified. If the project does not address *any* of the IRWM plan objectives, provide a one to two sentence description of how the project relates to a challenge or opportunity of the Region.

<p><b>Upper Feather River IRWM Objectives:</b></p>	<p><b>Will the project address the objective?</b></p>	<p><b>Brief explanation of project linkage to selected Objective</b></p>	<p><b>Quantification</b> (e.g. acres of streams/wetlands restored or enhanced)</p>
<p>Restore natural hydrologic</p>	<p><input type="checkbox"/> Yes</p>		

<b>Upper Feather River IRWM Objectives:</b>	<b>Will the project address the objective?</b>	<b>Brief explanation of project linkage to selected Objective</b>	<b>Quantification</b> (e.g. acres of streams/wetlands restored or enhanced)
functions.	<input checked="" type="checkbox"/> N/A		
Reduce potential for catastrophic wildland fires in the Region.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A		
Build communication and collaboration among water resources stakeholders in the Region.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Feasibility study will engage producers, UCCE, Sierra Valley Groundwater Management District, Sierra Valley RCD and County Ag and Planning Departments in conversations around water conservation	TBD
Work with DWR to develop strategies and actions for the management, operation, and control of SWP facilities in the Upper Feather River Watershed in order to increase water supply, recreational, and environmental benefits to the Region.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A		
Encourage municipal service providers to participate in regional water management actions that improve water supply and water quality.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A		
Continue to actively engage in FERC relicensing of hydroelectric facilities in the Region.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A		
Address economic challenges of municipal service providers to serve customers.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A		
Protect, restore, and enhance the quality of surface and groundwater resources for all beneficial uses, consistent with the RWQC Basin Plan.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A		
Address water resources and wastewater needs of DACs and Native Americans.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A		

<b>Upper Feather River IRWM Objectives:</b>	<b>Will the project address the objective?</b>	<b>Brief explanation of project linkage to selected Objective</b>	<b>Quantification</b> (e.g. acres of streams/wetlands restored or enhanced)
Coordinate management of recharge areas and protect groundwater resources.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Project is expected to protect groundwater resources by offering alfalfa producers a viable alternative crop or irrigation method that requires less pumping of groundwater.	This will depend on the feasibility study and subsequent interest by Sierra Valley ranchers in the alternatives identified.
Improve coordination of land use and water resources planning.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Project explores options for decreasing groundwater usage, which supports water resource planning.	TBD. Sierra Valley covers 184 square miles or 117,700 acres.
Maximize agricultural, environmental and municipal water-use efficiency.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	The project will explore alternative crops and growing methods to existing alfalfa hay production to improve water-use efficiency.	Will be determined by project – pilot will indicate water savings per irrigated acre.
Effectively address climate change adaptation and/or mitigation in water resources management.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	The project seeks alternative crops that can be grown in the arid, ~5000' elevation Sierra Valley with the reduced water resources anticipated as a result of climate change.	Alternatives identified in feasibility study will address anticipated changes in climate and water availability.
Improve efficiency and reliability of water supply and other water-related infrastructure.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Pilot projects may test infrastructure improvements for irrigation efficiency in alfalfa, as well as alternative crops. Improved efficiency will generate more reliable supply.	Number of acres where irrigation system efficiency changes are implemented TBD.
Enhance public awareness and understanding of water management issues and needs.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A		
Address economic challenges of agricultural producers.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Future surface and groundwater shortages may necessitate reductions in alfalfa production, which would hurt local growers economically. This project seeks to identify and prove economically feasible alternatives that can be employed to reduce these negative impacts on agricultural producers.	TBD – Feasibility research will address economic comparability of alternatives to alfalfa

<b>Upper Feather River IRWM Objectives:</b>	<b>Will the project address the objective?</b>	<b>Brief explanation of project linkage to selected Objective</b>	<b>Quantification</b> (e.g. acres of streams/wetlands restored or enhanced)
Work with counties/communities/groups to make sure staff capacity exists for actual administration and implementation of grant funding.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Funding request includes support of a project manager.	Project manager, University of CA support

If no objectives are addressed, describe how the project relates to a challenge or opportunity for the Region:

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#### IV. PROJECT IMPACTS AND BENEFITS

Please provide a summary of the expected project benefits and impacts in the table below or check N/A if not applicable; **do not leave a blank cell**. Note that DWR encourages multi-benefit projects.

<b>If applicable, describe benefits or impacts of the project with respect to:</b>		
<b>a. Native American Tribal Communities</b>	<input checked="" type="checkbox"/> N/A	
<b>b. Disadvantaged Communities<sup>1</sup></b>	<input checked="" type="checkbox"/> N/A	There are several Disadvantaged Communities in Sierra Valley (per 2010 Census data) – Chilcoot, Vinton, Sierraville and Sattley. Most of the ranches in Sierra Valley have addresses in one of these communities. Helping these ranchers remain economically viable creates positive economic (and social) impact on the surrounding communities by putting children in the schools, patronage of local businesses, etc.
<b>c. Environmental Justice<sup>2</sup></b>	<input checked="" type="checkbox"/> N/A	
<b>d. Drought Preparedness</b>	<input type="checkbox"/> N/A	Project explores agricultural options that require less irrigation water, giving growers alternatives during drought.
<b>e. Assist the region in adapting to effects of climate change<sup>3</sup></b>	<input type="checkbox"/> N/A	Project explores agricultural options that require less irrigation water during the summer/growing season. Potential anticipated impacts of climate change on water are: alterations in precipitation patterns, lower snowpack levels resulting

		in less water storage, change in availability and time of surface irrigation water, extended drought, etc. Project may also explore increasing yields from existing fields. Increased yields and less water-intensive crops would provide more flexible agricultural options in the area for an uncertain climate in the future.
<b>f. Generation or reduction of greenhouse gas emissions (e.g. green technology)</b>	<input type="checkbox"/> N/A	The project would investigate less water-intensive cropping systems, which would require less ground water pumping, and in turn reduce the amount of fossil fuel energy used to pump the ground water.
<b>g. Other expected impacts or benefits that are not already mentioned elsewhere</b>	<input type="checkbox"/> N/A	The issue of alfalfa clearly extends beyond Sierra Valley. Alternatives identified and proven could have beneficial impacts well beyond the project area.
<p><sup>1</sup> A Disadvantaged Community is defined as a community with an annual median household (MHI) income that is less than 80 percent of the Statewide annual MHI. DWR’s DAC mapping is available on the UFR website (<a href="http://featherriver.org/maps/">http://featherriver.org/maps/</a>).</p> <p><sup>2</sup> Environmental Justice is defined as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation and enforcement of environmental laws, regulations and policies. An example of environmental justice benefit would be to improve conditions (e.g. water supply, flooding, sanitation) in an area of racial minorities.</p> <p><sup>3</sup> Climate change effects are likely to include increased flooding, extended drought, and associated secondary effects such as increased wildfire risk, erosion, and sedimentation.</p>		

DWR encourages multiple benefit projects which address one or more of the following elements (PRC §75026(a)). Indicate which elements are addressed by your project.

a. Water supply reliability, water conservation, water use efficiency	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	g. Drinking water treatment and distribution	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A
b. Stormwater capture, storage, clean-up, treatment, management	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A	h. Watershed protection and management	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A
c. Removal of invasive non-native species, creation/enhancement of wetlands, acquisition/protection/restoration of <u>open space</u> and watershed lands	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	i. Contaminant and salt removal through reclamation/desalting, other treatment technologies and conveyance of recycled water for distribution to users	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A
d. Non-point source pollution reduction, management and monitoring	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A	j. Planning and implementation of multipurpose flood management programs	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A
e. Groundwater recharge and <u>management</u> projects	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	k. Ecosystem and fisheries restoration and protection	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A
f. Water banking, exchange, reclamation, and improvement of water quality	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A		

## V. RESOURCE MANAGEMENT STRATEGIES

For each resource management strategy (RMS) employed by the project, provide a one to two sentence description in the table below of how the project incorporates the strategy. A description of the RMS can be found in Volume 2 of the 2013 California Water Plan (<http://featherriver.org/2013-california-water-plan-update/>).

Resource Management Strategy	Will the Project incorporate RMS?	Description of how RMS to be employed, if applicable
<b>Reduce Water Demand</b>		
Agricultural Water Use Efficiency	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The Agricultural Water Use Efficiency RMS is the core of the proposal. The project will seek more water-efficient alfalfa hay production methods and/or alternatives to alfalfa production with lower water demands and minimal disruption to existing operations, as well as solid/equivalent returns.
Urban water use efficiency	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>Improve Flood Management</b>		
Flood management	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>Improve Operational Efficiency and Transfers</b>		
Conveyance – regional/local	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
System reoperation	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Water transfers	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>Increase Water Supply</b>		
Conjunctive management	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Feasibility studies may employ conjunctive management strategies, such as flooding alfalfa fields in winter.
Precipitation Enhancement	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Municipal recycled water	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Feasibility studies may employ increased use of recycled municipal water for alfalfa production.
Surface storage – regional/local	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>Improve Water Quality</b>		
Drinking water treatment and distribution	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Groundwater remediation/aquifer remediation	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Matching water quality to water use	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Pollution prevention	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Salt and salinity management	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Urban storm water runoff management	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>Practice Resource Stewardship</b>		
Agricultural land stewardship	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Continuing stewardship of agricultural land in Sierra Valley depends on producers being able to adjust to changing environmental and market conditions. This project utilizes the

Resource Management Strategy	Will the Project incorporate RMS?	Description of how RMS to be employed, if applicable
		agricultural land stewardship RMS by proactively seeking solutions to water shortages that likely will result from ongoing depletion of groundwater resources due to overdrafting, drought, and climate change. These factors, if left unaddressed, will make agricultural land more susceptible to development and conversion to other uses.
Ecosystem restoration	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Forest management	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Land use planning and management	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Recharge area protection	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sediment management	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Watershed management	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Stewardship of groundwater resources is a key component of watershed management.
<b>People and Water</b>		
Economic incentives	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Outreach and engagement	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Water and culture	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Water-dependent recreation	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Wastewater/NPDES	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Other RMS addressed and explanation:



**VI. PROJECT COST AND FINANCING**

Please provide any estimates of project cost, sources of funding, and operation and maintenance costs, as well as the source of the project cost in the table below.

<b>PROJECT BUDGET*</b>					
Project serves a need of a DAC?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Yes, but not in the sense of contaminated drinking water or severe threat to health...)					
Funding Match Waiver request?: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
	Category	Requested Grant Amount	Cost Share: Non-State Fund Source* (Funding Match)	Cost Share: Other State Fund Source*	Total Cost
a.	Direct Project Administration	\$30,000			\$30,000
b.	Land Purchase/Easement	N/A			\$0
c.	Planning/Design/Engineering / Environmental	\$75,000		In-kind possible?	\$75,000
d.	Construction/Implementation		**		
e.	Environmental Compliance/ Mitigation/Enhancement	N/A			\$0
f.	Construction Administration	N/A			\$0
g.	Other Costs	\$25,000			\$25,000
h.	Construction/Implementation Contingency				
i.	Grand Total (Sum rows (a) through (h) for each column)	\$130,000		Possible in-kind (research)	\$130,000
** This is very much a guess. Depends on interest, in what, whether we can get UC staff to contribute time...					
*Producer's labor, equipment, electricity for watering...					
j.	Can the Project be phased? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, provide cost breakdown by phases				
		<b>Project Cost</b>	<b>O&amp;M Cost</b>	<b>Description of Phase</b>	
	<b>Phase 1</b>			Research, feasibility study of alternative crops/cropping systems (gain an understanding of existing research – whether UC Davis, UNR, other land grant colleges, USDA, etc., have done any pertinent research – e.g., explore perennial grain research of The Land Institute in Salina, Kansas, sainfoin research, quinoa, etc. Evaluate options against the following preferred criteria (can	

			<p>be adjusted):</p> <ul style="list-style-type: none"> <li>• Compatible growing conditions (environmental/ season length, etc.);</li> <li>• Yields within X% of current alfalfa crop value or function (meaning that some % of local alfalfa production goes to feeding local cattle – so a compatible crop might be found that can meet that function without necessarily being of equal monetary value);</li> <li>• Alternative crops (including for direct human consumption) that could be grown with existing irrigation/planting/harvesting equipment?</li> <li>• Similar labor requirements / non-annual crop possibly – perennial grains/forage?</li> <li>• Requires less water</li> <li>• Minimal amendments/inputs required</li> <li>• Compatible with alfalfa production and/or grazing (incorporating the needs of ranches that put up hay for their own cattle vs. those that produce alfalfa mostly to sell)</li> </ul> <p>Initial pilot design.</p>
	<b>Phase 2</b>		Recruiting rancher participants, refining pilot design, evaluation design & implementing alternatives with technical assistance
	<b>Phase 3</b>		Technical assistance & Evaluation
	<b>Phase 4</b>		
<b>k.</b>	<b>Explain how operation and maintenance costs will be financed for the 20-year planning period for project implementation (not grant funded).</b>		Not applicable. This is a feasibility study and pilot test only. If a suitable alternative to alfalfa production is found, the theory is that it will pay for itself on the market.
<b>l.</b>	<b>Has a Cost/Benefit analysis been completed?</b>		<input type="checkbox"/> <b>Yes</b> <input checked="" type="checkbox"/> <b>No</b> (feasibility study / pilot)
<b>m.</b>	<b>Describe what impact there may be if the project is not funded (300 words or less)</b>		Significant domestic and international economic incentives exist today to keep producers growing water-intensive alfalfa hay in Sierra Valley. If we do not secure and apply resources to study and prove alternatives, we can expect this pattern to continue, resulting in significant

		competition for limited water resources and continued declines in the surface-to-groundwater levels that have been documented in monitoring wells in the Valley. Potentially also more and deeper well installation.
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\*List all sources of funding.

Note: See Project Development Manual, Exhibit B, for assistance in completing this table

(<http://featherriver.org/documents/>).

**VIII. PROJECT STATUS AND SCHEDULE**

Please provide a status of the project, level of completion as well as a description of the activities planned for each project stage. If unknown, enter **TBD**.

Project Stage	Check the Current Project Stage	Completed?	Description of Activities in Each Project Stage	Planned/ Actual Start Date (mm/yr)	Planned/ Actual Completion Date (mm/yr)
a. Assessment and Evaluation	<input checked="" type="checkbox"/>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Literature/Research review; Feasibility evaluation & documentation of alternatives; Pilot design; Recruitment of rancher participants	TBD	TBD
b. Final Design	<input type="checkbox"/>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Refinement of pilot design and evaluation methodology with ranchers; signed agreements	TBD	TBD
c. Environmental Documentation (CEQA / NEPA)	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Unlikely to be required unless some truly unusual idea surfaces...		
d. Permitting	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A			
e. Construction Contracting	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A			
f. Construction Implementation	<input type="checkbox"/>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Pilot testing of new cropping systems. Evaluation of water savings, economic return, producer satisfaction. Report.	TBD	TBD

Provide explanation if more than one project stage is checked as current status	
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## IX. PROJECT TECHNICAL FEASIBILITY

Please provide any related documents (date, title, author, and page numbers) that describe and confirm the technical feasibility of the project. See [www.featherriver.org/catalog/index.php](http://www.featherriver.org/catalog/index.php) for documents gathered on the UFR Region.

<p><b>a. List the adopted planning documents the proposed project is consistent with or supported by</b> (e.g. General Plans, UWMPs, GWMPs, Water Master Plan, Habitat Conservation Plans, TMDLs, Basin Plans, etc.).</p>	<p>The Plumas County General Plan is supportive of maintaining viable agriculture in the region.</p>
<p><b>b. List technical reports and studies supporting the feasibility of this project.</b></p>	<p><a href="#">Perennial grain research of The Land Institute in Salina, KS.</a></p> <p>UC Davis research on alfalfa water use <a href="#">“HOW MUCH WATER DOES ALFALFA REALLY NEED?”</a></p> <p>Sainfoin (<i>Onobrychis viciifolia</i>) research (as an alternative forage to alfalfa) of Montana State University Western Ag Research Center.</p> <p><a href="#">(“New Interest in Sainfoin”)</a></p> <p><a href="#">Strategies for the Improvement of Water-Use Efficient Irrigated Alfalfa Systems</a>, Dan Putnum</p> <p>Etc. A thorough review of existing studies, research, etc. is part of the project.</p>
<p><b>c. Concisely describe the scientific basis</b> (e.g. how much research has been conducted) <b>of the proposed project in 300 words or less.</b></p>	<p>Individual pockets of research on various crop alternatives, irrigation alternatives exist, groundwater recharge via flooding alfalfa fields in dormant times (winter/spring). The project would review and sift through that research in order to determine likely possibilities that meet the criteria defined above under section VI.j.</p>
<p><b>d. Does the project implement green technology</b> (e.g. alternate forms of energy, recycled materials, LID techniques, etc.).</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A If yes, please describe.</p> <p>It's possible it might...</p>
<p><b>e. Are you an Urban Water Supplier<sup>1</sup>?</b></p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A</p>
<p><b>f. Are you are an Agricultural Water Supplier<sup>2</sup>?</b></p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A</p>

<b>g. Is the project related to groundwater?</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A If yes, please indicate which groundwater basin. <b>Sierra Valley Basin No. 5-12.01</b>
<p><sup>1</sup> Urban Water Supplier is defined as a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually.</p> <p><sup>2</sup> Agricultural Water Supplier is defined as a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding the acreage that receives recycled water.</p>	

## Climate Change – Project Assessment Checklist

This climate change project assessment tool allows project applicants and the planning team to assess project consistency with Proposition 84 plan standards and RWMG plan assessment standards. The tool is a written checklist that asks GHG emissions and adaptation/resiliency questions.

Name of project: ALS 12: Alfalfa Alternative

Project applicant: Sierra Valley Resource Conservation District/UC Cooperative Extension

## GHG Emissions Assessment

### Project Construction Emissions

*(If you check any of the boxes, please see the attached worksheet)*

- The project requires nonroad or off-road engines, equipment, or vehicles to complete.
- The project requires materials to be transported to the project site.
- The project requires workers to commute to the project site.
- The project is expected to generate GHG emissions for other reasons.
- The project does not have a construction phase and/or is not expected to generate GHG emissions during the construction phase.

### Operating Emissions

*(If you check any of the boxes, please see the attached worksheet)*

- The project requires energy to operate.
- The project will generate electricity.
- The project will proactively manage forests to reduce wildfire risk.
- The project will affect wetland acreage.
- The project will include new trees.
- Project operations are expected to generate or reduce GHG emissions for other reasons.

## Adaptation & Resiliency Assessment

### Water Supply

Describe how the project makes the watershed (more/less) resilient to one or more of the following high priority water supply vulnerability issues:

- Not applicable
- Reduced snowmelt
- Unmet local water needs (drought)
- Increased invasive species

The intent of the project is to reduce irrigation water needs and usage for existing agricultural producers of alfalfa, which will help the region adapt for both drought and climate change.

### Water Demand

Describe how the project makes the watershed (more/less) resilient to one or more of the following high priority water demand vulnerability issues:

- Not applicable
- Increasing seasonal water use variability
- Unmet in-stream flow requirements
- Climate-sensitive crops
- Groundwater drought resiliency
- Water curtailment effectiveness

Alfalfa hay is a water-thirsty crop, production of which relies almost entirely on groundwater in this region. Identifying suitable alternative crops meeting the criteria established in the project proposal and/or more efficient irrigation methods for this crop will reduce seasonal water use, help reduce water need during drought years, and potentially offer climate change resiliency for crops/producers in the region.

### Water Quality

Describe how the project makes the watershed (more/less) resilient to one or more of the following high priority water quality vulnerability issues:

- Not applicable
- Increasing catastrophic wildfires
- Eutrophication (excessive nutrient pollution in a waterbody, often followed by algae blooms and other related water quality issues)
- Seasonal low flows and limited abilities for waterbodies to assimilate pollution
- Water treatment facility operations

- Unmet beneficial uses (municipal and domestic water supply, water contact recreation, cold freshwater habitat, spawning habitat, wildlife habitat, etc.)

### Flooding

Describe how the project makes the watershed (more/less) resilient to one or more of the following high priority flooding vulnerability issues:

- Not applicable
- Aging critical flood protection
- Wildfires
- Critical infrastructure in a floodplain
- Insufficient flood control facilities

### Ecosystem and Habitat

Describe how the project makes the watershed (more/less) resilient to one or more of the following high priority ecosystem and habitat vulnerability issues:

- Not applicable
- Climate-sensitive fauna or flora
- Recreation and economic activity
- Quantified environmental flow requirements
- Erosion and sedimentation
- Endangered or threatened species
- Fragmented habitat

### Hydropower

Describe how the project makes the watershed (more/less) resilient to one or more of the following high priority hydropower vulnerability issues:

- Not applicable
- Reduced hydropower output



ALS-12: Alfalfa Alternative

**GHG Emissions Analysis**

**Project Construction Emissions**

The project requires non-road or off-road engines, equipment, or vehicles to complete. If yes:

Type of Equipment	Maximum Number Per Day	Total 8-Hour Days in Operation	Total MTCO <sub>2</sub> e
Tractors/Loaders/Bac khoes	1	16	4
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
<b>Total Emissions</b>			<b>4</b>

The project requires materials to be transported to the project site. If yes:

Total Number of Round Trips	Average Trip Distance (Miles)	Total MTCO <sub>2</sub> e
4	80	<b>0</b>

The project requires workers to commute to the project site. If yes:

Average Number of Workers	Total Number of Workdays	Average Round Trip Distance Traveled (Miles)	Total MTCO <sub>2</sub> e
			<b>0</b>

The project is expected to generate GHG emissions for other reasons. If yes, explain:

The project does not have a construction phase and/or is not expected to generate GHG emissions during the construction phase.

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**Project Operating Emissions**

The project requires energy to operate. If yes:

Annual Energy Needed	Unit	Total MTCO <sub>2</sub> e
	kWh (Electricity)	<b>0</b>
	Therm (Natural Gas)	<b>0</b>

The project will generate electricity. If yes:

Annual kWh Generated	Total MTCO <sub>2</sub> e
	<b>0</b>

\*A negative value indicates GHG reductions

The project will proactively manage forests to reduce wildfire risk. If yes:

Acres Protected from Wildfire	Total MTCO <sub>2</sub> e
	<b>0</b>

\*A negative value indicates GHG reductions

The project will affect wetland acreage. If yes:

Acres of Protected Wetlands	Total MTCO <sub>2</sub> e
	<b>0</b>

\*A negative value indicates GHG reductions

The project will include new trees. If yes:

Acres of Trees Planted	Total MTCO <sub>2</sub> e
<b>0</b>	<b>0</b>

\*A negative value indicates GHG reductions

Project operations are expected to generate or reduce GHG emissions for other reasons. If yes, explain:

If lower water-usage crops or methods are proven through the feasibility study and pilot, then they will require less water pumping, which translate to less energy/electricity consumption, thereby reducing GHG emissions. Technical support for the feasibility study may require UCCE staff travel from Susanville and possibly Davis on occasion.

**GHG Emissions Summary**

Construction and development will generate approximately:	5 MTCO <sub>2</sub> e
In a given year, operation of the project will result in:	0 MTCO <sub>2</sub> e