

2015

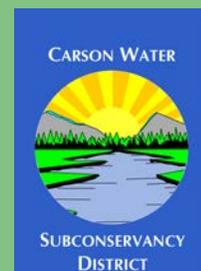
Carson River Watershed-Literacy Action Plan



A Supplement to the Carson River
Adaptive Stewardship Plan 2007



Carson Water Subconservancy
District
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PLAN PREPARED BY:

CARSON RIVER COALITION EDUCATION WORKING GROUP

The Carson River Coalition (CRC) is a watershed-wide citizen and stakeholder group that serves as the steering committee for the Integrated Watershed Planning Process (IWPP). Carson River Coalition Education Working Group (EWG) is a subcommittee of the overall CRC and works cooperatively with Carson Water Subconservancy District (CWSD) and multiple partners on educational programs and projects that seek to educate citizens through action oriented, hands-on activities that engage and connect us to our watershed.

CARSON WATER SUBCONSERVANCY DISTRICT

CWSD is a unique multi-county, bi-state agency dedicated to establishing a balance between the needs of the communities within the Carson River Watershed and the function of the river system. CWSD acts as lead agency for integrated watershed planning and coordinates the Carson River Coalition (CRC).

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1 INTRODUCTION

This Carson River Watershed Literacy Action Plan (WLAP) is a supplemental document to the Carson River Watershed Adaptive Stewardship Plan 2007 (Stewardship Plan). The WLAP updates the Outreach and Education project category and specifically, Sections 8.4-8.4.2 in the Stewardship Plan. Outreach and Education is one of seven categories outlined in the Stewardship Plan (See Figure 1). The purpose of WLAP is to:

Increase awareness that human behavior affects watershed health and to use education to promote changes in behavior that will ultimately improve habitat, water quality, water supply, and benefit the watershed as a whole.

The WLAP provides an action framework to achieve the Carson River Coalition's Education Working Group (EWG) vision by moving our target audiences along the change continuum from awareness to action with the goal of obtaining actual environmental benefits including water quality improvements in the long-term.

The overall purpose of the [Stewardship Plan](#) is detailed in the introduction of that plan and the subsequent 2015 update in progress. Please refer to those documents for specific details on the watershed geography and land use, non-point source pollution and potential sources, and other project categories.

In addition to the research conducted by CWSD staff, EWG helped prepare this WLAP through a series of facilitated brainstorming sessions and workshops. The EWG is the steering committee to guide this process.

Our Watershed

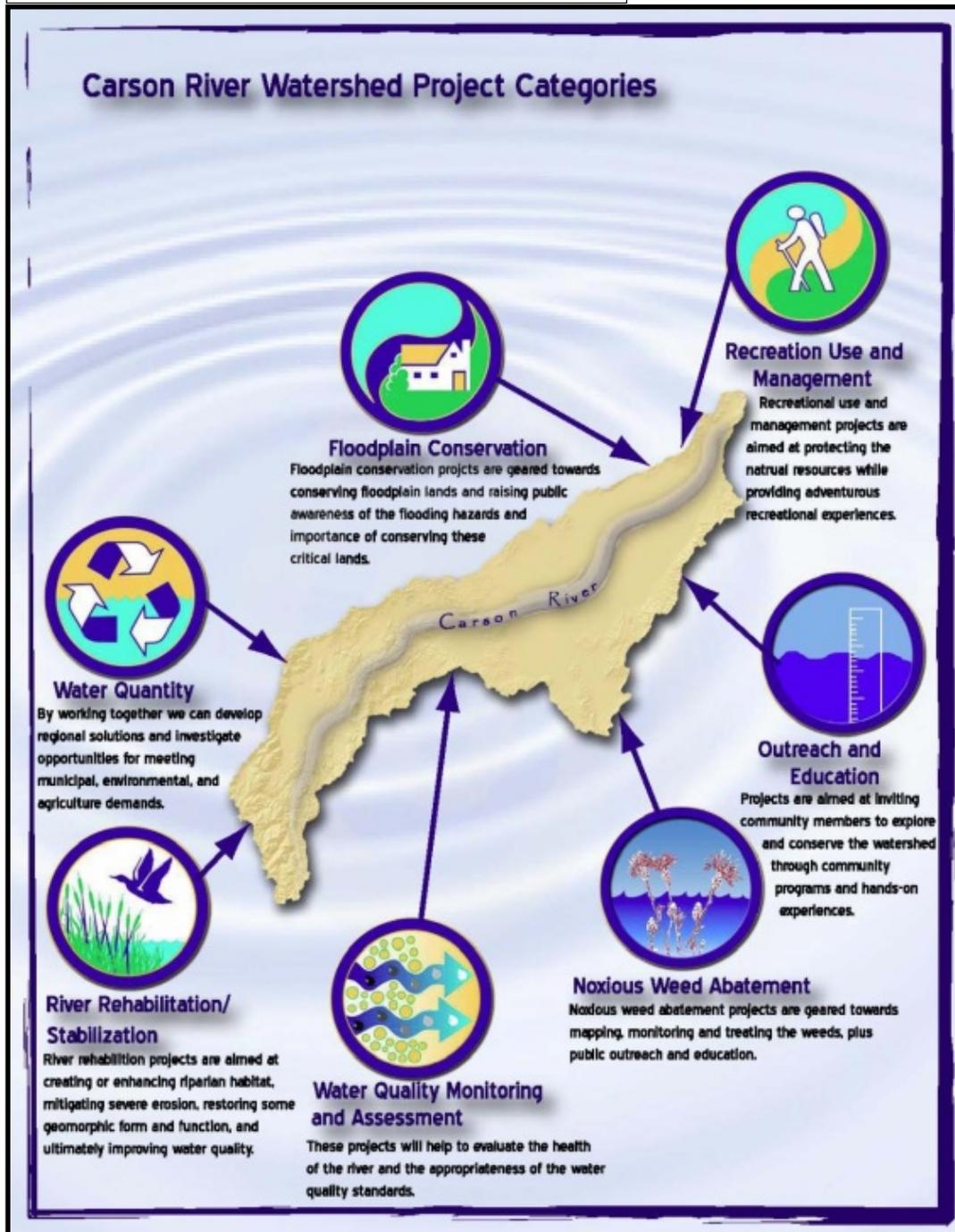
As stated throughout the Stewardship Plan, the Carson River is our lifeline in the desert. There are approximately 3,965 square miles of land from which water drains into the river creating the Carson River Watershed. The Carson River meanders 184 miles connecting California's high Sierra from green alpine meadows, wide valleys, rock-lined canyons, cottonwood galleries, and high desert sage brush plateaus to the intermittent lake beds and wetlands in Nevada's Carson Sink. The river itself is terminal or endorheic, meaning it is one of a few rivers in the world that do not flow to an ocean.

The Sierra snowpack is the main source of water and it supports our Watershed's environment, economy, and quality of life; intricately linking upstream and downstream users. The river basin's natural resources have always attracted human settlement and currently support nearly 150,000 people. The watershed contains rural, urban and tribal communities; private, public and tribal lands; a variety of land uses including irrigated farms and ranches, industrial, commercial and residential lands, cultural sites, and parks, open space and recreation areas.

Several reaches of the Carson River are identified on Nevada Division of Environmental Protection's list of impaired waters under Section 303(d) of the federal Clean Water Act. The

water impairment is due to non-point source pollution (NPS). Teaching our watershed population about their surroundings and the impacts their actions may have on our environment is an effective means of combating NPS pollution. NPS pollution affects every community in the Carson River Watershed, making environmental education a critical endeavor. Providing a basic understanding of watershed and NPS issues is fundamental to a person's understanding of their role in achieving and maintaining watershed health.

Figure 1: Stewardship Plan Project Categories



2 BACKGROUND AND VISION

CWSD is a unique multi-county, bi-state agency dedicated to establishing a balance between the needs of the communities within the Carson River Watershed and the function of the river system. CWSD's mission is to work within existing governmental frameworks to promote cooperative action for the watershed that crosses both agency and political boundaries. CWSD acts as lead agency for the integrated watershed planning process (IWPP) and facilitates the Carson River Coalition (CRC). CWSD strives to involve all counties and communities within the watershed in the effort to meet the various future water needs, enhance the health of the river system, protect the floodplains, and provide outreach and information to the community. The CRC is a watershed wide citizen and stakeholder group that serves as the steering committee for the IWPP. The [CRC created a vision and eleven guiding principles](#) or watershed "rules to live by". See Sections 2.3-2.7 of the Stewardship Plan for additional details on CWSD and the CRC.

The EWG was established to focus efforts on environmental education supporting CRC Guiding Principle 11:

Promote understanding and awareness of watershed resources and issues through cooperative education efforts throughout the watershed.

The idea behind this principle is that "the more people understand, the more they have the ability to appreciate and act responsibly."

The EWG established a vision and mission statement to assist with the implementation of this principle. The original vision is located on page 132 of the Stewardship Plan.

Carson River Coalition Education Working Group Vision

"A Carson River Watershed community that believes their behavior impacts watershed-wellness and applies their knowledge to act in ways that benefit the Watershed as a whole." (modified 2012 version).

Carson River Coalition Education Working Group Mission Statement

"To educate, through active participation, the watershed communities, inviting everyone to explore and conserve our watershed through community programs and hands-on experience; advocating the protection of our lifeline in the desert."

Early in 2012, the EWG participated in a series of facilitated workshops/brainstorming sessions. These workshops were held to focus the EWG's efforts and create a process to achieve measureable goals.

The EWG identified four main themes, seven driving forces, a new vision, four objectives, target audiences, and main messages. They also reviewed existing programs in relation to whether they addressed the driving forces.

The **four main watershed education themes**, the broad subjects within which our education efforts must concentrate were identified as the following:

- Water Quality
- Floodplain Protection
- Habitat Protection
- Sustainable Water Supply

3 DRIVING FORCES

The EWG identified the most pressing problems in the Carson River Watershed, and categorized these into seven main watershed concerns. These concerns became the **seven driving forces** for the Carson River Watershed Literacy Action Plan. These are the biggest challenges our educational efforts must address. The EWG identified whether any existing watershed environmental education programs address the driving forces. Specific messages for various audience types were drafted. This Action Plan will identify how to address the driving forces through outreach and education.

Seven driving forces:

1. ***Lack of public understanding of watershed functions and that the public can make a difference***

Population growth and increasing diversity in the watershed has led to a lack of public understanding, sense of place, and personal connection to source water. Who cares and why should they? *(Note: The EWG determined this is an overarching or umbrella problem in which all other concerns within the watershed are encompassed.)*

2. ***Lack of desirable habitats***

Urbanization, hydrologic modification, invasive species, erosion, habitat fragmentation and sedimentation are contributing to a loss of native species and habitat along the river corridor and throughout the watershed.

3. ***Finite water resources with competing demands***

Balancing the water needs between agricultural, municipal and environmental demand is difficult due to development, low flows in the summer, lack of upstream storage, and existing water laws and policies. The Carson River's water is fully allocated from a water rights perspective. The doctrine of prior appropriations, "use it or lose it" beneficial use provisions, antiquated storage and conveyance infrastructure, and water management by state (rather than watershed) boundaries – is not sustaining rapidly growing urban populations, farm economies, power generation, and river ecosystems in the face of diminishing supplies.

4. Lack of consistent watershed-wide floodplain management decisions

Lack of floodplain protection has allowed development in the floodplain. Placing development near meandering channels increases impervious surfaces, and leads to environmental degradation, flooding, loss of property, and a reduction in productive agricultural lands. Development often results in rivers being channelized and hardened for flood control, reducing natural floodplain functions.

5. Impaired water quality

Due to nonpoint source pollution from urban, rural and agricultural uses, a number of Carson River reaches exceed the water quality standards for several parameters, including total phosphorus, turbidity and temperature. Therefore, the Carson River is a listed impaired water body per Section 303(d) of the Clean Water Act.

6. Lack of resilience and adaptability to the uncertain

There is a lack of knowledge about climate change and the impacts to the Carson River Watershed, as well as how communities will adapt to these unknown changes.

7. Lack of money – money driving development

There is a lack of funding for restoration and other relevant watershed projects. Money is driving development and the economy and there is limited consideration of environmental impacts when planning for development.

4 EXISTING PROGRAMS

The EWG identified environmental education programs being offered in the watershed, targeting 16 different audiences. Audiences missing from the list include the minority population, the military community, voters, businesses, and seniors.

Table 1: Carson River Watershed Existing Environmental Education Programs

Program Title	Topic	Audience
Carson River Watershed Map	Watershed Concept – sense of place	Residents
Interactive Watershed Map	Watershed Concept – sense of place	Teachers, students, and youth
Carson River Watershed Snapshot Day	Water Quality, Watershed Awareness, Riparian Habitat	Residents, teachers, students and youth
Project WET	Interdisciplinary approach to water education	Community educators – (formal and non-formal), families, youth, teachers and students

Program Title	Topic	Audience
Conserve Carson River Work Days	Hands-on learning and habitat restoration	Residents, community educators, teachers, students, families, corporate groups, volunteers
Alpine Watershed Group Citizen monitoring	Watershed Awareness, water quality, riparian habitat	Residents in Alpine County, CA communities
Washoe Tribe	Watershed awareness	Tribal members
Environmental Education Coordinator – Linda Conlin	Non-point source education and awareness	Teachers, students, youth, residents and families
River Wranglers	River Wranglers inspires youth, through hands on education, to explore, conserve and celebrate our rivers. Non-point source pollution education and habitat restoration, youth mentoring	Youth 4-12 grade, teachers, students, families, volunteers, tribal members, residents
Spring Wings	Wetlands, wildlife and habitat education	General public
Eagles and Agriculture	Agriculture is beneficial, wildlife habitat	Residents, recreationists, tourists
CWSD Website	Watershed Awareness, access to resource database	Everyone – determined by seeking information on web
The Flow Newsletter	Watershed News, Sense of place	CRC members, on website, resource professionals, residents
Fallon Paiute Shoshone Tribe	Permaculture	Tribal members
Invasive Species	Weeds, Aquatic Invasive Species	Residents, recreationists, policy makers, volunteers, teachers, students, youth, agricultural producers, tribal members, resource professionals, CRC members, property owners and tourists
Regional Floodplain Management Plan	Floodplain protection and flood awareness	Policy makers, property owners, CRC members, and residents

Program Title	Topic	Audience
Cooperative Weed Management Areas (CWMAs)	Invasive Species/ Noxious Weeds	Residents, property owners, local jurisdictions, recreationists, tribal members
Agriculture in the Classroom	Agriculture, benefits of agriculture	Students, teachers, and youth
Trout in Classroom	Wildlife and habitat, lifecycle	Students and teachers
Tread Lightly/Leave No Trace	Invasive Species, Water Quality	Recreationists
Nevada Flood Awareness Week November 10-15	Floodplain conservation, flood awareness and preparedness	Residents, resource professionals, policy makers, teachers, students and community educators
Get on the Bus Tours	Watershed Awareness	Residents, resource professionals, policy Makers, teachers and community educators
Water Conservation Audits	Conservation of water	Adult public and policy makers
Comprehensive Regional Water Systems Plan	Balancing future water demands between Agriculture, Municipal and the Environment	Policy makers, adult public
Ranching and Wildlife – TNC and USFWS	“Ranching and Wildlife” (RAW) field days explore the role that birds, bees, butterflies, worms and vegetation play in improving water and soil quality for livestock and wildlife. Hands-on roping, branding and cattle drive, youth mentoring	Elementary school students from Title One designated schools
Bioengineering Workshops	Bank stabilization	Contractors, local government staff
<i>The following programs are not operating at this time:</i>		
Watershed Conservation Tours <i>(ends December 2015)</i>	Floodplain Education, Riparian, Bank restoration, Unique vantage point, non-point sources	Policy makers, teachers, students, community educators, corporate groups, recreationists, youth, volunteers, and tribal members

Program Title	Topic	Audience
Carson River Report	Watershed Awareness	Public access TV viewers
Carson Clear Water Revival	BMPs for erosion control and infiltration	Residents, property owners
Wings and Willows	Pollinators, Wildlife Habitat	Youth and Adults
NEMO	Planning, NPS, Riparian Education, BMP education	Residents, teachers and students, policy makers, web users, resource professionals, tribal members, property owners

5 GOALS AND OBJECTIVES

GOAL:

Increase awareness that human behavior affects watershed health and to use education to promote changes in behavior that will ultimately improve habitat, water quality, water supply, and benefit the watershed as a whole.

This goal will be met by achieving several action objectives. Specific actions to achieve these objectives will be outlined in the Section 11: Suggested Actions.

OBJECTIVES:

1. Determine how existing programs address main messages and reach target audiences.
2. Continue to conduct existing individual watershed outreach program evaluations.
3. Conduct a watershed-wide baseline survey to assess existing level of watershed residents' knowledge or literacy about basic watershed concepts. This is critical as the survey results will provide a base from which to measure whether our outreach and education programs are effective at increasing overall watershed literacy and where the gaps may exist. Some funding has been obtained through NDEP's 319(h) grant program to plan and conduct the survey. CWSD plans to hire a consultant to assist with developing and implementing a relatively short, statistically relevant, repeatable survey. Specific objectives associated with the survey are:
 - a. Develop or obtain a statistically relevant repeatable survey tool.
 - b. Survey a cross section of the community with a statistically sufficient percentage of coverage for each demographic.
 - c. Learn where watershed residents obtain their information/knowledge about the watershed.
 - d. Learn behaviors watershed residents will change to increase watershed health.
4. Conduct a gap analysis based on the watershed survey results to determine messages per topic, audiences being reached, topics being omitted, priorities and where to focus

efforts for future programing. Create new and/or modify existing messages and programs. Develop new partnerships that will enhance existing programs and fill identified gaps.

5. Conduct a watershed-wide media campaign to increase basic understanding of watershed concept main themes based on gap analysis. Focus on particular audience groups (adult public, youth, and policy/decision makers) using specific messages for particular topics. Messages should be developed using the seven main driving forces.
6. Implement an on-line interactive Stewardship Pledge that tracks commitments to activities that indicate behavior change.
7. Conduct follow-up survey a minimum of every five years to measure the increase in understanding of basic watershed concepts, and adapt efforts as needed based on survey results.
 - a. Increase watershed literacy by 15% per survey result.
 - b. Increase action steps by 10% per survey result.

6 AUDIENCES, MESSAGES, BARRIERS

What do our main audience groups need to know and what do they need to do? The EWG identified the main audience groups as:

- Adult Public – Residents; business and property owners; and agricultural producers.
- Youth- Public, private, charter and homeschooled students; youth group members, and
- Policy/Decision Makers – Local, state, regional, federal and tribal staff and elected officials.

Three audiences and topics to be addressed:

Messages for Adult Public: To know what a watershed is; that we are all connected in the watershed; and that their actions have an impact on everything, steps they can take to change behaviors that will lead to a healthier watershed.

Messages for Youth: To know what a watershed is; that we are all connected in the watershed; and that their actions have an impact on everything, steps they can take to change behaviors that will lead to a healthier watershed.

Messages for Policy/Decision Makers: Awareness of and need for a healthy watershed; steps to achieve and maintain a healthy watershed; and knowledge of what the other audience groups are learning and doing.

Table 2: Barriers that prevent the audience from engaging in preferred behaviors

Audience	Barriers	How to overcome barriers
Adult Public	Effort, time, money, lack of incentives and knowledge, competing interests.	Show time and money savings, provide reward and recognition; provide training and demonstrations; show a healthy watershed and why it is relevant to their day-to-day lives. Be positive
Youth	Lack of perceived responsibility, lack of knowledge, lack of recognition, competing interests.	Show cumulative impact; make it fun, provide reward; show a healthy watershed and why it is relevant to their day-to-day lives. Be positive.
Policy/Decision Makers	Resistance to change, lack of political will/popularity, competing interests.	Show monetary incentives, provide reward; provide demonstrations; show a healthy watershed and why it is relevant to their day-to-day lives and the lives of their constituents. Be positive. Ensure they are knowledgeable about what their constituents are learning and achieving.

7 MAIN MESSAGES

General message themes have been developed for audiences for each of the seven driving forces. These are organized in Table 2 below. Each of the message themes below need to address the question, “*Why is this relevant to my reality?*” and “*What can I do about it?*”. The messages should, whenever possible, be presented using positive visual/graphic aides to provide a vision of the future. The message themes below are connected to the topics that need to be addressed per audience. However; the results of the baseline watershed-literacy survey (discussed in Section 5 above) will aid in the creation of relevant, meaningful, targeted curricula and messages for our specific watershed audiences. This will occur after the survey is conducted and may continue to be modified after each subsequent survey.

Table 3: Driving forces, audiences, content, and message themes

Driving Force	Audience(s)	Curricula Content	Message Themes/Ideas
<p>Understanding watersheds (you live here, connectivity of everything, function and process)</p>	<p>Anyone we decide to target should include an element about this issue. EVERYONE</p>	<p>Sense of place, personal stewardship responsibility, basic ecological principles, why care? Target teaching to audience (find a hook/interest), socio-economic impacts of environmental degradation, impervious surfaces, personal practices such as car washing, rain gardens</p>	<p>Our lifeline in the desert (Needs to address why this is true). The watershed is our home; home means the Carson River. “Home means the Carson River” may work less for policy maker than it does for youth. Communities are all connected in the watershed. What is our desired behavior? Low impact Everything is in a watershed (plants, water, people). Upstream impacts will translate downstream; everyone lives downstream and upstream from someone else. Treat others how you want to be treated, treat your water how you want people upstream from you to treat their water.</p>
<p>Habitat</p>	<p>Youth, Adult public, political and regulatory decision makers, parks/open space maintenance staff, Ag & ranch producers and managers.</p>	<p>Basic River/Riparian ecology, weed and aquatic invasive species impacts, erosion control, Fertilizer use (product, frequency), waste disposal (clippings/leaves), turf vs native/non-native plants, irrigation methods. Waste Not, Want Not: mulch it!</p>	<p>Using examples of recreation to quickly link relevance to audience and focus on generally shared values across most demographics. Multiple benefits for people and nature; Example: Good Habitat = Good Fishing; habitat, haven, home; habitats good for animals/great for people. Swimming holes→water quality. Go beyond fishing...hunting of species that rely on healthy watersheds (deer). Sage grouse, cattle. Over grazing doesn’t just hurt the watershed, it hurts the economics of ranching.</p>

Driving Force	Audience(s)	Curricula Content	Message Themes/Ideas
Water Resources	Political and regulatory decision makers, adult public, youth, agriculture and riparian landowners	Irrigation issues, water rights, lack of upstream storage, development impacts, environmental flow needs	<p>All of the water we use in the watershed stays in the watershed (This provides context for all other messages below); Being considerate of all water needs and conserve so there is enough for all needs; balancing the needs of agriculture, municipalities, and environment; there is a finite amount of water; integrated water management to achieve balanced water provision; shared water resources to meet multiple and diverse needs; we can't make water, share what we have; water is precious, treat it as such; smart water use – get the most out of every drop; be water-wise</p> <p>What is our desired behavior? Land use practices that reduce nutrients and sediment in runoff as well as runoff volume. The environment should be considered a stakeholder in water use considerations.</p>
Floodplain	Political and regulatory decision makers, floodplain and agriculture landowners, developers, adult public, youth Ordinances and enforcement of regulations	Definition of floodplain and basic river systems geomorphology, floodplain benefits, need for regulations (setbacks/protection measures, limited development), comparison to other rivers that have lost their floodplain including economic and social impacts of floods in developed areas.	<p>Some audiences will respond to a visual message, like a photo of a channelized river vs. a natural river; Floodplains are for floods; building in a floodplain is like pitching your tent on a freeway when no cars are coming; the next flood is on its way; change is a part of life, as well as the river. Other audiences will respond to an economic message. The CRC's main message: <i>"Protect the floodplain from future development. Once the floodplain and especially the river's meander belt corridor are impacted by development, the river loses the ability to reestablish its natural functions. Agricultural fields near the channel are critical for floodwater attenuation, ground water recharge, non-point source pollution buffering and providing habitat for wildlife."</i> Most people don't put their money into risky financial investments, development of floodplains should be viewed the same way. It might look good when you see home prices for riverfront property, when the river floods your investment goes down the drain.</p>

Driving Force	Audience(s)	Curricula Content	Message Themes/Ideas
Water Quality	Youth, adult public, agricultural land owners, political, regulatory decision makers, and ranching community	Non-point source pollution issues, how to change behavior to limit negative impact, soil erosion, agriculture return flows, fertilizer use, BMPs for residential/ag lands.	All life depends on clean water; what you do impacts our water quality (this makes it relevant to each person); Link healthy habitat with water quality (stabilize river banks); dirt hurts; keep soil on your property; what is NPS and how do we reduce it?; storm drain water is not treated; you have a role in water quality possible some messages from Carson Clearwater Revival. Only rain down the storm drain; infiltrate your water
Uncertainty/ Change	Youth, Adult public, political and regulatory decision makers	Climate change and how it will impact the Carson River Watershed (specific examples if possible)	<p>“If nothing ever changed there would be no butterflies” Give a vision of a low carbon future (pictures, etc.). Review Climate Change messaging at: http://www.futerra.co.uk/downloads/Sellthesizzle.pdf for additional ideas.</p> <p>Increase in large storms/droughts make watershed preservation even more important. Healthier watershed will hold up better against climate change, whether it be cooling or warming trends. A person, just like a watershed can handle changes in lifestyle/ health better when they are healthy from the get go – resiliency! Injuries/illness heal faster when a person has a healthier baseline, just like a watershed.</p>
Money	Federal and State agencies, political and regulatory decision makers, watershed public	Fund critical on the ground needs, and education/outreach	What you do affects others in the watershed, reflects a sense of community and the connected nature of a watershed; Competing demands for finite water resources; Development requirements for conservation/preservation; Plan water/natural resource use as you would your financials.

8 MEDIA FORMAT/MESSAGE DELIVERY

There are many media formats currently used to deliver watershed stewardship messages outlined below. The delivery varies based on the target audience and associated message. Media format use and message delivery will be modified post watershed-wide baseline survey and gap analysis. Media format options, and their audience and use, are provided in Table 3 below.

Table 4: Analyzing media format

Format	Audience	Being used in current watershed programs	Gaps and Barriers
PRINT MEDIA			
Carson River Watershed map	Youth/Adults	YES	Not distributed to every school in watershed, needs to be distributed to adult public and policy/decision makers
The Flow Newsletter	Adult Public, Policy/Decision Makers	YES	Large percentage of adult watershed population does not receive newsletter
Newspaper Articles/Press Releases	Adult Public, Policy/Decision Makers	YES	Not all newspapers watershed wide get every article and press release
INTERNET MEDIA			
Interactive Watershed map	Youth	YES	Not used in every school in watershed, needs to be advertised to adult public and policy/decision makers
CWSD website	Adult Public, Policy/Decision Makers	YES	Need to look at Google Analytics to see who is using site and how
Online news	Adult Public, Policy/Decision Makers	YES	Not using all available websites
Facebook	Adult Public/Youth	YES	Do we need to expand to Twitter?
Blog	Adult Policy/Decision Makers	YES	Need to update on a regular basis

Format	Audience	Being used in current watershed programs	Gaps and Barriers
PROGRAM			
River Work Days	Youth, Adult Public	YES	Need to determine which groups are not being reached for participation
Citizen Monitoring	Adult Public, Youth	YES	Only occurring in Alpine County, missing Douglas, Carson, Lyon, Storey and Churchill
Environmental Education Program	Youth	YES	Need to identify schools that are not being reached
Watershed Conservation Tours	Adult Public, Youth	YES/limited	Assess how to modify/expand/continue program
EVENT			
Presentations	Policy/Decision Makers	YES	Need to look at presentations to counties to identify gaps
Forums, workshops, conferences	Adult Public, Policy/Decision Makers	YES	Assess desired formats, timing and frequency
Community Events, Service Learning Opportunities	Adult Public, Youth	YES	Assess effectiveness in relation to expansion
OTHER OUTREACH METHODS			
Billboards	Adult Public, Policy/Decision Makers	YES/limited	Have only focused on Flood Awareness, no other driving forces to date, cost
Radio and Television Ads	Adult Public, Policy/Decision Makers	YES/limited	Have only focused on Flood Awareness, no other driving forces to date, cost
Demonstration Projects	Adult Public, Youth, Policy/Decision Makers	YES/limited	Only exists in Lyon County and Carson City, cost
SWAG	Adult Public, Youth, Policy/Decision Makers	YES/limited	Not widely distributed, mainly at tours and work days, cost

9 ACTION AND IMPLEMENTATION TIMELINE

- Planning and hiring consultant for watershed-wide baseline survey – Jan-Mar 2015
- Conduct watershed-wide baseline survey – April-July 2015
- Analyze results and determine audience gaps of baseline survey – July-Oct 2015
- Evaluate program effectiveness – Nov 2015
- Host 2nd education roundtable to share evaluation results and brainstorm adaptations to fill gaps – Feb/March 2016
- Adapt program based on program evaluation - Ongoing
- Implement adapted program – Ongoing
- Conduct media campaign – 2016
- Complete on-line Stewardship Pledge – 2016
- Conduct follow up survey and repeat process – 5 years (2020)

10 EVALUATION AND APPLICATION OF LESSONS LEARNED

Evaluation will occur throughout the implementation of the Watershed Literacy Action Plan. This will determine if the objectives and goals have been accomplished, and if not, it will determine next steps. There two main types of indicators involved in program evaluation.

- Process Indicators relate to the implementation of the program (how many events were held, how many people attended an event).
- Impact Indicators reflect reaching the goal or objective (is there water quality or habitat improvement where outreach efforts have been targeted?).

At various stages of Plan implementation, the planning steps themselves will be evaluated. This will provide a progress check to guide on-going planning. Examples of indicators that will be used to evaluate the planning process are shown in Table 4 below.

Table 5: Planning Process Evaluation

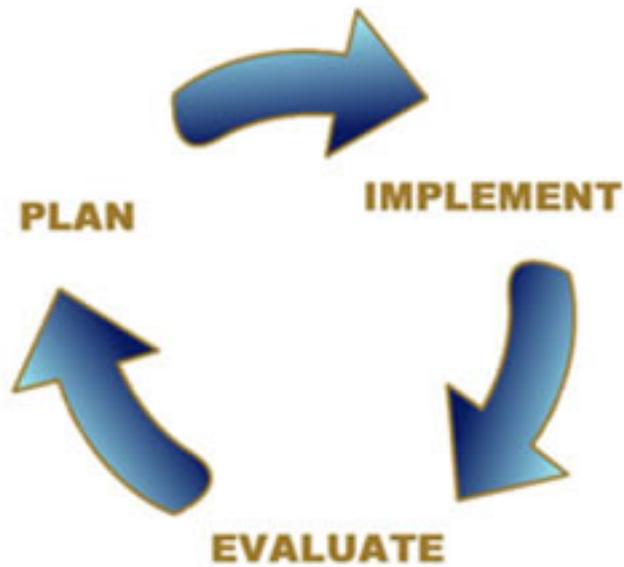
Planning Step	Example Indicator	Indicator Type	When to Use
Goal	Increase in riparian area vegetation, water quality , overall watershed health	Impact	Every 10 years
Objectives	Watershed survey conducted to a statistically relevant number and cross section of watershed residents	Process	Every 5 years
Media Campaign	Number of PSAs, work days, website hits, number of participants (adults and students)	Process	Annually
Implementation	Adherence to program, implementation and evaluation timeline	Process	Annually

Most of the evaluation effort will be focused on assessing the effectiveness of specific programs. However, overall watershed-wide program evaluation brings the planning process full circle, by measuring outcomes and helping to determine whether behavior changes have been achieved. Table 5 gives examples of indicators that are appropriate for program evaluation.

Table 6: Programming Evaluation

Program	Process Indicators/Measures	Impact Indicators/Measures
Existing program analysis	Determine how existing programs address main messages and reach target audiences	Reevaluate after the next survey is conducted
Conduct initial watershed- wide baseline survey	Survey response rate	Identification of audience demographics, characteristics and barriers
Post survey gap analysis	Identify gaps and determine process to improve programing and messaging	Prioritize efforts based on results, Reevaluate after the next survey is conducted
Media campaign	Number of PSAs aired or print ads run	Number of website hits or phone calls received, Reevaluate after the next survey is conducted
Stewardship Pledge	Number of pledges, number of activities/behavior changes indicated, compare to survey results?	Comprehensive analysis of behavior changes and how they may have led to improvements in watershed health
Follow up survey	Survey response rate, analysis of answers compared with previous survey.	Increase watershed literacy by 3% per survey result, increase action steps by 1% per survey result

The process does not end with evaluation, but instead is an adaptive and iterative process that begins again by determining next steps to guide on-going planning. Program evaluation will determine whether the goal – behavior change – has been achieved and over-time, further evaluations may lead to on-the-ground watershed health.



11 SUGGESTED ACTIONS

Table 7: Suggested Actions to Achieve Plan Objectives

SA Number	Suggested Action	Responsible Party	Existing or Potential Funding
Objective 1: Determine how existing watershed outreach programs address main messages and reach target audiences.			
SA 1.1	Introduce WLAP to Carson River Watershed Environmental Educators (from CRC Environmental Education Roundtable Event) via workshop or event.	CRC EWG	NDEP, CWSD, Program Partners
SA 1.2	Determine whether Environmental Education and Outreach Program principals are committed to helping implement this plan via survey monkey, other poll or workshop feedback.		
SA 1.3	Monitor and maintain existing partnerships/Foster new partnership with Environmental Educators		
SA 1.4	Survey program principals about whether existing programs are consistent with WLAP target messages and audience(s).	CWSD, CRC EWG, All program implementers	
SA 1.5	Per program, select a random sample from the audience population and ask if they're familiar with the message.		
Objective 2: Continue to conduct existing individual watershed outreach program evaluations.			
SA 2.1	Host an evaluation workshop for program principals to improve their evaluation tools and methodologies.	EPA, NDEP, CWSD, CRC EWG	NDEP, CWSD, Program Partners
SA 2.2	Collaboratively develop a system to track and analyze program evaluation summaries.	CWSD/CRC EWG	
SA 2.3	Work to establish a generic evaluation tool that program principals can use and continue to adapt	CWSD/CRC EWG, program funders and implementers	

SA Number	Suggested Action	Responsible Party	Existing or Potential Funding
Objective 3: Conduct a baseline watershed-literacy survey			
SA 3.1	Determine the baseline meaning of what makes a person watershed-literate in the Carson River Watershed.	CWSD/CRC EWG	NDEP 319,TNC, CWSD
SA 3.2	Secure funding to hire a consultant firm.		
SA 3.3	Create an RFP to hire a consultant group to work with CWSD and the EWG to develop and administer a survey.		
SA 3.4	Require a survey method that is easily repeatable and can be replicated in the future with ease and at low cost.		
SA 3.5	Conduct analysis of survey results to determine messages received, audiences reached, and overall program effectiveness.		
Objective 4: Conduct a gap analysis based on the existing program survey and watershed survey results			
SA 4.1	Determine whether consultant firm can conduct gap analysis, if not create a committee to interpret gaps.	CRC EWG	NDEP 319, CWSD, Program Implementers
SA 4.2	Develop alternatives by which the gaps may be addressed		
SA 4.3	Have CRC respond to gap analysis and select the best suited approach to address gaps.		
SA 4.4	Implement appropriate alternatives determined by CRC prior to the next survey.		
Objective 5: Conduct a watershed-wide media campaign			
SA 5.1	Work with CRC, Public Information Officers, etc. to determine succinct messaging to be used in media campaign (perhaps based on survey results).	Federal, State and local PIO's, CWSD, CRC EWG	CWSD, NDEP, ACOE, Program Implementers
SA 5.2	Develop a media campaign strategy to reach targeted audiences.		
SA 5.3	Secure funding to develop and conduct media campaign through various media outlets.		
SA 5.4	Identify ways in which CRC partners and program principals will commit to campaign involvement.		
SA 5.5	Conduct media campaign analysis to determine audiences reached.		

SA Number	Suggested Action	Responsible Party	Existing or Potential Funding
Objective 6: Implement an online interactive Stewardship Pledge to Track Behavior Change			
SA 6.1	Secure funding to develop and implement an online interactive Stewardship Pledge.	CWSD and CRC EWG	NDEP 319, CWSD, Program Implementers
SA 6.2	Investigate other stewardship pledge models for desirable characteristics.		
SA 6.3	Determine evaluation analysis schedule and conduct analysis to measure pledgee commitments/stewardship behaviors and track potential watershed health benefits. If pledgees follow through with their commitments, what will the resulting benefits be to our watershed?		
Objective 7: Conduct follow-up survey a minimum of every five years			
SA 7.1	Secure funding to conduct follow-up surveys.	CWSD and CRC EWG	NDEP 319, CWSD, Program Implementers
SA 7.2	Determine survey revisions and conduct survey		
SA 7.3	Analyze results by comparing to baseline data and change over time in watershed literacy.		
SA 7.4	Determine messages received, audiences reached, and overall program effectiveness and adjust action plan, media campaign and program focus accordingly.		

REFERENCES

United States Environmental Protection Agency, "Getting In Step: A Guide for Conducting Watershed Outreach Campaigns", (December 2003), EPA 841-B-03-002:

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Capitol Region Watershed District, "Education and Outreach Plan", (September 2009): http://www.capitolregionwd.org/wp-content/uploads/2012/09/Education_Plan.pdf