

PREPARED BY  
THE SIERRA INSTITUTE FOR  
COMMUNITY AND ENVIRONMENT

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DECEMBER 2020

# LAKE ALMANOR WATERSHED MANAGEMENT PLAN

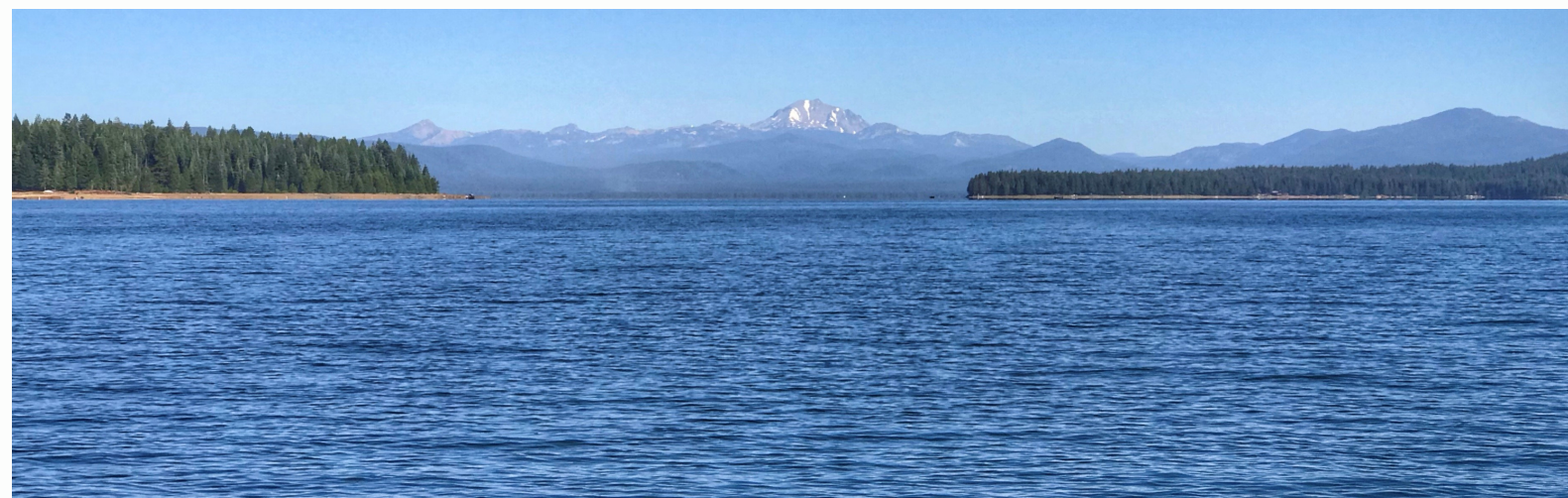
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LAKE ALMANOR  
WATERSHED GROUP



**Sierra Institute**  
for Community and Environment

## ***PREFACE:***



The Lake Almanor Watershed Group (LAWG), formerly known as the Almanor Basin Watershed Group (ABWAC), was created in 2005 by the Plumas County Board of Supervisors to address water quality, land use, and critical habitat issues in the Lake Almanor Basin and make policy recommendations to the Board of Supervisors. From 2005 to 2013, ABWAC served as an official advisory body to the Plumas County Board of Supervisors. The eleven volunteer ABWAC members worked closely with existing organizations and provided recommendations to the county on a range of topics from overnight boat use on Lake Almanor to cloud-seeding. ABWAC created a Watershed Management Plan that was approved by the Plumas County Board of Supervisors in 2009 and is intended to guide all efforts by the ABWAC to protect water quality, critical habitat, and quality of life in the Lake Almanor Basin. Since 2009, ABWAC (now LAWG) raises money each year to hire an independent contractor to sample the lake. In September of 2013, the group decided to end their official relationship as an advisory body to the Plumas County Board of Supervisors. The group continues to pursue its mission to maintain and improve the health of the Lake Almanor watershed. Sierra Institute has been a part of LAWG since its origins in the early 2000s and provides watershed coordination for the group.

## ***THE LAKE ALMANOR WATERSHED GROUP AS OF DECEMBER 2020:***

Peggy Fulder, Chair	Lassen County
Bridie Johnston, Chair	Member-At-Large
Carl Felts	East Shore/Hamilton Branch
Aaron Seandel	Peninsula/North Shore
Lorena Gorbet	Maidu Community
Gina Johnston	Chico State University
Jacqui Cordova	Member-At-Large
Susan Riney	Member-At-Large
Philip Datner	Almanor Fishing Association
Charlie Plopper	Almanor Parks and Recreation District

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## INTRODUCTION

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The Lake Almanor Basin is located at the intersection of the Sierra Nevada and Cascade mountain ranges in northeastern California. The basin forms the headwaters of the North Fork of the Feather River and is a key component of the State Water Project and hydropower production for Northern California. Based on a 2007 assessment, the Almanor watershed is currently believed to be in good condition (LAWA 2007, CH2M HILL). This management plan will help protect water quality, critical habitat, and quality of life in the Almanor Basin in light of the multitude of threats outlined in the watershed assessment.

This plan identifies priority action areas based on the Watershed Assessment (2007), a Stakeholder Report (2003), LAWG meetings and discussions, and the results of public workshops and other outreach efforts. The plan contains watershed goals and outlines specific objectives that LAWG is considering, and includes tasks to meet those objectives.

Each task is given a due date or a priority level (high, medium, low). High priority tasks should be completed within 1-2 years, medium priority tasks in 2-3 years, and low priority task in 3-5 years. This is a living document; over time, priorities may change and new tasks may be added. The LAWG will review this plan every other year to ensure that tasks are completed and priorities are still appropriate.

### **Goal 1: Protect, maintain, and improve water quality and riparian and terrestrial habitat in the Lake Almanor Basin.**

This goal addresses the physical aspects of the watershed. We recognize that water quality and the quality of wildlife habitat are closely linked to and affected by society. Public outreach and education will play an important role in meeting this goal and its associated objectives.

### **Goal 2: Maintain and improve quality of life in basin communities; minimize the negative social impacts of development and maximize the benefits.**

This goal addresses the social, economic, and cultural aspects of the watershed and will help ensure that the Almanor Basin continues to be a desirable place to live and visit.

### **Goal 3: Establish ongoing investment, restoration, and coordinated management in the watershed.**

The goal addresses building partnerships and securing funding for long-term, coordinated management and monitoring in the Almanor Basin.

## **GOAL 1**

### **Protect, maintain, and improve water quality and aquatic, riparian, and terrestrial habitat in the Lake Almanor Basin.**

#### Objectives:

1. Maintain an ongoing, comprehensive water quality monitoring program for Lake Almanor and its tributaries.
2. Minimize erosion, sedimentation, and contaminated runoff from upstream sources.
3. Minimize urban run-off and effectively manage stormwater.
4. Support partners who identify critical habitat areas and indicator species and prioritize areas for protection or restoration.
5. Partner with the Almanor Fishing Association, Forest Service, and other partners to maintain healthy fish populations in Lake Almanor and its tributaries, including a cold water fishery.
6. Prevent the spread and establishment of invasive species in the Almanor Basin.
7. Advance watershed stewardship through a comprehensive outreach and education program and the development of educational material.

## Objective 1: Maintain an ongoing, comprehensive water quality monitoring program for Lake Almanor and its tributaries.

For many years, the Department of Water Resources (DWR) conducted most of the water quality monitoring for Lake Almanor. PG&E, the U.S. Forest Service, the Central Valley Regional Water Quality Control Board, and Plumas County have also monitored constituents in the lake. However, these efforts have not been coordinated, and no long-term, comprehensive monitoring program has been developed. In 2008, the DWR halted its Lake Almanor monitoring program, leaving the lake with only Plumas County's summer *E. coli* monitoring program at heavily used beaches. PhD Gina Johnston conducted testing from 2008-2013 before partnering with DWR from 2014 to 2020. As a private contractor, PhD Gina Johnston is paid through local donations for continue testing. The DWR will withdraw from testing in mid-2020.

An on-going comprehensive monitoring program, restarted in 2014, has tracked water to assess the lake's health. Funding, equipment, and personnel are needed to support a long-term program.

A reconnaissance-level field survey conducted for the Watershed Assessment confirmed unpublished reports of the existence of milfoil in Lake Almanor (see Section 6.5.5). The assessment recommends further investigation to determine its extent and potential for spreading.

The Watershed Assessment also recommends conducting an assessment of major tributary streams and installing flow gauges on those tributaries (see Section 6.5.5). Establishing long-term flow gauges on major tributaries would document the impact of future land use changes on flow regime patterns. In addition, a baseline assessment of major tributaries, coupled with ongoing stream condition monitoring, would identify erosion and stream degradation issues before they become significant problems.

### Objective 1.1: Implement a continuous water quality monitoring program for Lake Almanor.

Action		Product(s)	Completed by	Due by or priority
1	Develop a monitoring program to track water quality over time and provide an early warning system for possible water quality problems.	<input type="checkbox"/> List of constituents <input type="checkbox"/> Monitoring station locations <input type="checkbox"/> Monitoring schedule	LAWG	High Priority
2	Make recommendations for funding options for on-going monitoring. (See Objective 18.1)	<input type="checkbox"/> List and explanation of recommended funding options	LAWG	High priority
3	Explore opportunities for a citizen's monitoring program.	<input type="checkbox"/> Summary of options <input type="checkbox"/> Recommended action	LAWG Sierra Institute	Sep. 2020

Action		Product(s)	Completed by	Due by or priority
4	Develop citizen science monitoring protocols.	<input type="checkbox"/> Protocols developed	LAWG Sierra Institute	March 2021
5	Manage, and make publicly available, a comprehensive water quality database.	<input type="checkbox"/> Database <input type="checkbox"/> Website updates	LAWG Sierra Institute	Ongoing updates
6	Maintain and update GIS maps that display baseline and trend water quality data along with changes in land use.	• Geographic information system maps	LAWG Sierra Institute	Ongoing
7	In coordination with partner organizations, create an annual state of the lake report for the general public that assigns water quality grades (for temperature, dissolved oxygen, visibility, invasive species, etc.) and explains water quality.	<input type="checkbox"/> Annual report <input type="checkbox"/> Newspaper article	LAWG Sierra Institute	Annually in summer
8	Link monitoring results to management recommendations as appropriate.	<input type="checkbox"/> Recommendations informed by monitoring results	LAWG Sierra Institute	Ongoing



**Objective 1.2:** Assess the condition of tributary streams and conduct ongoing flow and stream conditions monitoring.

Action		Product(s)	Completed by	Due by or Priority
1	Coordinate with PG&E to ensure plans to install flow gauges on tributaries to Lake Almanor are implemented as recommended in Watershed Assessment (Section 7.3.4).	A Plan outlining: <ul style="list-style-type: none"> <li>• Priority tributaries</li> <li>• The cost of installing flow gages</li> <li>• Who will install and maintain the gages</li> <li>• Who will collect and analyze the data</li> </ul>	LAWG, Sierra Institute, PG&E, Landowner Input	High Priority
2	As necessary, seek funding to 1) install flow gauges and 2) for a tributary conditions assessment. (see objective 18.1)	<ul style="list-style-type: none"> <li>• Grant proposals, as appropriate.</li> </ul>	LAWG Sierra Institute	Following development of a flow gage development plan.
3	Install flow gages on tributary streams.	<ul style="list-style-type: none"> <li>• Flow gages installed.</li> </ul>	To be determined.	As funding allows.
4	Conduct a conditions assessment of tributary streams, as recommended in the Watershed Assessment (Section 7.3.5, see objective 5.3).	<ul style="list-style-type: none"> <li>• Tributary assessment</li> </ul>	Consultant	As funding allows.
5	Coordinate with partners to identify priority tributary streams to be monitored, what to monitor for, and how after.	<ul style="list-style-type: none"> <li>• List of priority tributaries.</li> <li>• List of constituents for monitoring.</li> <li>• Monitoring schedule.</li> </ul>	LAWG	Within one year after the lake monitoring program is implemented.
6	Identify Funding possibilities to implement monitoring program.	<ul style="list-style-type: none"> <li>• List of possible funding options.</li> </ul>	LAWG Sierra Institute	Ongoing
7	Link monitoring results to management recommendations as appropriate.	<input type="checkbox"/> Recommendations informed by monitoring results	LAWG Sierra Institute	Ongoing

Action		Product(s)	Completed by	Due by or priority
8	Maintain or update water quality reports and/or GIS maps that display baseline and trend water quality data along with changes in land use. Coordinate with partner organizations as necessary.	<input type="checkbox"/> GIS maps <input type="checkbox"/> Water Quality Reports	Sierra Institute	As data become available

## **Objective 2: Minimize erosion, sedimentation, and contaminated runoff from upstream sources.**

Timber harvesting, associated road building, and maintenance of existing unsurfaced roads can contribute significant amounts of sediment to streams and other water bodies if not properly managed. Unmanaged off-road vehicle use of roads and non-road routes can also lead to an increase in erosion and sedimentation as well. Sediment from upstream sources can negatively impact water quality and degrade aquatic habitat and hydrologic function.

The Watershed Assessment notes that “impacts from timber harvesting and related unsurfaced roads in the Lake Almanor watershed appear to be reasonably well controlled. However, limited information was available, and a more comprehensive monitoring program could help to clarify the current situation and ensure that problems do not develop. Given the large portion of the watershed managed primarily or secondarily for timber production, this issue is significant and more information is needed to adequately characterize the conditions.”

**Objective 2.1:** Plan and implement shoreline gardens projects in coordination with the Maidu Summit Consortium.

Action		Product(s)	Completed by	Due by or priority
1	Work with MSC and local biologists to identify specific habitat sites and species.	<ul style="list-style-type: none"> <li>Species and habitat sites identified.</li> </ul>	LAWG MSC Sierra Institute	Medium priority
2	Explore opportunities for funding and partnerships to advance planning and implementation of shoreline gardens project.	<ul style="list-style-type: none"> <li>Funding obtained and partnerships established.</li> </ul>	LAWG MSC Sierra Institute	Medium priority
3	Coordinate outreach and engagement to volunteers and partner organizations for education and eventual implementation of gardens.	<ul style="list-style-type: none"> <li>Volunteers engaged.</li> <li>Volunteer-based implementation.</li> </ul>	LAWG MSC Sierra Institute	Medium priority
4	Maintain and monitor shoreline gardens project.	<ul style="list-style-type: none"> <li>Funding obtained.</li> <li>Monitoring protocols established</li> <li></li> </ul>	LAWG MSC Sierra Institute	Medium priority

**Objective 2.2:** Support efforts to seek funding for and implement a forest road inventory and assessment. (Watershed Assessment Section 7.3.2)

	Action	Product(s)	Completed by	Due by or priority
1	Seek funding for a forest road assessment to identify problem areas. If possible, include with funding for a tributary assessment (Objective 1.2).	<input type="checkbox"/> Submit proposals for funding	LAWG Sierra Institute	Low priority
2	Develop and release a request for proposals for a contractor to conduct the assessment.	<input type="checkbox"/> RFP	LAWG Sierra Institute	Low priority
3	Identify and prioritize problem areas based on work already completed by the Forest Service, and determine if additional information is needed.	<input type="checkbox"/> Reports <input type="checkbox"/> Recommendation for next steps	LAWG Sierra Institute	Low-medium priority
4	Survey unmanaged off-road vehicle routes to determine usage trends. (Watershed Assessment Section 7.3.3)	<input type="checkbox"/> Seek funding for survey <input type="checkbox"/> Survey of off-road vehicle routes	To be determined	Low priority

### Objective 3: Minimize urban runoff and effectively manage stormwater.

Lake Almanor and its tributaries receive runoff from roads, golf courses, lawns, and other surfaces around homes and developed areas. Runoff contains potential pollutants, including sediment, biological contaminants, synthetic chemicals, fertilizers, and septage. Increased development around the lake has led to increasing concerns about urban runoff, especially associated with new developments and associated golf courses. It is important to minimize the pollutants in runoff to ensure a healthy lake environment.

Group members are committed to mitigating the effects of urban runoff through ongoing water quality testing and restoration projects, including the Shoreline Gardens Project, to increase the ecological health of the basin.

**Objective 3.1:** Reduce the impact of runoff from *existing* developments in the Basin through restoration of shorelines (Shoreline Gardens Project).

Action		Product(s)	Completed By	Due by or priority
1	Research options and examples from other communities, including Lake Tahoe.	<ul style="list-style-type: none"> <li>Short report and presentation</li> </ul>	LAWG Sierra Institute	Medium priority
2	Submit recommendations to the appropriate entities and incorporate the recommendation into comments on environmental documents for proposed developments.	<ul style="list-style-type: none"> <li>Recommendations</li> </ul>	LAWG	Medium priority

**Objective 3.2:** When appropriate, support low impact development techniques for new developments in the Basin to better manage stormwater and runoff.

Action		Product(s)	Completed By	Due by or priority
1	Research examples of low impact development techniques that are working in other watersheds	<ul style="list-style-type: none"> <li>Report and presentation.</li> <li>Pamphlets Created</li> </ul>	LAWG Sierra Institute	Medium Priority
2	Help minimize directly connected impervious surfaces.	<ul style="list-style-type: none"> <li>Recommendations</li> </ul>	LAWG	Medium Priority

**Objective 3.3:** Ensure that fertilizers applied to golf courses in the Basin do not negatively impact water quality.

Action		Product(s)	Completed by	Due by or priority
1	Explore golf course best management practices, including use of low impact fertilizers and chemicals.	<input type="checkbox"/> Interviews <input type="checkbox"/> Short report	Land Use subcommittee, with assistance from the Technical Advisory Group and Sierra Institute staff	Medium priority
2	Recommendations for improving proposed and existing golf courses, if applicable.	<input type="checkbox"/> Draft Environmental Impact Report comments <input type="checkbox"/> Recommendations	LAWG	Medium priority



## **Objective 4: Support partners who identify critical habitat areas and indicator species and prioritize areas for protection or restoration.**

The Lake Almanor watershed provides habitat for a diverse assemblage of wildlife species, including a number with special management concerns. The basin has been designated an Important Bird Area by Audubon California. According to the Watershed Assessment, one federal threatened and two federal endangered species are found in the basin. Additionally, the basin has four State of California threatened and four state endangered animal species. A number of these threatened and endangered species breed here, including the Greater Sandhill Crane and Willow Flycatcher. In addition, the Watershed Assessment and Stakeholder Assessment highlighted the summer presence of the Eastern Tehama deer herd, and the herd's population decline, as a major concern that needs to be addressed. Of particular concern to biologists is the limited wetland and meadow habitat remaining in the Almanor Basin, and the critical importance of this habitat to wildlife and human populations alike.

Almanor Basin plants and animals can reveal a great deal about ecosystem health and the effects of land management strategies. The selection and monitoring of appropriate indicator species can be used to track the overall health of the Lake Almanor Basin. In addition to native vertebrates, invasive and macroinvertebrate species can be effective indicators.

LAWG members will support and consult with relevant organizations working within the basin including: Point Blue Conservation Science, Feather River Land Trust, Plumas Audubon Society, Mountain Meadows Conservancy, and the Maidu Summit Consortium.

### **Objective 4.1: Support identification of critical habitat for protection and/or restoration.**

Action		Product(s)	Completed by	Due by or priority
1	Work with local biologists to identify and prioritize critical habitat areas.	<input type="checkbox"/> Critical habitat areas highlighted on a map and their importance described	LAWG	Medium priority
2	Identify specific habitat sites and possible management actions for each site.	<input type="checkbox"/> Specific habitat areas identified.	LAWG	Within one of year of completing Action 1
3	Seek funding for a stream conditions assessment, as recommended in the Watershed Assessment (Section 7.3.5), to identify priority areas for protection and/or restoration. (Also see Objective 1.2.)	<input type="checkbox"/> Grant proposals <input type="checkbox"/> Proposals could include funding for stream and road assessments	LAWG Sierra Institute	Ongoing

4	Conduct a stream conditions assessment. If appropriate, contribute to a restoration plan for priority areas.	<input type="checkbox"/> Investigate existing tributary data, especially data from the Forest Service <input type="checkbox"/> Stream conditions assessment <input type="checkbox"/> Restoration plan	Contractor	To be determined by funding
5	Offer educational public workshop(s).	<input type="checkbox"/> Collect public questions, comments, and concerns	LAWG Sierra Institute	Fall 2020
6	Support school-based stewardship education programs.	<input type="checkbox"/> Stewardship education programming	LAWG Sierra Institute (GrizzlyCorps Fellow)	Spring 2021
7	Explore opportunities for funding and for partnerships to advance and/or implement habitat protection and restoration efforts.	<input type="checkbox"/> List of opportunities <input type="checkbox"/> Help ensure that deer migration corridors and access to water are protected	LAWG Sierra Institute	Following completion of task 5.4

Objective 4.2: Identify and monitor indicator species to assess watershed management activities and overall basin health.

Action		Product(s)	Completed by	Due by or priority
1	Work with local biologists to identify appropriate indicator species.	<input type="checkbox"/> List of indicator species	LAWG	Ongoing
2	Offer educational public workshop(s) and/or newspaper articles.	<input type="checkbox"/> Collect public questions, comments, and concerns	LAWG	Ongoing

**Objective 5: Partner with the Almanor Fishing Association, Forest Service, and other partners to maintain healthy fish populations in Lake Almanor and its tributaries, including a cold-water fishery.**

Lake Almanor is a popular fishing destination. The lake is known for producing trophy sized fish. Rainbow and brown trout, landlocked Chinook salmon, large- and small-mouth bass, green sunfish, Sacramento perch, channel catfish, and brown bullhead catfish can all be found in the lake. LAWG recognizes that maintaining a healthy fishery is vital to maintain a healthy ecosystem and a thriving tourism economy.

Objective 5.1: Support partner organizations in maintaining healthy fish populations in Lake Almanor and its tributaries.

Action		Product(s)	Completed by	Due by or priority
1	Support partners in inventorying fish populations in the basin (by species and relative abundance) by compiling existing data into one database.	<input type="checkbox"/> Database of fish species present in Lake Almanor and tributaries, with population estimates	LAWG Partner Organizations	Low-medium priority
2	Work with the Forest Service to identify potential projects and opportunities for collaboration.	<input type="checkbox"/> Identification of potential projects and opportunities	LAWG Partner Organizations USFS	Medium priority
3	Receive and manage information related to the Lake Almanor reservoir and fish populations.	<input type="checkbox"/> Managed database of fish, lake levels, temperatures, and other data.	LAWG Partner Organizations USFS	Medium priority

**Objective 6: Prevent the spread and establishment of invasive species in the Almanor Basin.**

Non-native plants and animals have the potential to significantly alter aquatic and terrestrial ecosystems in the Lake Almanor watershed. They are known as “invasive” species because they often cause economic and environmental damage and can be extremely difficult to eradicate. Invasive species are usually transported by human activity, frequently on vehicles.

One of the largest threats currently facing the basin is the potential for a Dreissenid mussel infestation. Quagga and zebra mussels, closely related species from the *Dreissena* genus, are native to Eastern Europe and Russia. Once they become established, they are extremely difficult, if not impossible, to eradicate: as many as 700,000 mussels per square meter have been reported in infested areas. Zebra mussels were first found in North America in 1988 in the Great Lakes. In the summer of 2007, quagga mussels were found in the Colorado River Aqueduct, and they have recently been found in southern California reservoirs.

U.S. Congressional researchers have estimated that the zebra mussel infestation of the Great Lakes area cost industries, businesses, and communities more than \$5 billion between 1993 and 1999. In California, the mussels threaten water delivery systems, hydroelectric facilities, agriculture, recreational boating and fishing, and the environment. While there are other invasives with the potential to wreak havoc on local ecosystems, preventing the infestation of these mussels is a top priority.

**Objective 6.1:** Take action to help ensure that the Lake Almanor Basin remains free of quagga and zebra mussels.

Action		Product(s)	Completed by	Due by or priority
1	Launch, and commit to, an education campaign for residents (seasonal and year-round) and visitors.	<input type="checkbox"/> Newspaper articles <input type="checkbox"/> Homeowners association meetings <input type="checkbox"/> Signs at boat ramps	LAWG Sierra Institute	Ongoing, high priority if necessary
2	Hold an educational workshop with representatives from Fish & Game.	<input type="checkbox"/> Workshop	LAWG Sierra Institute	May 2009
3	Work with partners to coordinate a response to the mussel threat and implement the above tasks.	<input type="checkbox"/> Invite partners to the May workshop with Fish & Game <input type="checkbox"/> Involve partners in discussions about monitoring and inspections	LAWG Sierra Institute	Ongoing, high priority if necessary

**Objective 6.2:** Help minimize the impact and spread of invasive species currently established in the basin, and work to prevent additional invasives from establishing through education, monitoring, assessments, and work with partners.

Action		Product(s)	Completed by	Due by or priority
1	Determine the extent of milfoil in Lake Almanor and its potential to spread through obtaining USFS data.	<input type="checkbox"/> Milfoil survey	LAWG Sierra Institute	Low priority.
2	If warranted, work with partners to develop a management/eradication plan to prevent the spread of milfoil.	<input type="checkbox"/> Milfoil management/eradication plan	LAWG Contractor Partners	Low priority
3	Research invasive species management plans from other areas and develop recommendations for Almanor.	<input type="checkbox"/> Survey of existing plans <input type="checkbox"/> Recommendations	LAWG	Low priority

**Objective 7: Advance watershed stewardship through a comprehensive outreach and education program and the development of educational material.**

Some of the current threats to habitat and water quality, like improperly maintained septic systems and illegal OHV use, can be addressed through outreach and education programs. Outreach will also help to garner citizen interest and involvement in the watershed and its management.

**Objective 7.1: Promote opportunities for community-wide watershed education.**

Action		Product(s)	Completed by	Due by or priority
1	Host or present educational workshops for the general public and/or homeowners associations.	<ul style="list-style-type: none"><li>• State of the Watershed</li><li>• Indicator Species</li><li>• Grebes</li><li>• Water Quality</li></ul>	LAWG Sierra Institute	Ongoing
2	Develop family-oriented educational outdoor activities.	<ul style="list-style-type: none"><li>• Bird walks</li><li>• Tours</li><li>• Trash cleanups</li><li>• Meadow exploration</li></ul>	LAWG Sierra Institute	Ongoing
3	Support and collaborate with partner organizations conducting educational opportunities.	<ul style="list-style-type: none"><li>• Sierra Institute tours</li><li>• Point Blue's STRAW program</li><li>• High School programs</li></ul>	LAWG Sierra Institute Partners	Ongoing
4	Coordinate LAWG citizen science and natural resource-based education activities with local high schools.	<ul style="list-style-type: none"><li>• Increased student involvement in public watershed work and public knowledge of programs.</li></ul>	LAWG Sierra Institute	Ongoing

**Objective 7.2:** Host a booth and/or provide information about Lake Almanor, water quality, wildlife, forest restoration, and other relevant topics at community events, including games and educational items for children.

Action		Product(s)	Completed by	Due by or priority
1	Develop and prioritize a list of events to attend.	<input type="checkbox"/> List	LAWG Sierra Institute	Ongoing
2	Develop booth/material to be used.	<input type="checkbox"/> Booth <input type="checkbox"/> Lemonade stand?	LAWG Sierra Institute	Spring 2021
3	Contact event coordinators for details.	<input type="checkbox"/> Staff report	Sierra Institute	Ongoing
4	LAWG members sign up for duty at each event.	<input type="checkbox"/> List	LAWG	Ongoing



5	Attend events and record in database for	<input type="checkbox"/> Host a booth at the event	LAWG Sierra Institute	Ongoing
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**Objective 7.3:** Contribute educational watershed articles to the Chester Progressive and other Plumas and Lassen County newspapers.

Topics		Completed by	Due by or Priority
1	State of the Watershed	LAWG Sierra Institute	Ongoing
2	Indicator Species and Habitat	LAWG Sierra Institute	Ongoing
3	Invasive Species	LAWG Sierra Institute	Ongoing
4	Erosion and Shoreline Gardens	LAWG Sierra Institute	Ongoing
5	Fish and Recreation	LAWG Sierra Institute	Ongoing
6	Additional topics as appropriate	LAWG Sierra Institute	Ongoing

**Objective 7.4:** Produce and distribute a periodic watershed newsletter to inform and educate partner organizations and the public.

Action		Product(s)	Completed by	Due by or priority
1	Suggest ideas for articles.	• Suggestions submitted to Sierra Institute	LAWG	Ongoing
2	Write articles and produce newsletter.	• Newsletter Produced	Sierra Institute	July, October, January, April
3	Distribute newsletter and submit key articles to the Chester Progressive.	• Articles submitted to Chester Progressive	LAWG	End of July, October, January, April

**Objective 7.5:** Maintain, contribute to, and advise an up-to-date website that will serve as an educational resource for residents and land managers in the Almanor Basin.

Website Elements		Completed by	Due by or priority
1	Water Quality Monitoring Database	Sierra Institute	Yearly, or as data becomes available.
2	Reports and Presentations	Sierra Institute	Ongoing
3	Project Updates and Information	Sierra Institute	Ongoing
4	Google Earth Watershed Tours	Sierra Institute	Ongoing
5	LAWG Meeting Minutes and Committee Information	Sierra Institute	Monthly

## GOAL 2

**Maintain and improve quality of life in basin communities; minimize the negative social impacts of development and maximize the benefits.**

Objectives:

8. Protect and enhance opportunities for recreation and public access without compromising water quality or wildlife habitat.
9. Ensure that land conversions (e.g., recreation lands to developments and TPZ lands to general forest) maximize benefits and minimize negative impacts to basin quality of life and wildlife habitat.
10. Through education, create and maintain fire safe communities.
11. Protect visual resources, including open space and scenic highway corridors.
12. Ensure healthy air quality.

## **Objective 8: Protect and enhance opportunities for recreation and public access without compromising water quality or wildlife habitat.**

Public access to Lake Almanor has always been limited, and it has only become more limited as access points have been converted into private resorts or developments that provide members-only access or charge day-use fees. At present, despite 52 miles of shoreline, there are only two free public boat launches on Lake Almanor. Efforts under this objective should be linked to the 2105 re-licensing process.

Action		Product(s)	Completed by	Due by or priority
1	Work with the Planning Commission, county consultants, the Board of Supervisors, the Almanor Parks and Recreation District, and basin stakeholders to ensure that recreation and access issues are specifically addressed in the General Plan.	<input type="checkbox"/> Meetings <input type="checkbox"/> Recommendations for the General Plan and Active Transportation Plan	LAWG	Medium priority
2	Work with the 2105 Committee and others in their work to improve public access to the lake.	<input type="checkbox"/> Attend and contribute to meetings	LAWG	Medium priority
3	Track land use changes around the lake and bring significant proposed changes to the public's attention so that citizens are aware of these proposals and can offer comments early in the process.	<input type="checkbox"/> Meetings and articles if appropriate <input type="checkbox"/> Information on website	LAWG Sierra Institute	Medium-high priority
4	Examine the usefulness of having a LAWG member participate in PG&E's recreational flow technical advisory group.	<input type="checkbox"/> Recommendation	LAWG Sierra Institute	Low priority
5	Support efforts to expand non-motorized trails.	<input type="checkbox"/> Participate in meetings to develop the Plumas County Trails Master Plan <input type="checkbox"/> Work with Trails for Plumas County on expanding trails in the Almanor Basin	LAWG Sierra Institute	Medium priority

**Objective 9: Ensure that land conversions (e.g., recreation lands to developments and TPZ lands to general forest) maximize benefits and minimize negative impacts to basin quality of life, water quality, and wildlife habitat.**

Zoning conversions can lead to significant land use changes that can impact human communities, infrastructure, and natural resources. As conversions are proposed, it is important to assess the potential impacts, especially in the context of other proposed changes within the basin.

Action		Product(s)	Completed by	Due by or priority
1	Assess land use conversions to determine if there are potential impacts.	<input type="checkbox"/> Assessment <input type="checkbox"/> Coordinate with the Planning Commission	LAWG Sierra Institute	Ongoing
2	Submit recommendations to stakeholders and community members.	<input type="checkbox"/> Recommendations	LAWG	Ongoing as appropriate

**Objective 10: Through education, create and maintain fire safe communities.**

Communities in Plumas County, including the Almanor Basin, are surrounded by forestland and an over-abundance of hazardous fuels. The “Plumas County Communities Wildland Fire Mitigation Plan” was developed by the Plumas County Fire Safe Council to reduce the risk to homes and communities through education and outreach programs, the development of partnerships, and implementation of preventative activities such as hazardous fuel reduction, defensible space, land use, or building codes.

The State Board of Forestry and Fire Protection adopted “General Guidelines for Creating Defensible Space” to help reduce the potential impact of wildfire. These guidelines should become part of the environmental documents for all proposed developments, and should also be adopted by existing developments. The Lake Almanor Watershed Group acknowledges the impacts of catastrophic wildfire on the water quality of Lake Almanor and its tributaries.

**Objective 10.1:** Work with developers, homeowners, and the county, along with local Fire Safe Councils and agencies, to help ensure that risk reduction recommendations and fire safe practices are incorporated into basin planning and management.

Action		Product(s)	Completed by	Due by or priority
1	Support the Almanor Basin Fire Safe Council and Firesafe Communities in advancing the Community Fire Plan and opportunities for partnership.	<input type="checkbox"/> Meeting(s)	LAWG Fire Safe Council	Medium priority
2	Hold educational public workshop(s).	<input type="checkbox"/> Workshop	LAWG Partners	Ongoing medium priority
3	As appropriate, support environmental documents for proposed developments in the basin.	<input type="checkbox"/> Comments submitted	LAWG	Medium priority

**Objective 10.2:** Reduce hazardous fuels on public land.

Action		Product(s)	Completed by	Due by or priority
1	Support the Forest Service, South Lassen Watersheds Group, and other partners in reducing hazardous fuel loading on public land, particularly Wildland Urban Interface areas.	<input type="checkbox"/> Meeting(s)	LAWG Fire Safe Council Firewise Forest Service	Ongoing



## **Objective 11: Protect visual resources, including open spaces and scenic highway corridors.**

Sweeping mountain views and clear streams and lakes contribute to a picturesque landscape that has made the Almanor Basin a premier destination for tourists, second-home owners, recreationists, and retirees. Maintaining this scenic value is critical for promoting the basin as a destination area, enriching the local economy through tourism and development, and maintaining quality of life for those who live in the basin.

### **Objective 11.1: Help maintain visual resources.**

Action		Product(s)	Completed by	Due by or priority
1	Support, educate, and inform community members about areas in which scenic values are threatened, and determine if these areas are adequately protected.	<input type="checkbox"/> List of priorities	LAWG	Medium priority

**Objective 12: Increase awareness of air pollutants and support actions to ensure healthy air quality.**

Smoke and other air pollutants tend to settle in mountain valleys and compromise air quality. Affordable and attainable housing can contribute to maintaining good air quality by eliminating the need for workers to commute longer distances from more affordable communities outside the basin. Additional air quality concerns often stem from smoke from woodstoves and wildfires. When sulfur dioxide and nitrogen oxides are released into the atmosphere they dissolve in water vapor to form acid. This acidic water vapor condenses into clouds and falls as precipitation such as rain or snow, eventually entering bodies of water and making them more acidic. Acidic waters create stressful environments for some fish and animals and can affect species populations by preventing eggs from hatching.

Individuals living in wildfire-prone areas such as the Almanor Basin may benefit from increased awareness of the air quality conditions and by making plans for controlling wildfire smoke exposure in our homes.

Action		Product(s)	Completed by	Due by or priority
1	Identify existing air quality data for the basin; review the data and identify problem areas.	<input type="checkbox"/> List	LAWG	Low priority (state standards are established and tracked)
2	Make the data publicly available.	<input type="checkbox"/> Website	Sierra Institute	Low priority
3	Develop an air quality subcommittee if problems are identified.	<input type="checkbox"/> Active subcommittee	LAWG	Low priority
4	Promote education through workshops, articles, or other means, if necessary.	<input type="checkbox"/> Articles or workshops as appropriate	LAWG Sierra Institute	Low priority

## **GOAL 3**

### **Establish ongoing investment, restoration, and coordinated management in the watershed.**

#### Objectives:

13. Improve coordination between organizations and agencies working locally, and increase opportunities for collaborative partnership projects.
14. Work with agencies and other organizations to obtain investment in the watershed to support basin monitoring, restoration, and future coordination.

**Objective 13: Improve coordination between organizations and agencies working locally, and increase opportunities for collaborative partnership projects.**

Increased coordination between organization, agencies, and committees working in the Almanor Basin can lead to increased opportunities for collaborative projects and more effective programs. The Lake Almanor Watershed Group will strive to bring managers together to explore opportunities for partnerships and leverage resources for linked work.

**Objective 13.1:** Attend the meetings of other groups and agencies working locally on watershed issues to exchange information about projects and work and discuss partnership opportunities.

Group/organization		Product(s)	Completed by	Due by or priority
1	Feather River CRM	<input type="checkbox"/> Attend meetings and look for opportunities for partnerships <input type="checkbox"/> Report on workshops, meetings, tours attended	Watershed Coordinator LAWG	Ongoing
2	Feather River RCD			Quarterly
3	Plumas Watershed Forum			Ongoing
4	U.S. Forest Service			Ongoing
5	Planning Commission		Chair or subcommittee	Ongoing
6	South Lassen Watersheds Group		Watershed Coordinator	Every other month

**Objective 13.2:** Help coordinate and host an annual Sierra Clean-up as a partnership event between LAWG, Feather River CRM, PG&E, Plumas County, Sierra Institute, and community members.

Action		Product(s)	Completed by	Due by or priority
1	Coordinate annual lake clean-up	<ul style="list-style-type: none"> <li>Clean-up event held.</li> </ul>	LAWG Sierra Institute Partners	Annually
2	Explore opportunities for additional collaboration between clean-up partners.	<ul style="list-style-type: none"> <li>Discussion with partners</li> </ul>	LAWG Sierra Institute	Ongoing

**Objective 13.3:** Use educational public workshops to create and maintain partnerships and facilitate the exchange of information between partners and the public.

Action	Product(s)	Completed by	Due by or priority
Host educational workshops with a diverse group of partners.	<input type="checkbox"/> Workshops	LAWG Sierra Institute	Ongoing

**Objective 13.4:** Help establish a water quality database for the whole Feather River watershed.

Action	Product(s)	Completed by	Due by or priority
1 Explore the feasibility of a watershed-wide database, including funding needs.	<input type="checkbox"/> Workshops	LAWG Sierra Institute Partners	Low-medium priority
2 Identify data sources.	<input type="checkbox"/> List of data sources for all branches of Feather River	Sierra Institute Partners	Low-medium priority
3 If appropriate, seek funding to establish a database.	<input type="checkbox"/> Identify who will house, update, and maintain the database <input type="checkbox"/> Submit grant proposals	Sierra Institute Partners	Low-medium priority

**Objective 13.5:** Investigate new institutional structures for basin coordination.

Action	Product(s)	Completed by	Due by or priority
1 Investigate the feasibility of incorporating the basin as one district or city.	<input type="checkbox"/> Recommendation	LAWG	Low priority
2 Explore possibilities for new organizational structures for LAWG, including a watershed council model.	<input type="checkbox"/> Recommendation	LAWG Sierra Institute	Medium priority

**Objective 14: Work with agencies and other organizations to obtain investment in the watershed to support monitoring, restoration, and future coordination.**

The basin's vast public and private working forestlands are crucial for providing wildlife habitat, carbon sequestration, clean water, and jobs for local residents. Securing investment in the landscapes ecosystem services can help fund lake and tributary monitoring, prevent degradation of critical habitat, and help keep working lands working. Increasing investment in ecosystem services will increase the likelihood that the Almanor Basin's most valuable living resource, its forest and riparian land, is sustainably managed for the good of the ecosystem, the economy, and local communities.

**Objective 14.1:** Identify and recommend sustainable funding opportunities for water quality monitoring, restoration, and coordination.

Action	Product(s)	Completed by	Due by or priority
Identify funding opportunities for investment in ecosystem services.	<ul style="list-style-type: none"> <li>List of funding opportunities</li> </ul>	LAWG Sierra Institute	Medium Priority

**Objective 14.2:** Work toward implementation of an ecosystem services pilot project in the Lake Almanor Basin to fund monitoring and coordinated management.

Action	Product(s)	Completed by	Due by or priority
1 Conduct meetings to develop pilot project(s).	<ul style="list-style-type: none"> <li>Identify existing institutional mechanisms for investment.</li> <li>Inventory of basin services.</li> <li>Identify existing methods for calculating value.</li> </ul>	LAWG Sierra Institute Partners	Medium Priority
2 Seek additional funding for an ecosystem services pilot.	<ul style="list-style-type: none"> <li>Proposal submitted.</li> </ul>	LAWG Sierra Institute	Medium Priority
3 Implement ecosystem services pilot.	<ul style="list-style-type: none"> <li>Implement pilot project and increase investment in the basin.</li> </ul>	LAWG Sierra Institute	Medium Priority

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