



NORTH COAST RESOURCE PARTNERSHIP 2018/19 IRWM Project Application

The North Coast Resource Partnership (NCRP) 2018/19 Project Application Instructions and additional information can be found at the NCRP 2018/19 Project Solicitation webpage (<https://northcoastresourcepartnership.org/proposition-1-irwm-round-1-implementation-funding-solicitation/>). Please fill out grey text boxes and select all the check boxes that apply to the project. Application responses should be clear, brief and succinct.

Project Applications will be accepted until 5:00 pm, ~~March 8, 2019~~ March 15, 2019. It is important to save the application file with a distinct file name that references the project name. When the application is complete, please email to kgledhill@westcoastwatershed.com

If you have questions, need additional information or proposal development assistance please contact:

- Katherine Gledhill at kgledhill@westcoastwatershed.com or 707.795.1235
- Tribal Projects: Sherri Norris, NCRP Tribal Coordinator at sherri@cieaweb.org or 510.848.2043

Project Name: 12th DAA Drought Response and Water Efficiency Project

A. ORGANIZATION INFORMATION

1. Organization Name: 12th District Agricultural Association

2. Contact Name/Title

Name: Jennifer Seward
Title: Chief Executive Officer
Email: ceo@redwoodempirefair.com
Phone Number (include area code): (707) 462-3884

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

1055 N STATE ST
UKIAH, Mendocino County
CA 95482-3413

4. Organization Type

- Public agency
- Non-profit organization
- Public utility
- Federally recognized Indian Tribe
- California State Indian Tribe listed on the Native American Heritage Commission's California Tribal Consultation List
- Mutual water company
- Other:

5. Authorized Representative (if different from the contact name)

Name:
Title:
Email:
Phone Number (include area code):

6. Has the organization implemented similar projects in the past? yes no

Briefly describe these previous projects.

The 12th DAA recently completed a renovation and replacement of the irrigation system throughout the grounds to address aging equipment.

7. List all projects the organization is submitting to the North Coast Resource Partnership for the 2018/19 Project Solicitation in order of priority.

12th DAA Drought Response and Water Efficiency Project

8. Organization Information Notes:

The 12th District Agricultural Association (dba The Redwood Empire Fair).

B. ELIGIBILITY

1. North Coast Resource Partnership and North Coast IRWM Objectives

GOAL 1: INTRAREGIONAL COOPERATION & ADAPTIVE MANAGEMENT

- Objective 1 - Respect local autonomy and local knowledge in Plan and project development and implementation
- Objective 2 - Provide an ongoing framework for inclusive, efficient intraregional cooperation and effective, accountable NCIRWMP project implementation
- Objective 3 - Integrate Traditional Ecological Knowledge in collaboration with Tribes to incorporate these practices into North Coast Projects and Plans

GOAL 2: ECONOMIC VITALITY

- Objective 4 - Ensure that economically disadvantaged communities are supported and that project implementation enhances the economic vitality of disadvantaged communities by improving built and natural infrastructure systems and promoting adequate housing
- Objective 5 - Conserve and improve the economic benefits of North Coast Region working landscapes and natural areas

GOAL 3: ECOSYSTEM CONSERVATION AND ENHANCEMENT

- Objective 6 – Conserve, enhance, and restore watersheds and aquatic ecosystems, including functions, habitats, and elements that support biological diversity
- Objective 7 - Enhance salmonid populations by conserving, enhancing, and restoring required habitats and watershed processes

GOAL 4: BENEFICIAL USES OF WATER

- Objective 8 - Ensure water supply reliability and quality for municipal, domestic, agricultural, Tribal, and recreational uses while minimizing impacts to sensitive resources
- Objective 9 - Improve drinking water quality and water related infrastructure to protect public health, with a focus on economically disadvantaged communities
- Objective 10 - Protect groundwater resources from over-drafting and contamination

GOAL 5: CLIMATE ADAPTATION & ENERGY INDEPENDENCE

- Objective 11 - Address climate change effects, impacts, vulnerabilities, and strategies for local and regional sectors to improve air and water quality and promote public health
- Objective 12 - Promote local energy independence, water/ energy use efficiency, GHG emission reduction, and jobs creation

GOAL 6: PUBLIC SAFETY

- Objective 13 - Improve flood protection and reduce flood risk in support of public safety

2. Does the project have a minimum 15-year useful life?

- yes no

If no, explain how it is consistent with Government Code 16727.

3. Other Eligibility Requirements and Documentation

CALIFORNIA GROUNDWATER MANAGEMENT SUSTAINABILITY COMPLIANCE

- a) Does the project that directly affect groundwater levels or quality?
 yes no
- b) If Yes, will the organization be able to provide compliance documentation outlined in the instructions, to include in the NCRP Regional Project Application should the project be selected as a Priority Project?
 yes no

CASGEM COMPLIANCE

- a) Does the project overlie a medium or high groundwater basin as prioritized by DWR?
 yes no
- b) If Yes, list the groundwater basin and CASGEM priority: Medium
- c) If Yes, please specify the name of the organization that is the designated monitoring entity: Ukiah Valley, 1-052. Project will not effect groundwater.
- d) If there is no monitoring entity, please indicate whether the project is wholly located in an economically disadvantaged community.
 yes no

URBAN WATER MANAGEMENT PLAN

- a) Is the organization required to file an Urban Water Management Plan (UWMP)?
 yes no
- b) If Yes, list the date the UWMP was approved by DWR:
- c) Is the UWMP in compliance with AB 1420 requirements?
 yes no
- d) Does the urban water supplier meet the water meter requirements of CWC 525?
 yes no
- c) If Yes, will the organization be able to provide compliance documentation outlined in the instructions, to include in the NCRP Regional Project Application should the project be selected as a Priority Project?
 yes no

AGRICULTURAL WATER MANAGEMENT PLAN

- a) Is the organization – or any organization that will receive funding from the project – required to file an Agricultural Water Management Plan (AWMP)?
 yes no
- b) If Yes, list date the AWMP was approved by DWR:
- c) Does the agricultural water supplier(s) meet the requirements in CWC Part 2.55 Division 6?
 yes no

SURFACE WATER DIVERSION REPORTS

- a) Is the organization required to file surface water diversion reports per the requirements in CWC Part 5.1 Division 2?
 yes no
- d) If Yes, will the organization be able to provide SWRCB verification documentation outlined in the instructions, to include in the NCRP Regional Project Application should the project be selected as a Priority Project?
 yes no

STORM WATER MANAGEMENT PLAN

- a) Is the project a stormwater and/or dry weather runoff capture project?
 yes no
- b) If yes, does the project benefit a Disadvantaged Community with a population of 20,000 or less?
 yes no
- e) If No, will the organization be able to provide documentation that the project is included in a Stormwater Resource Plan that has been incorporated into the North Coast IRWM Plan, should the project be selected as a Priority Project?
 yes no

C. GENERAL PROJECT INFORMATION

1. Project Name: 12th DAA Drought Response and Water Efficiency Project

2. Eligible Project Type under 2018/19 IRWM Grant Solicitation

- Water reuse and recycling for non-potable reuse and direct and indirect potable reuse
- Water-use efficiency and water conservation
- Local and regional surface and underground water storage, including groundwater aquifer cleanup or recharge projects
- Regional water conveyance facilities that improve integration of separate water systems
- Watershed protection, restoration, and management projects, including projects that reduce the risk of wildfire or improve water supply reliability
- Stormwater resource management projects to reduce, manage, treat, or capture rainwater or stormwater
- Stormwater resource management projects that provide multiple benefits such as water quality, water supply, flood control, or open space
- Decision support tools that evaluate the benefits and costs of multi-benefit stormwater projects
- Stormwater resource management projects to implement a stormwater resource plan
- Conjunctive use of surface and groundwater storage facilities
- Decision support tools to model regional water management strategies to account for climate change and other changes in regional demand and supply projections
- Improvement of water quality, including drinking water treatment and distribution, groundwater and aquifer remediation, matching water quality to water use, wastewater treatment, water pollution prevention, and management of urban and agricultural runoff
- Regional projects or programs as defined by the IRWM Planning Act (Water Code §10537)
- Other:

3. Project Abstract

The 12th DAA Drought Response and Water Efficiency Project address the identified need for replacement, adaptation and modernization of the aging and dilapidated fresh water delivery system at the Redwood Empire Fair.

4. Project Description

This project is the top priority as outlined in the 12th DAA's Stewardship Plan to Conserve Water. This project will replace all of the freshwater pipes throughout the Redwood Empire Fairgrounds in Ukiah, California. In addition, this project will support the development of complete plans for addressing the storm water issues. The current fresh water system is antiquated and does not meet the goals and standards of water quality and conservation. The project will provide a 100% engineered design to replace the drinking water distribution system, and storm water drain systems, sufficient for implementation. The project benefits include increased conservation through pipe replacement, and storm water protection with improved designs for infiltration, and Low Impact Development designs. The 12th DAA serves as a vital resource in area emergencies and has been instrumental as an Evacuation Center, a Heating or Cooling Center, FEMA temporary housing solution, and a CAL FIRE Distribution Center. The 12th DAA also provides a significant economic impact in the county. The 12th DAA generated approximately \$10,593,000 in spending activity alone in 2015, benefiting the local economy and creating a ripple effect of economic benefits in this underserved community. In 2015, the equivalent of 108 jobs was created as a result of the spending by the fairgrounds, its support businesses and its attendees. In 2015, the labor income generated by these additional jobs was approximately \$3,472,000. The 12th DAA also generates business tax revenue through the collection of state and local sales taxes, transient occupancy taxes, possessory interest taxes and other taxes and fees. These revenues stimulate further economic activity by providing for programs that benefit the local community. This project is the second phase of a three-part effort to meet the standards of 12th

DAA's Stewardship Plan to Conserve Water. In Phase 1 a water audit and report was conducted (\$ 8,945) and water conserving irrigation upgrades were implemented throughout the property (\$25,534).

5. Specific Project Goals/Objectives

- Goal 1: Provide and conserve fresh drinking water through the 12th DAA facility
- Goal 1 Objective: Survey and evaluate freshwater pipes throughout the 12th DAA facility
- Goal 1 Objective: Identify the most efficient and practical solutions to insure the fresh water delivery mechanism at the facility is installed.
- Goal 1 Objective:
- Goal 1 Objective:

- Goal 2: Alleviate flooding on the grounds.
- Goal 2 Objective: 100% engineering design sufficient for future implementation.
- Goal 2 Objective:
- Goal 2 Objective:
- Goal 2 Objective:

- Goal 3: Increase Public Awareness of the project, of water conservation and the NCRP
- Goal 3 Objective: Install interpretive signage for display at both fairs and interim events at the facility
- Goal 3 Objective: Coordinate with the schools and the pre-school to educate students about the project and water issues
- Goal 3 Objective:

Additional Goals & Objectives (List)

6. Describe how the project addresses the North Coast Resource Partnership and North Coast IRWM Plan Goals and Objectives selected.

- Goal 4 - Beneficial Uses of Water
- Objective 8 – This project will ensure water supply reliability and quality while minimizing impacts to sensitive resources for the facility including an RV Park, three schools and a pre-school.
- Objective 9 – Improve drinking water quality and water related infrastructure at this important facility.
- Objective 10 – The elimination of ruptures and leaks will protect groundwater resources from over-drafting and contamination
- Objective 11 – This project will result in improved water quality and promote public health
- Objective 12 – This project will promote water use efficiency will create temporary jobs

- Goal 6: Public Safety
- Objective 13 – This project will improve flood protection and reduce flood risk in support of public safety

7. Describe the need for the project.

Staff of the 12th DAA maintain a continual assessment of the structural integrity and environmental impact of the facility's operations. Water is a critical component in the operation of the Fairgrounds and an identified natural resource that must be conserved. To manage this critical resource, staff maintains a water conservation plan that monitors water use and lists priority projects to achieve the goal of maximum conservation possible. Currently, Priority #1 is the replacement of the water delivery system throughout the grounds. Constant leaks and occasional catastrophic incidents result in unacceptable

levels of lost water. Priority #2 is the design for upgrading the stormwater drain system throughout the Fairgrounds to protect stormwater and prevent flooding.

8. List the impaired water bodies (303d listing) that the project benefits:

Russian River

9. Will this project mitigate an existing or potential Cease and Desist Order or other regulatory compliance enforcement action? yes no

If so, please describe?

10. Describe the population served by this project.

The 12th DAA is centrally located in Ukiah, California, population 16,075 (2010 census). The facility is host to an RV Park, three schools and a preschool. Ukiah is designated as a Severely Economically Disadvantaged Community. The 12th DAA serves Mendocino County with the two fairs through FFA & 4H participation and community events. Multiple economically challenged communities throughout the county are served including Fort Bragg, Booneville, Willits, and Laytonville.

11. Does the project provide direct water-related benefits to a project area comprised of Disadvantaged Communities or Economically Distressed Communities?

- Entirely
- Partially
- No

List the Disadvantaged Community(s) (DAC)

Ukiah, CA

12. Does the project provide direct water-related benefits to a project area comprised of Severely Disadvantaged Communities (SDAC)?

- Entirely
- Partially
- No

List the Severely Disadvantaged Community(s)

Ukiah, CA

13. Does the project provide direct water-related benefits to a Tribe or Tribes?

- Entirely
- Partially
- No

List the Tribal Community(s)

If yes, please provide evidence of support from each Tribe listed as receiving these benefits.

14. If the project provides benefits to a DAC, EDA or Tribe, explain the water-related need of the DAC, EDA or Tribe and how the project will address the described need.

Water is a critical component in the operation of the fairgrounds in both daily operations and its role as a crisis center in emergencies. Located within a DAC, the fairgrounds is often utilized in emergencies and has served as a evacuation center, a heating or cooling center and a FEMA housing solution. The

fairgrounds is also home to three schools, a preschool, multiple community events and the two annual fairs. Water supply in the Ukiah Valley Groundwater Basin is considered at a medium level of threat, and this project will conserve water to protect water security for the community of Ukiah.

- 15. Does the project address and/or adapt to the effects of climate change? Does the project address the climate change vulnerabilities in the North Coast region?** yes no

If yes, please explain.

This project will eliminate the aging and inefficient water delivery system currently being used at the Redwood Empire Fair. Reducing leaks and catastrophic line breakage aligns the Fairgrounds with the State in achieving water conservation goals to prepare for extended droughts forecast in climate change models.

- 16. Describe how the project contributes to regional water self-reliance.**

This project addresses the Redwood Empire Fair's identified need to maintain the efficiency and quality of the water delivered throughout this important facility. In the event of a community emergency, the fairgrounds must be prepared to provide a reliable water delivery system to the community. This project will provide the administration with the confidence to continue to accept the multiple responsibilities often thrust on a emergency response facility.

- 17. Describe how the project benefits salmonids, other endangered/threatened species and sensitive habitats.**

N/A

- 18. Describe local and/or political support for this project.**

This project has significant support from the City of Ukiah, County of Mendocino (verbal: Carmel Angelo, CEO), State Assemblymember, 2nd District, Jim Wood, the Mendocino County Resource Conservation District, Mendocino County Tourism Commission, and the Redwood Academy. Letters of support are included.

- 19. List all collaborating partners and agencies and nature of collaboration.**

This is a collaborative project between the 12th DAA (Redwood Empire Fair), The Department of Food and Agriculture (CDFA), Fairs & Expositions (F&E), a Branch within the Division of Marketing Services, Resource Management, SHN Engineering and the California Construction Authority. All collaborators have participated in developing project priorities and activities. The 12th DAA will provide in-kind support including manpower, equipment and management services, Resource Management provides professional oversight and management, SHN is providing licensed engineering services. The California Construction Authority will provide plan review, project management, bid package prep, and inspections to the State of California standards.

- 20. Is this project part or a phase of a larger project?** yes no
Are there similar efforts being made by other groups? yes no

If so, please describe?

This project is Phases 2 and 3 of a larger effort to improve water quality and efficiency throughout the facility and improve storm drain/flood control. This project is a small piece of an overall effort for increased water conservation and storm drain/flood control. Phase 2 is the replacement of the water delivery system throughout the entire facility. Phase 3 will consist of developing a 100% engineering design for implementation and a storm drain/flood control system.

21. Describe the kind of notification, outreach and collaboration that has been done with the County(ies) and/or Tribes within the proposed project impact area, including the source and receiving watersheds, if applicable.

Fairs are at their core an excellent mechanism for outreach and educating the public to the benefits of conservation and flood control. This project will be highlighted at the annual Fair to educate the public to the importance of regular maintenance to water delivery systems, conserving water and the role the NCRP plays in supporting these efforts. Interpretive signs will be built and put on display. The schools on the property will be included in the educational component of the project.

22. Describe how the project provides a benefit that meets at least one of the Statewide Priorities as defined in the 2018 IRWM Grant Program Guidelines and Tribal priorities as defined by the NCRP?

Provide Safe Water for All Communities: In addition to the three schools and the preschool, over 100,000 people visit the facility annually and this project will provide them with safe, reliable drinking water.

Educate and encourage conservation a way of life: This project will be an excellent opportunity to provide outreach and education to the community. Signs will be posted for guests to enjoy and help them understand how important maintained infrastructure is to providing safe, reliable drinking water. The outreach will also highlight the role the NCRP plays in insuring that the storm water runoff is managed to avoid contaminants and pollution.

Manage and prepare for Dry periods: This project will conserve water and prepare the community for any extended drought occurrences.

Increase Flood Protection: The designs for repairing and upgrading the stormwater system at the fairgrounds will allow the organization to seek and secure funding to install a state-of-the-art system.

23. Project Information Notes:

Item 21. Fairgrounds staff have contacted the City of Ukiah about connecting to the Purple Pipe Project to support landscape irrigation, thus saving potable water for the community. The Purple Pipe Project is not yet complete, but will be incorporated in to the system when it reaches the property.

Item 22. This project will provide safe water to facility users and take steps to increase flood protection.

D. PROJECT LOCATION

1. Describe the location of the project

Geographical Information

Latitude 39.164533 Longitude -123.210245

2. Site Address (if relevant):

1055 N STATE ST

UKIAH, CA 95482-3413

3. Does the applicant have legal access rights, easements, or other access capabilities to the property to implement the project?

Yes If yes, please describe

No If No, please provide a clear and concise narrative with a schedule, to obtain necessary access.

NA If NA, please describe why physical access to a property is not needed.

The property is owned and operated by the 12th District Agricultural Association, a entity of the State of California.

4. Project Location Notes:

Facility wide. Water pipe replacement will take place from the City's main water line, throughout the grounds including underground, above ground and throughout all buildings. Meters will be installed to allow for more precise readings of water use.

E. PROJECT TASKS, BUDGET AND SCHEDULE

1. Projected Project Start Date: 3/1/20
Anticipated Project End Date: 3/1/23

2. Will CEQA be completed within 6 months of Final Award?

- Yes State Clearinghouse Number:
 NA, Project is exempt from CEQA
 NA, Not a Project under CEQA
 NA, Project benefits entirely to DAC, EDA or Tribe, or is a Tribal local sponsor. [Projects providing a water-related benefit entirely to DACs, EDAs, or Tribes, or projects implemented by Tribes are exempt from this requirement].
 No

3. Please complete the CEQA Information Table below

Indicate which CEQA steps are currently complete and for those that are not complete, provide the estimated date for completion.

CEQA STEP	COMPLETE? (y/n)	ESTIMATED DATE TO COMPLETE
Initial Study	N	8/1/20
Notice & invitation to consult sent to Tribes per AB52	N	4/15/20
Notice of Preparation	N	6/1/20
Draft EIR/MND/ND	N	9/1/20
Public Review	N	9/1/20
Final EIR/MND/ND	N	10/1/20
Adoption of Final EIR/MND/ND	N	12/31/20
Notice of Determination	N	12/31/20
N/A - not a CEQA Project	x	

If additional explanation or justification of the timeline is needed or why the project does not require CEQA, please describe.

Project is exempt due to the location being entirely within Ukiah, an Economically Disadvantaged Community.

4. Will all permits necessary to begin construction be acquired within 6 months of Final Award?

- Yes

- NA, Project benefits entirely to DAC, EDA, Tribe, or is a Tribal local sponsor
- No

5. PERMIT ACQUISITION PLAN

Type of Permit	Permitting Agency	Date Acquired or Anticipated
Building permits	City	12/31/20
Encroachment Permits	City/Railroad	12/31/20

For permits not acquired: describe actions taken to date and issues that may delay acquisition of permit.
 We anticipate permit acquisition to be routine, and do not anticipate any delays.

6. Describe the financial need for the project.

Although the 12th DAA has funding for ongoing basic maintenance of infrastructure there is no internal funding available for major infrastructure replacement and repair for a project of this magnitude. The project is in an economically disadvantaged community.

7. Is the project budget scalable? yes no

Describe how a scaled budget would impact the overall project.

Scaling by 25% to 50% reduction would still accomplish significant water conservation benefits for the Fairgrounds. If necessary, the project budget for implementation could be reduced incrementally to replace the water system in strategically, prioritized sections/area.

8. Describe the basis for the costs used to derive the project budget according to each budget category.

Labor costs are determined by prevailing wage scale for the area. Engineering, project management, and implementation costs area all based on prevailing wage scale for the area. Materials and supplies costs are based on best value utilizing local vendors.

9. Provide a narrative on cost considerations including alternative project costs.

Cost considerations are based on prevailing wage, local availability and pricing of materials, equipment and supplies in this rural community. Unitizing existing collaborator employees/resources and/or existing long term contractual relationships was determined to be the most cost effective process due to familiarity with local conditions and cost effectiveness.

10. List the sources of non-state matching funds, amounts and indicate their status.

N/A

11. List the sources and amount of state matching funds.

N/A

12. Cost Share Waiver Requested (DAC or EDA)? yes no

Cost Share Waiver Justification: Describe what percentage of the proposed project area encompasses a DAC/EDA, how the community meets the definition of a DAC/EDA, and the water-related need of the DAC/EDA that the project addresses. In order to receive a cost share waiver, the applicant must demonstrate that the project will provide benefits that address a water-related need of a DAC/EDA. This project takes place entirely in a Severely Economically Disadvantaged Community and partially in a Economically Distressed Area that relies on the 12th DAA as an evacuation center, a cooling or heating center, a FEMA housing solution and a home to three schools and a preschool.

13. Major Tasks, Schedule and Budget for NCRP 2018 IRWM Project Solicitation

Please complete MS Excel table available at <https://northcoastresourcepartnership.org/proposition-1-irwm-round-1-implementation-funding-solicitation/>; see instructions for submitting the required excel document with the application materials.

14. Project Tasks, Budget and Schedule Notes:

This project is the second phase of a three-part effort to meet the standards of 12th DAA's Stewardship Plan to Conserve Water. In Phase 1 a water audit and report was conducted: (\$ 8,945) and Irrigation upgrades were implemented throughout (\$25,534).

F. PROJECT BENEFITS & JUSTIFICATION

1. Does the proposed project provide physical benefits to multiple IRWM regions or funding area(s)?

yes no

If Yes, provide a description of the impacts to the various regions.

2. Provide a narrative for project justification. Include any other information that supports the justification for this project, including how the project can achieve the claimed level of benefits. List any studies, plans, designs or engineering reports completed for the project. Please see the instructions for more information about submitting these documents with the final application.

The currentl water delivery system at the 12th DAA is failing. Ruptures and leaks are commonplace. This project is a high priority need for the 12th DAA and directly addresses the need for water quality and water efficiency and providing critical infrastructure for community public health and safety during community emergencies such as flood, fires and other natural disasters. This project is the number one identified need as outlined in the 12th DAA’s Stewardship Plan to conserve water. The project is identified as a critical need to replace all of the freshwater pipes throughout the12th DAA as they are currently failing. This project has undergone initial planning and development and is now at the point of needing 100% final engineering plans sufficient for project implementation as well as implementation itself.

3. Does the project address a contaminant listed in AB 1249 (nitrate, arsenic, perchlorate, or hexavalent chromium)? yes no

If yes, provide a description of how the project helps address the contamination.

4. Does the project provide safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes consistent with AB 685? yes no

If Yes, please describe.

This project will insure the safe and efficient delivery of potable water throughout the facility.

5. Does the project employ new or innovative technologies or practices, including decision support tools that support the integration of multiple jurisdictions, including, but not limited to, water supply, flood control, land use, and sanitation? yes no

If Yes, please describe.

6. For each of the Potential Benefits that the project claims complete the following table to describe an estimate of the benefits expected to result from the proposed project. [See the NCRP Project Application Instructions, Potential Project Benefits Worksheet and background information to help complete the table. The NCRP Project Application, Attachment B includes additional guidance, source materials and examples from North Coast projects.]

PROJECT BENEFITS TABLE

Potential Benefits Description	Physical Amt of Benefit	Physical Units	Est. Economic Value per year	Economic Units
Water Supply				
Increased Water Supply Reliability	RVs, buildings	66	\$21,384	\$27/bldg /Mo.
Avoided Costs Associated with Emergency Repairs	RVs, Buildings	66	\$66,000	\$1,000/unit/Yr.
Water Quality				
Other Ecosystem Service Benefits				

Potential Benefits Description	Physical Amt of Benefit	Physical Units	Est. Economic Value per year	Economic Units
Other Benefits				
Increased Quantity or Quality of Recreation or Public Access	300 days	200 people/day	\$40,000	\$128/day
Decreased Operation and Maintenance Cost	RVs. Buildings	66	\$33,000	\$500/building/yr.
Jobs created and/or maintained	18 temporary jobs	18	\$1,000.000	Average \$55,000/pers
Flood Damage Reduction	Main Storm Drains	2	\$16,000	8

7. Project Justification & Technical Basis Notes:

Project Benefits Table, Flood damage Reduction estimates based on four drainage issues per year per drain requiring \$2,000 in remediation per incident

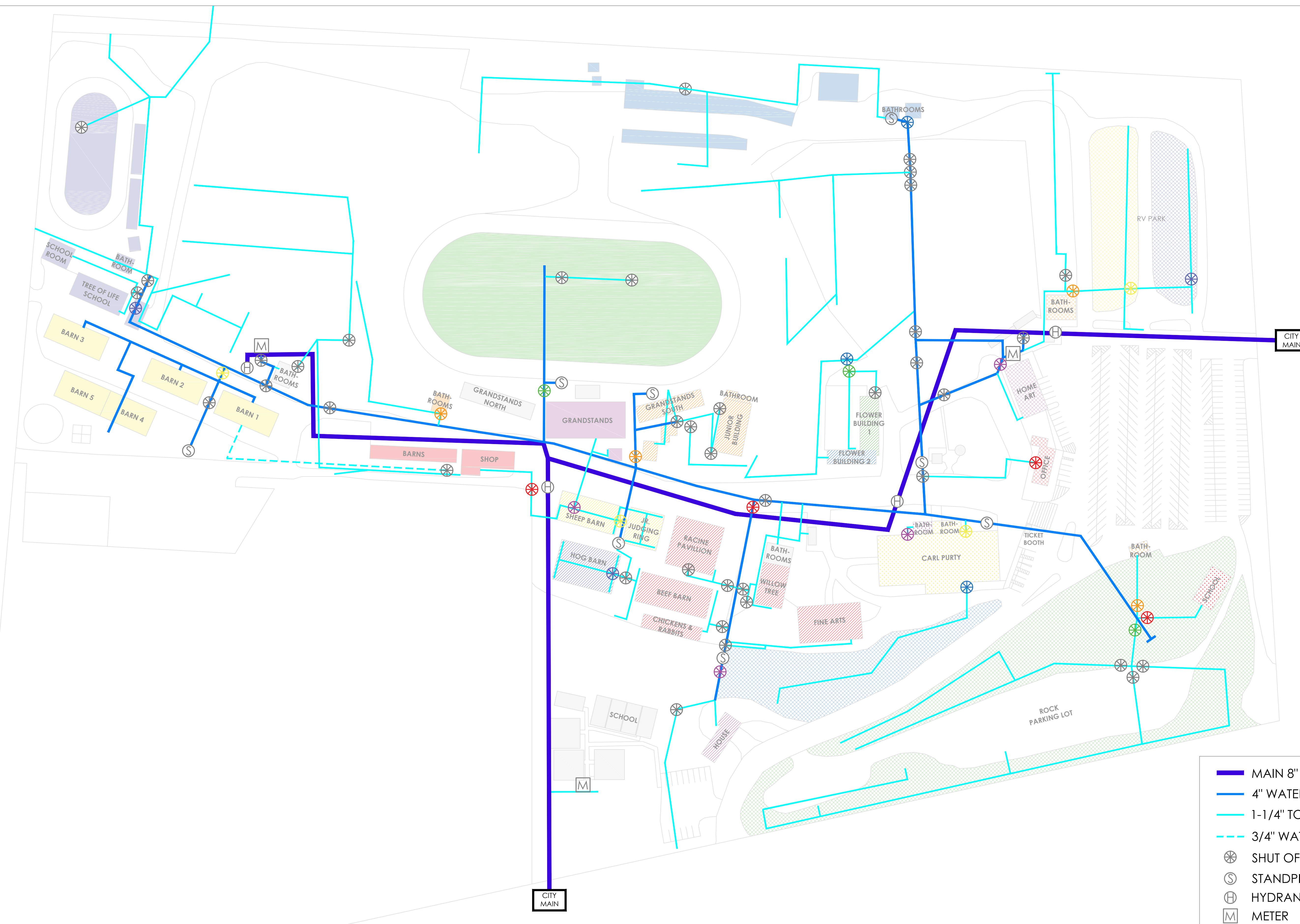
Major Tasks, Schedule and Budget for North Coast Resource Partnership 2018/19 IRWM Project Solicitation

Project Name: 12th DAA Drought Response and Irrigation Efficiency Project
Organization Name: 12th District Agricultural Association

Task #	Major Tasks	Task Description	Major Deliverables	Current Stage of Completion (%)	IRWM Task Budget	Non-State Match	Total Task Budget	Start Date	Completion Date
A Category (a): Direct Project Administration									
1	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. Provide audited financial statements and other deliverables as required.	Invoices, audited financial statements and other deliverables as required	0%	\$32,000.00	\$0.00	\$32,000.00	3/1/20	5/1/20
2	Monitoring Plan	Develop Monitoring Plan to include goals and measurable objectives	Final Monitoring Plan	0%	\$3,500.00	\$0.00	\$3,500.00	3/1/20	5/1/20
3	Labor Compliance Program	Execute service agreement with Labor Compliance Program company	Submission of Labor Compliance Program	0%	\$11,000.00	\$0.00	\$11,000.00	3/1/20	5/1/20
4	Reporting	Develop monthly reports describing work completed, challenges, and strategies for reaching remaining project objectives. Develop Final Report	Quarterly and Final Reports	0%	\$19,000.00	\$0.00	\$19,000.00	3/1/20	3/1/23
B Category (b): Land Purchase/Easement									
1	N/A	N/A	N/A	0%	\$0.00	\$0.00	\$0.00		
C Category (c): Planning/Design/Engineering/Environmental Documentation									
1	Final Design /Plans	Develop 100% engineer design plans for water system and storm drain replacement implementation.	Completion of 100% engineer design plans sufficient for implementation of new water system and storm drain replacement implementation		\$135,000.00		\$135,000.00	3/1/20	8/1/20
2	Environmental Documentation: CEQA *	Complete environmental analysis of project site, including cultural resources, wildlife, botany, and other resources as applicable.	Completion of environmental resource reports, notice of determination, consultation with lead agency, approved and adopted CEQA documentation providing for project implementation clearance	0%	\$36,000.00	\$0.00	\$36,000.00	3/1/20	8/1/20
3	Permit Development *: [PLEASE COMPLETE]	Building permit from City	Acquisition of completed building permit for implementation	100%	\$1,300.00	\$0.00	\$1,300.00	3/1/20	8/1/20
4	Permit Development *: [PLEASE COMPLETE]	Encroachment permit from Railroad & City	Acquisition of completed encroachment permit for implementation		\$1,000.00		\$1,000.00	3/1/20	8/1/20
5	Water Audit	Complete a water audit of the water system	Water audit of the water system completed	100%	\$0.00	\$8,945.00	\$8,945.00		
6	Irrigation upgrade	Upgrade of existing irrigation system	Completed upgrades of irrigation system for efficiency	100%	\$0.00	\$25,534.00	\$25,534.00		
7	Water System Mapping/Audit	Complete a map of water infrastructure	Completed a water infrastructure map	100%	\$0.00	\$7,000.00	\$7,000.00		
8				0%	\$0.00	\$0.00	\$0.00		
D Category (d): Construction/Implementation									
1	Construction/Implementation Contracting	Contract with the California Construction Authority which oversees all projects of this type on any Fair Grounds within the State of California. They provide final Plan review, Project Management, Bid Package Prep and Inspections.	Completed contract with the California Construction Authority to satisfy their requirement for Plan review, Project Management, Bid Package Prep and Inspection to further insure the project is implemented properly.	0%	\$80,640.00	\$0.00	\$80,640.00		
2	Mobilization and Site Preparation			0%	\$0.00	\$0.00	\$0.00		
3	Project Construction/Implementation: [PLEASE COMPLETE]	Replacement of water system on Fairgrounds property. Includes mobilization, supplies & materials, trenching, bedding, installation of piping & fittings	Replacement of 16,800 feet of water system infrastructure.	0%	\$1,344,000.00	\$0.00	\$1,344,000.00	9/1/20	2/1/23

Project Name: 12th DAA Drought Response and Irrigation Efficiency Project
 Organization Name: 12th District Agricultural Association

Task #	Major Tasks	Task Description	Major Deliverables	Current Stage of Completion (%)	IRWM Task Budget	Non-State Match	Total Task Budget	Start Date	Completion Date
4	Project Construction/Implementation: [PLEASE COMPLETE]			0%	\$0.00	\$0.00	\$0.00		
5				0%	\$0.00	\$0.00	\$0.00		
6				0%	\$0.00	\$0.00	\$0.00		
7	Project Signage	Development of public signage naming project and funding sources	Completion of and installation of public signage for duration of project.	0%	\$3,500.00	\$0.00	\$3,500.00	3/1/20	5/1/20
8	Project Close Out, Inspection & Demobilization	Inspect project components and establish that work is complete. Verify that all project components have been installed and are functioning as specified will be conducted as part of construction inspection and project closeout. Conduct project completion photo monitoring. Prepare record drawings	As-Built and Record Drawings; Project completion site photos	0%	\$14,500.00	\$0.00	\$14,500.00	9/1/20	2/1/23
9	Project Performance Monitoring	The performance of the project will be monitored in accordance to the Monitoring Plan using the following measurement tools and methods: Project monitoring during implementation to insure plans & designs are being followed. Photo point monitoring reflecting pre-project, during project and post-project photos. Three year post monitoring will take place utilizing photo points.	Successful completion of project according to standards of the design plans	0%	\$11,500.00	\$0.00	\$11,500.00	9/1/20	2/1/23
10	Construction Administration	Complete tasks necessary to administer construction contract. Keep daily records of construction activities, inspection, and progress. Conduct project construction photo monitoring	Construction Management Logs; Completed construction administration tasks documented in monthly progress reports	0%	\$45,000.00	\$0.00	\$45,000.00	8/1/20	2/1/23
Total North Coast Resource Partnership 2018/19 IRWM Grant Request					\$1,737,940.00	\$41,479.00	\$1,779,419.00		
Is Requested Budget scalable by 25%? If yes, indicate scaled totals; if no delete budget amount provided.					\$1,303,455.00	\$31,109.25	\$1,334,564.25		
Is Requested Budget scalable by 50%? If yes, indicate scaled totals; if no delete budget amount provided.					\$868,970.00	\$20,739.50	\$889,709.50		



- █ MAIN 8" WATER (CITY)
- █ 4" WATER LINE
- █ 1-1/4" TO 2" WATER LINE
- █ 3/4" WATER LINE
- SHUT OFF VALVE
- STANDPIPE
- HYDRANT
- METER

REDWOOD EMPIRE FAIR
 UKIAH, CA | 1" = 75'-0"

Redwood Empire Fair Water Audit Results



June 2016

Prepared By:



Michael R. Muelrath 6/28/2016

Michael R. Muelrath RCE 67435



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Introduction

This outdoor water audit was made possible through a contract with the Mendocino County Resource Conservation District as part of the Mendocino Jumpstart Integrated Water Plan, funded by the Dept. of Water Resources through Prop 84.

The purpose of this report is to review the water use for the Redwood Empire Fair (Fair) and to provide recommendations to further improve water use efficiency at the Fair.

The total annual cost of water and sewer charges at the Fair peaked in 2012 at almost \$85,000. Lowering to \$75,000 in 2013 and approximately \$50,000 in 2014 and 2015. The majority of water savings resulted from the Fair shutting off irrigation in response to the four-year drought and mandated statewide and local conservation orders. It is anticipated that water use will increase now that the drought has ended on the North Coast, but with proper management and system upgrades the Fair will not return to the pre drought water use levels.

Summary

- Indoor water use is estimated to be greater than 40% of total water use. It is highly recommended that the Fair consider retrofits of indoor fixtures to curtail indoor water use.
- Metering on outdoor water supply lines would provide the opportunity to accurately identify indoor versus outdoor water use and to focus efficiency efforts where needed.
- Irrigation valves and manifolds are in disrepair. It is recommended that valve manifolds be replaced and that replacement parts be uniform throughout the facility.
- Irrigation manifolds are not properly covered in many instances. For example, a sheet of plywood covers the manifold for the Carl Purdy Hall. The plywood needs to be lifted each time the valves are to be used. It is recommended that manifolds be properly covered so that they are safe for employees and visitors.
- Irrigation valves are currently being controlled manually by Fair staff. It is recommended that weather based irrigation controllers be installed to control irrigation valves more efficiently. The same make and model controller should be installed throughout the facility to provide more efficient water management.
- Emission devices in many cases are inefficient and would greatly benefit from being retrofitted to more efficient equipment.
 - Spray heads should be replaced for high-efficiency rotating heads on 6-inch risers, with matched precipitation rates, and check valves.
 - Drip irrigation should be 1/2-inch inline tubing.
 - Where possible spray irrigation should be retrofitted with drip irrigation, e.g. shrub beds around Fair office.
- Consider investment in portable irrigation system for irrigation of driving range, campground, and race track.
- Investigate cost of using well with portable irrigation system.
- Recent temporary water savings are attributable to turning off the irrigation to the driving range and campground turf areas.

Outdoor Water Use

The following analysis was performed using water meter data provided by the Fair. The Fair is served by two looped meters on an 8-inch main line provided by the City of Ukiah. Indoor water use during the winter months is estimated to be 250 hundred cubic feet per month (187,000 gallons). The remainder of the water use is assumed to be outdoor use and indoor use during the summer fair and other events.

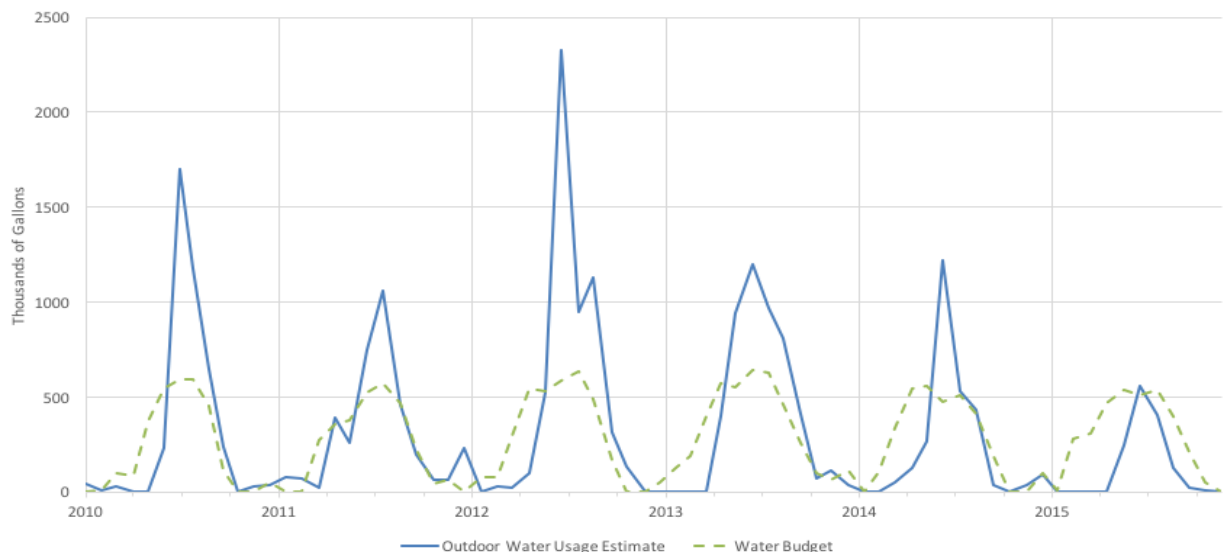
Overall Outdoor Water Budget

An overall outdoor water budget has been prepared for the Fair for all landscape areas to illustrate the big picture of outdoor water use. The water budget is a project of the amount of water needed to sustain a healthy landscape at the fairgrounds. The driving range has been allocated a lower plant factor than other turf areas (0.5 rather than 0.8) as it is not maintained to the same standard. Due to the limited use and poor uniformity of the irrigation system the race track and campground have been excluded for the purposes of the water budget analysis. Additional water budget assumptions are explained in the Appendix.

Chart 1 shows the calculated water budget (green dashed line) against the estimate of actual outdoor water use (solid blue line). It should be noted that this number also includes indoor use over and above that observed in the winter months and that used for dust control on the campground and race track. The large difference between the estimate of outdoor water use and the water budget in the peak summer months highlights the importance of knowing how much water is being applied outdoors. For example, July 2012 water use was 2.3 million gallons, compared to a water budget of 0.6 million gallons for that month. At current rates this quantity of water has a value of \$6,355.

In years 2013 – 2015 the water use to budget ratio improves but is due to the Fair not irrigating large areas of the Fair to comply with statewide and local conservation mandates during the drought.

Chart 1: Redwood Empire Fair Water Budget vs. Outdoor Water Usage



Board of Directors

Charles Coleman – President
Roberto Muniz– Vice President
Michael Anderson
Casey Burris
Roger Coate
Eric Crawford
Peter McNamee



Jennifer Seward - CEO

(707) 462-FAIR
Fax (707) 462-2641
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www.redwoodempirefair.com

12th DAA's Stewardship Plan to Conserve Water

Redwood Empire Fair has identified the need to maintain the efficiency and quality of the water delivered as well as controlling the storm water runoff throughout this important facility.

Priority 1: Survey and assess the water delivery and runoff systems throughout the 12th District Agricultural Association grounds to identify and needs for repairs, upgrades or replacement to ensure that the association is doing its part to conserve water, maintain water quality and provide reliable water to the people utilizing the facility. – **Water Survey Completed**

Priority 2: Implement the recommendations of the Water Survey by securing funding to replace the water delivery system throughout the grounds.

Priority 3: Implement the recommendations of the Water Survey by securing funding to design and install upgraded storm water systems where required on the grounds

Priority 4: Leverage the role the Fair plays in the community to elevate awareness among the general public about the need to conserve water protect the waterways in which we live.



CHARTER ACADEMY OF THE REDWOODS
dba Redwood Academy of Ukiah and Accelerated Achievement Academy

A non-profit corporation
1059 North State Street Ukiah, CA 95482
(707) 467-0500, (fax) 467-4942

Friday, March 8, 2019

To Whom It May Concern

Re: 12th DAA Drought Response and Irrigation Efficiency Project

The Redwood Empire Fairgrounds has identified the need to replace the fairground's aging and decrepit water delivery system as the number one priority project on their major maintenance (drought response) plan.

The current water delivery system is aged out and performs below acceptable standards. Leaks and ruptures are frequent and result in the loss of potable water and increased maintenance and repair costs.

It is my understanding that the Board of Directors has authorized an application to the North Coast Resource Partnership's Proposition 1 Integrated Regional Water Management Grant Program to underwrite the design and implementation of the Drought Response and Irrigation Efficiency Project.

The Redwood Empire Fair is an important community asset with a long history of providing support, education, and entertainment to the residents of Mendocino County and beyond. The funding from this grant will provide the Fair with the means to conserve water while reducing the financial hardships the current situation inflicts.

I am pleased to offer my support for this project and can assure you that it is worthwhile and much needed as well as prove a good investment in an important community partner.

Sincerely,



Elna Gordon
Principal/Co-Executive Director
Redwood Academy of Ukiah

CHARTER ACADEMY OF THE REDWOODS
dba Redwood Academy of Ukiah and Accelerated Achievement Academy

A non-profit corporation
1059 North State Street Ukiah, CA 95482
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I am pleased to offer my support for this project and can assure you that it is worthwhile and much needed as well as prove a good investment in an important community partner.

Sincerely,



Selah Sawyer
Principal/Co-Executive Director
Accelerated Achievement Academy



March 14, 2019

To: Whom it May Concern

Re: 12th DAA Drought Response and Irrigation Efficiency Project

The Redwood Empire Fairgrounds has identified the need to replace the fairground's aging and decrepit water delivery system as the number one priority project on their major maintenance (drought response) plan.

The current water delivery system is aged out and performs below acceptable standards. Leaks and ruptures are frequent and result in the loss of potable water and increased maintenance and repair costs.

It is my understanding that the Board of Directors has authorized an application to the North Coast Resource Partnership's Proposition 1 Integrated Regional Water Management Grant Program to underwrite the design and implementation of the Drought Response and Irrigation Efficiency Project.

The Redwood Empire Fair is an important community asset with a long history of providing support, education and entertainment to the residents and out of county visitors of Mendocino County. The funding from this grant will provide the Fair long-term sustainability by conservation of water and reduction of financial hardships due to the aging water delivery system.

I am pleased to offer my support for this project and can assure you that it is worthwhile, much needed and will be a good investment in an important community and cultural partner.

Thank you,

A handwritten signature in black ink, appearing to read "Travis Scott".

Travis Scott
Executive Director
Visit Mendocino County
Mendocino County Tourism Commission, Inc.

COMMITTEES
CHAIR: HEALTH
BUDGET
JOINT LEGISLATIVE AUDIT
WATER, PARKS, AND WILDLIFE

SUBCOMMITTEE
BUDGET SUBCOMMITTEE NO. 1 ON HEALTH
AND HUMAN SERVICES

Assembly California Legislature



JIM WOOD
ASSEMBLYMEMBER, SECOND DISTRICT

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(707) 576-2526
FAX (707) 576-2297

1036 5TH STREET, SUITE D
EUREKA, CA 95501
(707) 445-7014
FAX (707) 455-6607

March 13, 2019

North Coast Resource Partnership
P.O. Box 262
Healdsburg, CA 95448

RE: Proposition 1 Integrated Regional Water Management Grant Program, Redwood Empire Fairground's Drought Response and Irrigation Efficiency Program

Dear Grant Reviewer:

I am writing to express my strong support for The Redwood Empire Fairground's application to the North Coast Resource Partnership's Proposition 1 Integrated Regional Water Management Grant Program.

The Redwood Empire Fairgrounds has identified the need to replace the fairground's aging and decrepit water delivery system as the number one priority project on their major maintenance and drought response plan. The current water delivery system is aged out and performs below acceptable standards. Leaks and ruptures are frequent resulting in the loss of potable water, increased maintenance and high repair costs. If approved, these funds would underwrite the design and implementation of the Drought Response and Irrigation Efficiency Project.

The Redwood Empire Fair is an important community asset with a long history of providing support, education and entertainment to the residents of Mendocino County and beyond. The funding from this grant will provide the Fair with the means to conserve water while reducing the financial hardships the current situation inflicts.

I am pleased to offer my support for this project. It is worthwhile and much needed investment in an important community partner.

Sincerely,

A handwritten signature in cursive script that reads "Jim Wood".

JIM WOOD
Assemblymember 2nd District



Recommendation

Install water meters on outdoor water supply at point of connection and record monthly meter readings. Compare monthly readings to water budgets.

Irrigation Controllers

Onsite interviews with maintenance staff at the Fair revealed that all of the irrigation systems are currently being actuated by manually turning on irrigation valves. While this does afford the maintenance staff the opportunity to fine tune watering requirements through observation of plant material it is also extremely time consuming and allows for the possibility of over watering if valves are left open for too long. Installing operational irrigation controllers is considered a high priority.

There are several existing irrigation controllers, but they are either no longer working, no longer connected, or are otherwise not used. Of the existing controllers onsite, the most sophisticated is the Hunter ICC adjacent to the pond. Unfortunately, this controller is a discontinued model and is not compatible with Hunter's weather based control module (Solar Sync).



Recommendation

Install matching EPA WaterSense approved weather based irrigation controllers¹ to control watering for areas with in ground irrigation systems. Where a power source is not available, battery operated timers may be used. All battery operated timers should be the same brand.

¹ <https://www3.epa.gov/watersense/products/controltech.html>

Irrigation Valves and Manifolds

The irrigation manifolds are not in suitable condition for a commercial setting. The manifold at the Carl Purdy Hall is covered by a sheet of plywood and a guard rail. Inside, the manifold is in poor operating condition.



Recommendation

Perform repairs and upgrades to irrigation valves and manifolds. Ensure that appropriate backflow protection and pressure regulation is used. Replace old valves. Use the same components throughout the fairgrounds to make ongoing maintenance easier to perform.

Turf Around Fair Buildings

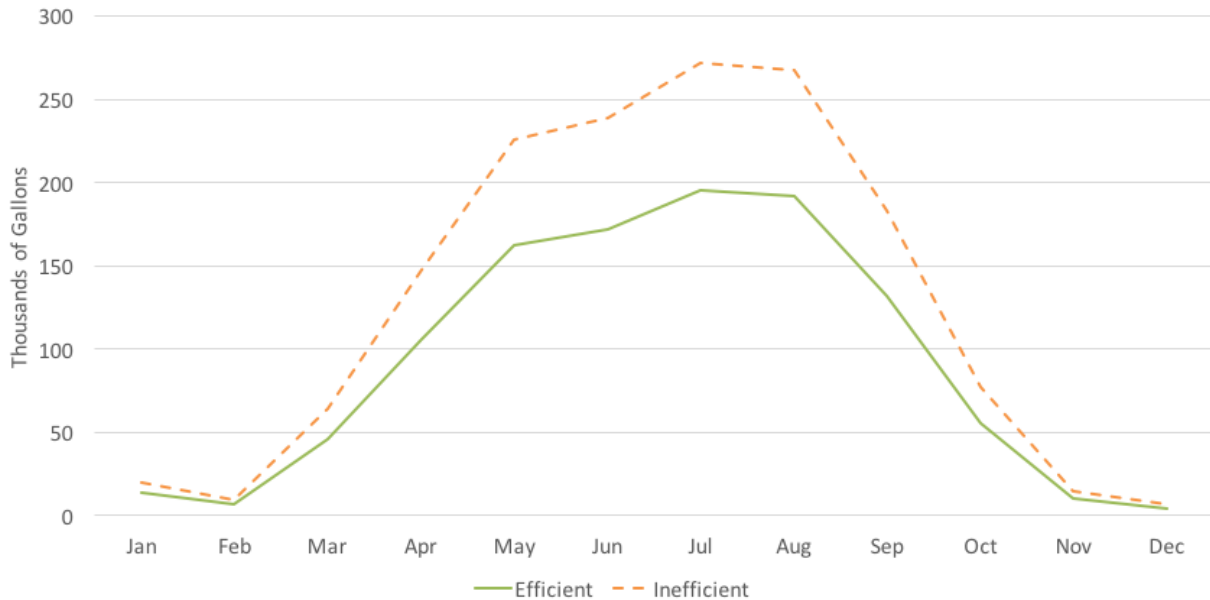
The turf areas surrounding Carl Purdy Hall, the Fine Arts Buildings and the pond are maintained for use during the annual fair and for other events. The sprinklers used on these areas are outdated and the height of the pop-ups is inadequate to ensure reasonable coverage. During the audit the zone at the south east corner of the Carl Purdy Hall was run for a few minutes. Significant run-off was observed in a short period of time. The run-off observed is a result of water being deflected due to the low height of the pop-ups. Mismatched precipitation rates were also observed in this zone, e.g. a single high-efficiency rotating head had been installed in one corner and has a much lower precipitation rate than the other fixed spray heads. Many irrigation lateral pipes are undersized for the gallons per minute of the zones they cover. Upgrading nozzles to high efficiency low precipitation rate heads can lead to better operating pressure, improved coverage and the ability to have larger irrigation zones.



It is estimated that the total turf area is approximately 1-acre or 43,560 sq. ft. including the area adjacent to the pond but excluding the area adjacent to the driving range. If properly managed it is estimated that these areas would require 1.5 million gallons of water annually with the existing inefficient system. Upgrading the systems to improve the distribution uniformity has the potential to reduce the water requirement to approximately 1.1 million gallons annually, a 30% reduction.

Chart 1 below illustrates the theoretical water use for each month of the year for an inefficient system (orange dashed line) compared to an efficient system (solid green line).²

Chart 2: Fair Buildings Turf Water Budget



Recommendation

The distribution uniformity of these high priority turf areas could be improved by installing high-efficiency rotating sprinkler heads on six-inch popups, with matched precipitation rates, and check valves. Examples of such devices include the Hunter MP Rotator³, the Rain Bird RN Series⁴, and the Toro Precision Series⁵. A review of the existing head placement would need to be undertaken to ensure that the retrofit would be effective.

² Inefficient system assumed distribution uniformity of 0.35, efficient system distribution uniformity of 0.75.

³ <http://www.hunterindustries.com/irrigation-product/nozzles/mp-rotator>

⁴ <http://www.rainbird.com/homeowner/products/sprays/RNnozzles.htm>

⁵ <https://www.toro.com/en/professional-contractor/irrigation-sprays/precision-series-spray-nozzles>

Turf Adjacent to Driving Range

The turf areas adjacent to the driving range are irrigated using rotors that are suitable for areas of this size. The rotor used is the Hunter PGP Ultra with a published precipitation rate of 0.4 inches per hour. The turf area is estimated to be 15,600 sq. ft. and has an annual water requirement of approximately 0.5 million gallons per year to be maintained in a healthy state.⁶

Mulched Planting Beds Around Fair Office

There are several mulched planting beds around the vicinity of the fair office. Mulching is an excellent way to reduce soil water loss, condition soil, and suppress weeds. The large bed on the southwest corner of the office building has various overhead sprayers on fixed risers. At least four different types of spray heads were observed with different throw ranges (5 ft. to 12 ft.) and precipitation rates.



Recommendation

Install in-line drip irrigation to irrigate mulched planting beds. The same line should be used on all beds (precipitation rate and emitter spacing). The lines should be laid out in a grid to provide even moisture at a known precipitation rate. All beds should be tied to a single controller if possible.

Downspouts from the office roof are directed across the landscape to paved surfaces so that all of the rainwater goes to the storm drain. Redirected rainwater into landscaped areas would provide supplemental water to the landscape and would infiltrate water into the ground rather than contributing to high stream and river flows during the wetter months.



⁶ Assuming a distribution uniformity of 0.5.

Landscape Adjacent to North State Street

The long strip of land adjacent to North State Street is approximately 2 acres split by the parking area in the middle. This landscape slopes down from the road towards the main Fair parking lot. In the past this area was irrigated with a series of Rain Bird impact sprinklers on fixed risers. These sprinklers are still in place. Assuming that they will no longer be used they should be disconnected from the water supply and removed (capped at ground level).

The upper landscape (closest to the road) is sporadically planted with clusters of mostly low water use shrubs. Mulch has been applied around the shrubs. Lines of point source drip irrigation are being used to irrigate the shrubs. The drip irrigation lines are connected directly to hose bibs without the required filter and pressure regulator for these systems to function properly. The drip line is severed near the north end of the landscape.



The lower landscape has trees where an in-ground pop-up Rain Bird impact sprinkler system is installed. It was observed that the area on either side of the staircase is saturated with water. Maintenance staff advised that this is some kind of natural spring. This amount of water in the ground could be utilized to irrigate plants, and plants could be used to stabilize the area and transpire the water. Swales could be used to capture and infiltrate as much water as possible.

Recommendation

Install an irrigation controller and in-ground valve boxes with proper filter and pressure regulator. Replace existing point source drip irrigation with in-line drip irrigation. With in-line drip irrigation the emitters are embedded in the ½ inch tubing rather than being attached with ¼ inch tubing. In-line drip tubing is more robust in commercial settings and less prone to clogging. Sections of in-line drip tubing can be connected with blank tubing. Mulch entire upper landscape and install additional low water use plant material.

Driving Range

According to maintenance staff the 3.2-acre driving range is irrigated manually with a fire hose. Installation of an in-ground irrigation system would likely be cost prohibitive. However, the Fair could consider investing in a portable irrigation system to irrigate the driving range more efficiently, both in terms of the application of water and staff time. A similar system could also be used for dust control on the race track and for irrigation of the campground.

A travelling gun irrigation system may be an attractive option for the Fair. Such systems are typically categorized as either cable-tow travelers or hose-pull travelers. Hose-pull travelers require less time to be repositioned because there is no hose to reel in and no cable to unwind. Such systems require a high operating pressure. Staff interviewed at the site indicated that the Fair has a pressure of 140 psi, which should be adequate for such a system. Kifco, Inc is one manufacturer of such systems.

Campground

The almost 3-acre campground area is irrigated with a series of 35 ft. throw impact sprinklers on fixed risers. Maintenance staff advised that in recent drought years irrigation is used primarily for dust control. The valves controlling water supply to the campground are contained in an enclosure at the north west corner adjacent to the Tree of Life Charter School. The control wires for the valves are not connected to an irrigation controller. Given that the risers for the irrigation system are fixed and the poor distribution uniformity it does not represent an efficient way to apply water to a landscape. One option is to consider removing the risers, disabling the water supply to the valves, and instead using a portable irrigation system as mentioned above.



Race Track

Water is applied to the race track for dust control purposes. This area would benefit from a portable irrigation system to apply water as evenly as possible and potentially reduce the amount of water that is applied.

Recommendation

Consider investment in a portable irrigation system to irrigate the driving range, campground, and race track.

Well

There is an existing well drilled, but not equipped on the Fair property at the south east corner of the driving range. Using well water to irrigate part of the Fair landscape could potentially save money in the longer term. Perhaps the greatest potential for using well water would be in conjunction with a portable irrigation system. As noted above such systems require a high operating pressure.

Recommendation

Obtain cost estimate for using well water to irrigate the driving range, campground, and race track.

General Landscape Recommendations

1. Develop master water map for fairgrounds

In order to effectively manage the water use at the Fair a master water map should be developed that shows the path of all water mains and the locations of backflow devices, fire hydrants, irrigation manifolds and isolation valves. This map will help reduce the amount of water loss due to leaks and associated staff time.

2. Remove non-functional and small irregularly shaped turf areas

Potential areas include the front of the Fair Office and behind the Curl Purdy Hall.

3. Irrigation of trees

As irrigation of turf is reduced or disabled trees in affected areas may require additional irrigation, which may lead to a decline in health and the demise of the plant. It is not recommended to begin irrigating trees that have not previously received supplemental irrigation unless they are showing signs of drought stress. The UC Davis California Center for Urban Horticulture provides advice for irrigating trees⁷.

4. Replace overhead spray irrigation with drip tubing

Overhead spray is an inefficient mechanism to deliver water to shrub beds as water is lost due to overspray and evaporation from the plant and soil surface. As shrubs grow they frequently obstruct the spray further reducing its effectiveness to deliver water to a group of shrubs.

Replacing spray heads with drip tubing can reduce the amount of water required by delivering it directly to the plant root zone rather than broadcasting it in the general vicinity.

It is recommended to use ½ inch inline drip tubing where feasible to overcome the high failure rate of ¼ inch (spaghetti) tubing with individual emitters. Inline tubing can be buried under a layer of mulch but should be checked periodically for damage and leaks. The UC Davis

⁷ <http://ccuh.ucdavis.edu/public/drought/tree-ring-irrigation-contraption-tric-1/tree-ring-irrigation-contraption-tric> and <http://ccuh.ucdavis.edu/public/drought/rotary-system-irrigation-contraption-rsic/RSIC>

California Center for Urban Horticulture provides additional information related to converting to inline drip tubing⁸.

5. Maintain a layer of mulch in shrub beds

A layer of organic mulch 3 – 6 inches deep will reduce moisture loss due to evaporation from the soil, especially when combined with inline drip tubing. As the mulch is broken down it will increase the organic matter content in the soil and the soil moisture holding capacity.

6. Increase soil organic matter content

Incorporating compost into the soil as part of a regular maintenance practice will increase the organic matter content in the soil. This will improve the soil structure and increase the water holding capacity of the soil.

7. Replace moderate water use plant material with water efficient plant material

The watering requirement of plant material in shrub beds can be reduced by replacing moderate plants with those that require low or very low amounts of water. As plants are replaced they should be grouped into hydrozones to ensure that some plants do not get overwatered in order to keep others healthy. Once properly established suitable plant material can live with no or very low amounts of supplemental irrigation.

The Water Use Classification of Landscape Species⁹ (WUCOLS) provides a classification of High, Medium, Low, or Very Low for the majority of landscape plant species use in California and should be used to select and group plants.

The UC Davis Arboretum All-Stars¹⁰ program has identified 100 tough, reliable plants that have been tested in the Arboretum, are easy to grow, don't need a lot of water, have few problems with pests or diseases, and have outstanding qualities in the garden.

⁸ <http://ccuh.ucdavis.edu/public/ysb-series/past-events-folder/ysb-low-water-use-landscaping/uc-davis-11-8-2014/presentations-handouts/converting-your-landscape-a-how-to-k-reid>

⁹ <http://ucanr.edu/sites/WUCOLS/>

¹⁰ http://arboretum.ucdavis.edu/arboretum_all_stars.aspx

Indoor Water Use

The billing units for the fairgrounds are in hundred cubic feet (ccf) which is equal to 748 gallons. The average indoor water use is estimated to be 250 ccf per month during the winter months of November to March. This estimation assumes that there is no irrigation during these months which is supported by the water use pattern. There are occasional periods with water use below 200 ccf, and as low as 114 ccf for the billing period ended April 17, 2015.

It is more difficult to provide an estimation of indoor water use during the summer months when the fair is more likely to have significant public events going on. For example, in 2016 the Spring fair is scheduled for June 3 – 5 and the summer fair is scheduled for August 4 – 7 along with other smaller events throughout the summer.

Even assuming that indoor water use remains at the winter average throughout the year it would represent approximately 35% of total water use. In reality it is more likely to be 40-50% of total water use given the amount of people that are likely to be present during busy events.

Given that indoor water use is such a high proportion of total water use it is highly recommended that the following cost effective measures be pursued to curtail indoor water use.

A simple water audit of bathrooms at the fair would determine the flow rate of existing fixtures as well as identify leaks. Fixtures with excessive flow rates could be retrofitted with more efficient ones. Shower heads and faucet aerators are relatively cheap and can save a significant amount of water.

- In August 2015 the California Energy Commission¹¹ approved new efficiency standards.
- The maximum flow rate for showerheads will reduce from 2.5 gallons per minute (GPM) to 2.0 GPM for showerheads manufactured after July 1, 2016 (reducing to 1.8 GPM after July 1, 2018)
- The maximum flow rate of public lavatory faucet aerators has reduced from 2.2 GPM to 0.5 GPM, effective January 1, 2016.
- Toilets and urinals consume a significant amount of indoor water and provide long term savings when more efficient models are installed.
 - The maximum flow rate for toilets is 1.28 gallons per flush (GPF).
 - The maximum flow rate for wall mounted urinals has reduced from 0.5 GPF to 0.125 GPF, effective January 1, 2016.

¹¹ <http://www.energy.ca.gov/appliances/>

Return on Investment Scenarios

The following scenarios are based on numerous assumptions representing the industry standard for water savings and are based on actual water rates.

1. Install WaterSense weather based irrigation controllers

Install controllers on key areas of turf around Fair buildings, landscape around office building, and landscape adjacent to North State Street. This will reduce the amount of staff time spent manually operating valves and reduce the potential for over watering

Initial project costs \$10,000

Management inefficiency improvement of 20%

Annual reduction in water and maintenance costs \$5,000

Annual Water Savings	Years to Payback	Net Present Value	Annual Rate of Return	Annual Units of Water Saved	% Reduction
\$2,162	2	\$53,564	75.3%	792	13%

2. Upgrade fixed spray heads to high-efficiency rotating spray heads on high priority turf areas

Project area is the high priority turf areas on fixed spray around Fair buildings

Total size of area upgraded 42,863 sq. ft.

Initial project costs \$10,000

Improvement in distribution uniformity 0.35 to 0.7

Annual Water Savings	Years to Payback	Net Present Value	Annual Rate of Return	Annual Units of Water Saved	% Reduction
\$974	6	\$4,746	20.1%	357	6%

3. Potable watering system and activation of well

The analysis of these two options are beyond the scope of this audit, however well water is typically 1/3 the cost of municipal water, so a favorable return on investment would be expected.

Appendix

Water Budget Assumptions

- The closest active California Irrigation Management Information System (CIMIS) weather station with available daily reference evapotranspiration (ET) data is located in Hopland.
- Historical reference ET data for Ukiah¹² was compared to corresponding data for Hopland to generate multipliers to approximate reference ET for Ukiah from the available Hopland data.
- An estimate of effective rainfall was deducted from each month's ET estimate. Effective rainfall was estimated as 33% of daily rainfall for Ukiah¹³ where the daily rainfall exceeds 0.25 inches.
- Calculated net evapotranspiration was averaged over the period 2007 to 2015 for the calculation of water budgets.
- Reference ET was adjusted using plant factors.
 - All turf grass was assumed to be cool season. The annual average plant factor used for turf grass was 0.8. The turf plant factor used for each month varied according to those recommended by the UC Center for Landscape & Urban Horticulture¹⁴.
 - All non-turf areas were assumed to be moderate with a plant factor of 0.5.
- Landscape area was estimated for all irrigated areas by plotting polygons on a Google Map¹⁵.

¹² Climate Data for Various Locations in Sonoma, Napa, Mendocino, Lake and Marin Counties, California, University of California Cooperative Extension Sonoma County, 1993

¹³ <http://www.ipm.ucdavis.edu/WEATHER/wxactstnames.html#U>

¹⁴

http://ucanr.edu/sites/UrbanHort/Water_Use_of_Turfgrass_and_Landscape_Plant_Materials/Turfgrass_Crop_Coefficients_Kc/

¹⁵ https://drive.google.com/open?id=1qDhxInehN-_S49f5OctpWj68o8M&usp=sharing



Friday, March 14, 2019

To Whomever it May Concern,

Re: 12th DAA Drought Response and Irrigation Efficiency Project

The Redwood Empire Fairgrounds has identified the need to replace the fairground's aging and decrepit water delivery system as the number one priority project on their major maintenance (drought response) plan.

The current water delivery system is aged out and performs below acceptable standards. Leaks and ruptures are frequent and result in the loss of potable water and increased maintenance and repair costs.

It is my understanding that the Board of Directors has authorized an application to the North Coast Resource Partnership's Proposition 1 Integrated Regional Water Management Grant Program to underwrite the design and implementation of the Drought Response and Irrigation Efficiency Project.

The Redwood Empire Fair is an important community asset with a long history of providing support, education and entertainment to the residents of Mendocino County and beyond. The funding from this grant will provide the Fair with the means to conserve water while reducing the financial hardships the current situation inflicts.

I am pleased to offer my support for this project and can assure you that it is worthwhile, much needed and will be a good investment in an important community partner.

Sincerely,

A handwritten signature in blue ink, appearing to read "Sage Sangiacomo", is written over a white background.

Sage Sangiacomo
City Manager



707.462.3664
410 Jones St., Suite C-3
Ukiah, CA 95482
www.mcrd.org

March 14, 2019

Dear NCRP Proposal Review Team:

The 12th District Agricultural Association (12th DAA) has identified the need to replace the aging water delivery system as their top priority project as they work on their drought preparedness and response plan. The current system is very old, and leaks and pipe fractures result in significant loss of potable water.

The Mendocino County Resource Conservation District has been working with the 12th DAA since 2015 to assist with upgrading the irrigation system on their 52-acre site. Many recommended irrigation upgrades have been installed per direction of a certified irrigation auditor, and the 12th DAA is moving on to the next level of water conservation. Their plan to design and implement the Drought Response and Irrigation Efficiency Project will achieve their goals of reliable potable water for the people they serve and improve conservation of potable water.

The 12th DAA provides several valuable services to people in Ukiah Valley and Mendocino County including education, emergency services staging areas, agricultural support, and recreation. Improving this site's ability to reliably provide safe, potable water to over 100,000 people annually, while increasing its level of conservation will benefit the City of Ukiah and the Ukiah Valley Groundwater Basin.

Thank you for considering this very important project.

A handwritten signature in blue ink that reads "Megan McCluer".

Megan McCluer
Executive Director



March 14, 2019

North Coast Resource Partnership Grant Program
Katherine Gledhill
West Coast Watershed
kgledhill@westcoastwatershed.com

RE: Re: 12th DAA Drought Response and Irrigation Efficiency Project

Dear Katherine Gledhill:

I am writing to express my support for the Redwood Empire Fairgrounds' (REF) grant proposal to the North Coast Resource Partnership Proposition 1 Integrated Regional Water Management (IRWM) program.

The current water delivery system at the Fairgrounds is old, performs below acceptable standards, leaks and ruptures are frequent and result in the loss of potable water and increased maintenance and repair costs. The Redwood Empire Fairgrounds needs to replace their aging and decrepit water delivery system and it is the number one priority project on their major maintenance (drought response) plan.

The Redwood Empire Fair is an important community asset with a long history of providing support, education and entertainment to the residents of Mendocino County and beyond. The funding from this grant will provide the Fair with the means to conserve water while reducing the financial hardships the current situation inflicts.

I urge you to give the Redwood Empire Fairgrounds' application your full consideration. If our office can be of any assistance, please do not hesitate to call us at 916-651-4002.

Warmest regards,

A handwritten signature in black ink, appearing to read "MIKE MCGUIRE".

MIKE MCGUIRE
Senator