



**TWSA BOARD MEETING
PACKET
For 12/4/2019**

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NOTICE OF MEETING:

The next regular meeting of the Tahoe Water Suppliers Association (TWSA) is:

Wednesday, December 4, 2019 / 12 noon to 4 pm

Edgewood Lodge

100 Lake Parkway, Stateline, NV 89449

Conference call will be available:

Call **1-877-594-8353** / when prompted, Enter Conference Dial-in **17757186**

Agenda

Lunch will be provided at noon

Agenda

- A. Introduction of Guests**
- B. Presentations** – none scheduled. The bi-state TROA Water Rights Presentation, will be offered at the March 2020 meeting.
- C. Public Comment** Conducted in accordance with Nevada Revised Statute (NRS) Chapter 214.020 and limited to a maximum of 3 minutes in duration.
- D. Approval of Agenda**
- E. Approval of Minutes** for the Sept. 4, 2019 TWSA Board meeting.
- F. Reports**
 - a. Staff Reports (Annual Report, Events, Tahoe Tap Refill Network, Water Fill Station Grant Project, Microplastics Grant and Research).
 - b. Current budget - see Open Gov link for current budget and expenses:
https://inclinevillageidnv.opengov.com/transparency#/13549/accountType=revenuesVersusExpenses&embed=n&breakdown=types¤tYearAmount=cumulative¤tYearPeriod=years&graph=bar&legendSort=coa&month=10&proration=false&saved_view=128547&selection=CB5BA873E200D4E06EB4E08C133688F5&projections=null&projectionType=null&highlightingVariance=null&year=2020&selectedDataSetIndex=null&fiscal_start=2018&fiscal_end=latest
 - c. TWSA Chair Report
- G. General Business** (for possible action/vote):
 - 1. Selection of TWSA Board Meeting 2020 dates
 TWSA Board Meetings – First Wednesdays, quarterly, held from 12 to 4 pm:
Draft Proposed 2020 Board Meeting Dates
 - March 4, 2020 (IVGID)
 - May 27 or June 10, 2020 (ED unavailable June 3) (STPUD)
 - Sept. 2, 2020 (IVGID)
 - Dec. 2, 2020 (Edgewood)
 - 2. TKPOA Application/AIS Plan Update
 - a. General informational updates: scoping report and project description
- H. Purveyor Updates**
- I. Public Comment**
- J. Adjournment**

TWSA Board of Directors

Suzi Gibbons (Chair)

Andrew Hickman

Richard Robilliard; Phil Ritger (alternate)

Patrick McKay; Mike McKee (alt.)

Cameron McKay

Joseph Pomroy; Bob Lochridge (alt.)

Cameron McKay; Brandon Garden (alt.)

Nakia Foskett

Kim Boyd; Tony Lalotis (alt.)

Lynn Nolan; Shelly Thomsen (alt.)

North Tahoe Public Utility District

Round Hill General Improvement District

Douglas County Systems

Edgewood Water Company

Glenbrook Water Cooperative

Incline Village General Improvement District

Kingsbury General Improvement District

Lakeside Park Association

Tahoe City Public Utility District

South Tahoe Public Utility District

For more information, please contact: Madonna Dunbar, TWSA Executive Director

1220 Sweetwater Road, Incline Village, Nevada 89451

(775) 832-1212 office / (775) 354-5086 cell /email: mod@ivgid.org

Certification of posting of agenda

I hereby certify that on or before Thursday, Nov. 28, 2019 at 9:00 am, a copy of this agenda was delivered to the post office addressed to the people who have requested to receive copies of IVGID's agendas; copies were either faxed or e-mailed to those people who have requested; and a copy was posted at the following locations within Incline Village/Crystal Bay in accordance with NRS 241.020:

1. IVGID Anne Vorderbruggen Building (Administrative Offices)
2. Incline Village Post Office
3. Crystal Bay Post Office
4. Raley's Shopping Center
5. Incline Village Branch of Washoe County Library

By, Madonna Dunbar, Executive Director, TWSA, (775) 832-1212 office / email: mod@ivgid.org

Notes:

Items on the agenda may be taken out of order; combined with other items; removed from the agenda; moved to the agenda of another meeting; moved to or from the Consent Calendar section; or may be voted on in a block. Items with a specific time designation will not be heard prior to the stated time, but may be heard later. Members of the public who are disabled and require special accommodations or assistance at the meeting are requested to call IVGID at 832-1212 at least 24 hours prior to the meeting.

Copies of the packets containing background information on agenda items are available for public inspection at the Incline Village Library. TWSA agenda packets are available at the TWSA website www.TahoeH2O.org or the TWSA office at 1220 Sweetwater Road, Incline Village, Nevada 89451.



**The regular meeting of the Tahoe Water Suppliers Association (TWSA) was held on
Wednesday, September 6, 2019, noon to 4 pm
IVGID Public Works, 1220 Sweetwater, Incline Village, NV.**

MINUTES

A. Introduction of Guests – none scheduled

B. Presentations – none scheduled

C. Roll Call Members in Attendance: Suzi Gibbons (NTPUD), Rick Robillard (Douglas County), Lynn Nolan (STPUD), Cameron McKay (Glenbrook/ KGID), Joe Pomroy (IVGID), Kim Boyd (TCPUD), Bob Loding (LPA), Nakia Foskett (LPA), Andrew Hickman (RHGID), Patrick Mckay (Edgewood), Reginald Lang (NDEP)
TWSA Staff in attendance: Madonna Dunbar and Sarah Vidra

C. Public Comment Conducted in accordance with Nevada Revised Statute (NRS) Chapter 214.020 and limited to a maximum of 3 minutes in duration.
No public comment given.

D. Approval of Agenda

Motion to approve agenda as submitted made by Joe Pomroy, second by Andrew Hickman all in favor; motion carried.

E. Approval of Minutes for the June 12, 2019 TWSA Board meeting.

Motion to approve the June 12, 2019 TWSA Board Meeting minutes as submitted, made by Joe Pomroy, second by Bob Loding, all in favor; motion carried.

F. Reports

a. Staff Reports

- Staff highlighted several activities from the quarter; a full activity report is available in the board packet.
- Staff is compiling the *TWSA 2019 Watershed Control Program Annual Report* data for the July 1, 2018-June 30, 2019 reporting year. Data request have been sent out with an estimated completion date of November 8, 2019, for distribution on or before the December 4, 2019 TWSA Board Meeting.
- Water Fill Station Grant Project is moving forward with the Tahoe Fund providing the \$10K match in advance. TWSA will provide funds to applicants. Currently there are five active applications.

b. Year End Fiscal 2018-2019 Report

See OpenGov link for current budget and expenses.

- \$23K rollover from the 2018-2019 budget.
- \$150K in total reserve budget.

c. Current budget - see Open Gov link for current budget and expenses.

d. TWSA Chair Report

- Attended the July Tahoe Keys Stakeholder Committee meeting
 - Debriefed on South Shore public workshop
 - Public comments for EIR Scoping closed August 2nd
 - Discussed using AmeriCorps divers
- Attended the Lake Tahoe Summit at Valhalla on August 20th

G. General Business (for possible action/vote):

1. TKPOA Application/AIS Plan Update

- a. General informational update
- TKPOA continues to hold Stakeholder Meetings, with the last meeting in June 2019. The project Scoping period has ended and the report is being drafted.
 - During the TRPA Shorezone Project Coordination meeting the Army Corps of Engineers raised concern about a Section 10 violation of the Clean Rivers and Harbors Act of 1899. TWSA Staff was present at the TRPA for the meeting and has the following notes for the board:
 - At this time there are no plans or proposals for resolution of the violation. The Tahoe Keys are listed as historic lake, not wetland with the Army Corp.
 - The Army Corps will need a permit for Section 10 work for the use of the UV-C light boat during the proposed project, they do not have jurisdiction over the use of herbicides.
 - Anti-degradation analysis should be finalized in November 2019.
 - CEQA Preliminary Documents , Fall 2019
 - TWSA will support researching the AmeriCorps Dive Team for manual removal of plants.
 - The South Lake Tahoe (TRCD or Tahoe Keys) host will have a team for 5 months who train in diving, plant identification, and public outreach. We will be facilitating.
 - The subcommittee will reconvene when the scoping report is published.

Additional Topic- False Cyanobacteria outbreak in South Lake Tahoe

- The media reported a cyanobacteria outbreak at Kiva Beach in South Lake Tahoe, Lahoantan has tested the water and there are no cyanobacteria present in Lake Tahoe proper.
- b. Discussion - current Board position – see note at end of 6/12/19 minutes.
- What is this board's definition of "fully vetted?"
 - Lahontan is also defining fully vetted, and is including an economic hardship as a vetting matrix criteria.
 - Economic hardship needs to be removed.
 - Cheap is not a shortcut, cheap means cheap.
 - What is economically feasible
 - 100% of CEQA cost should be put on Herbicides.
 - Is the full environmental analysis vetted enough?
 - TWSA Board recommendation to provide TKPOA with a "positive" response on the full vetting of non-chemical methods.

No action taken.

c. Chair topic - Sodium Carbonate Peroxyhydrate treatment methods for algae blooms.

- TWSA mentioned looking at Sodium Carbonate Peroxyhydrate as a treatment for algae blooms.
 - Is on Lahontan's approved chemical list but would need to be included in anti-degradation analysis
 - Question: What is TWSA Board's input?
 - Lahontan and NDEP are the only ones who can make the decision.
 - Look in to what the Great Lakes AWWA recommendations on algaecides for surface water.

No action taken.

2. Emerging contaminants: micro-plastics

- a. CA Senate Bill No. 1422 - requirements for State Board to develop analytical methods and conduct monitoring minimum of four years of testing and reporting of micro-plastics in drinking water.

Staff provided information on new CA Senate Bill.

- b. Sampling efforts at Lake Tahoe. Does the Board have interest in supporting TERC surface water micro-plastics sampling efforts w/ purchase of sampling trawl/monitoring equipment?

TERC Staff has requested a partnership on a new sampling opportunity for microplastic research. TERC would like to collaborate with the TWSA to purchase the sampling equipment, manta net (\$5,500.00), TERC to provide a staff time match to include field sampling, lab work, and reporting. Water Samples will be taken at two depths when the research vessel is conducting current water monitoring.

Board Discussion included the following:

- Has the Waterboard come up with protocol and procedures? No, the deadline is still 18 months out.
- Will this study meet the requirements for State monitoring? The goal of the project is not to do the work for the State of CA for Senate Bill No. 1422. TERC has the information on State of CA requirements.
- IVGID would be in support of this effort since a volumetric result will be given.
- TERC to do filter analysis.
- Matching funds for this project? Yes from TERC, for use of the boat, staff time, labwork and report writing, 60 hours of staff time as a match.
- How will the TWSA fund the project, will it be reserve or current fiscal budget?

- Getting data more than presence absence is important. Is this request contingent on getting grant funding. No, this is going to be added to a current monitoring program. If we buy the net, this project will happen.

Motion to approve the sampling effort of Lake Tahoe is support of TERC for Surface Water Microplastic Sampling Efforts with purchase of approximately \$5,500.00 for sampling trawl-monitoring equipment to come out of current year TWSA operating budget made by Joe Pomroy, second by Andrew Hickman, motion carried 12 to 1.

- c. NDEP 319h Grant – Micro-plastics Education Proposal submitted.
Verbal update provided.
- d. “Tahoe Tap Canned Water’ idea
Would TWSA be interested in cobranding a packaged water in an alternative of plastic water bottles for retail sales, but canning water with a local brewery. There is an emerging market for canned water, including the big soda companies. We have the trademark for “Drink Tahoe Tap” and we can do a licensing agreement.
Our refill campaign is still the best for the environment, and human health.

Discussion included the following:

- Canned water is valuable in emergency situations.
- The NRS allows for water canning
- STPUD is against this project, due to the mixed messaging with our current outreach campaigns.
- 70% of aluminum get recycled within 90 days, 20% of plastics get recycled after warehouse time
- Our name would be on the line, who controls the quality? Product source?
- Null and void if water quality is not met.
- What happens if the water gets contaminated in the process?
- What about our brand when the litter has our name on it?
- Can tap water be sold? Yes, though a permit with Washoe County, NV.

Staff to present Board with a 100% reusable product for approval by board for co-branding.

- e. Diver Cleanups
The Chair and Executive Director responded in support with two mediations; notification (phone call and email) to any affected intakes 24 hours so turbidity can be monitored, and no mooring or anchoring near intake structures.

3. Vice Chair Reassignment

South Tahoe PUD will fill the position of Vice Chair between Shelly Thomsen and Lynn Nolan.

H. Purveyor Updates

Douglas County – the County commissioners passed the consolidated water rate for the entire county valley and lake. Lake Tahoe customers will pay an additional \$20 surcharge. This will provide increased funding for CIP projects, focused on the Cave Rock water system, exploring CMAR project to upgrade the water lines on Cave Rock Drive, and redundant filtration skid, in a three-year project. Zephyr is current

doing VOC upgrades in in 2020. The county is working on the SCADA system master plan roll out including redundant server at the PW office, to provide a redundant SCADA system between the lake and the valley.

TCPUD - Prop 218 notes for water rates, the October board meeting will be the public hearing with September community workshops. Distribution upgrades are happening for Madden Creek and Timberland water systems. TCPUD is working on the Tahoe Cedars master plan for mainline relocation. The West Lake Tahoe Water Treatment Plant has completed 90% designs. SRF will finance the \$14M; the principal will be paid down with half property tax and half water rate.

Edgewood – The water company has completed tank inspections and cleaning for 2019. The intake was also cleaned and inspected.

IVGID – contract awarded for MCC replacement at the burnt cedar water treatment plant. Pure Technologies analyzed the Tahoe Blvd water transmission main with the smart ball technology, found two leaks.

STPUD – PEC grant in December for treatment. Water line upgrades continue. Lots of position opening in STPUD in the next 5-6 months.

LPA - Valve exercising on the distribution system. LPA will be putting out a proposal for skid pumps and vfd's.

RHGID – Public hearing on water rates. RHGID will be looking into upgrading the billing system to include radio equipment software. Staff has been working on rebuilding pressure reducing valves, and cleaning storm drains. Chlorine rates have increased with the vender, and they are currently looking into generating their own.

KGID – The district is in design for two major water line replacement projects. CIP project for \$2m in projects every year for 5 years.

NTPUD – Is also doing a rate increase on a similar schedule as TCPUD. Plaza Circle Water main replacement project broke ground September 3, 2019. Tank maintenance contract will be canceled.

NDEP- Sanitary Surveys are completed for 2019. KGID is back up to speed for unfiltered systems for weekly raw water coliform monitoring biased on population size. Water Systems need to report fecal or total coliform; laboratories are reporting E. coli coliform.

I. Public Comment

No public comment given

J. Adjournment

Motion to adjourn made by Cameron McKay, second by Andrew Hickman, motion passes unanimously. The meeting adjourned at 3:15 pm.

MEMORANDUM

TO: TWSA Board
FROM: Madonna Dunbar, IVGID Resource Conservationist
SUBJECT: TWSA Program Highlights – October to Dec. 2019
DATE: Nov. 22, 2019

TWSA / Water Conservation / Water Quality**Ongoing**

Staff initiated the TWSA/Tahoe Fund Water Bottle Filling Station Grant Program (2019-20) on Aug. 1. Tahoe Fund has provided a \$10K match for the project. To date, 12 applications are active. Media coverage: <https://www.kolotv.com/content/news/Tahoe-business-owners-could-add-water-refill-station-inside-stores--525119571.html>

Work is also being conducted to bolster the number of available refill stations on the Tap App which will also help advertise newly installed units. Details are posted at www.DrinkTahoeTap.org.

Staff was awarded a \$62,000 NDEP 319h Source Water Protection grant with the Tahoe Center for Environmental Sciences, for a 2-year educational campaign on micro-plastics pollution, and ways to reduce single use plastics from getting in the environment.

Staff monitors the monthly TRPA Shorezone Project Review Committee Project Application Meeting.

The Tahoe Keys Integrated Weeds Stakeholder Management Plan (mediated) workgroup met on October 4 and Nov. 5. Staff was in attendance. Website of current information is: <https://tahoekeysweeds.org/>. The project applicant is significantly rewriting portions of the application at this time. CEQA document preparation is underway. The workgroup is on hiatus until early 2020.

Work is also being conducted to bolster the number of available refill stations on the Tap App which will also help advertise newly installed units. Details are posted at www.DrinkTahoeTap.org.

The 'Cigarette Bin Collection Project' initiated between TWSA, League to Save Lake Tahoe and Keep America Beautiful (KAB) began region-wide bin distribution/installation in June 2019. KAB has provided 250 metal cigarette filter collection bins to IVGID Waste Not (for TWSA) for distribution and use within the Tahoe Basin. Project is ongoing.

A Tahoe Tap Music Video was produced by local producer, Joaquin Fioresi. It features local talent, including Jenni Charles, Jonny Mojo, and the Tahoe Expedition Academy choir. It is posted online at https://youtu.be/uaZ_tn4fRj0

September 2019

Staff hosted the Incline portion of the Great Sierra Beach and River Cleanup on 9/2/19. 15 volunteers collected about 40 pounds of trash, cleaning 5 miles of shoreline. A diver underwater cleanup effort occurred at Sand Harbor at the same time, with the goal of a lake-wide underwater cleanup next year. <https://www.tahoeailytribune.com/news/divers-to-attempt-unprecedented-lake-tahoe-clean-up/>. Hours logged this month by community volunteers in support of the Waste Not/TWSA programs equaled 45.5 hours.

Staff attended the Lahontan Board meeting on 9/19 for an update on the Tahoe Keys Aquatic Invasive Species Working Group's progress.

Staff facilitated the 9/4/19 TWSA Board meeting.

Staff has been immersed in the production of the 2019 TWSA Watershed Control Program (WCP) Annual Report.

September Events Water Station Use:

Forest Gathering		200 Attendees
Tahoe Truckee Comm. Foundation	9/21	50 Attendees
Lost Sierra HoeDown	9/20-26	1000 Attendees
Liberty Utility Event	9/29	300 Attendees
NorthStar Wine Event	9/21	500 Attendees
		<hr/>
		2050 total attendees
<i>Water pouches/bike bottles distributed:</i>	300	

October 2019

The TWSA website (www.DrinkTahoeTap.org) was recently updated.

Staff is working with Sierra Nevada College students on service learning projects that assist the utilities goals while building the student's resume and experience. Frankie Sanchez will continue his work on Drink Tahoe Tap – App/Research project and Nathaniel Turley is researching energy efficiency projects and outreach methods for Diamond Peak.

Staff has been immersed in the production of the 2019 TWSA WCP Annual Report.

TWSA was a sponsor of the 2019 Mountain and Resort Town Planners Summit held in South Lake Tahoe Oct 16-18, 2019.

October Events Water Station Use:

Official Nevada Day Parade	10/26/19	500 attendees
Hangtown Music Festival	10/24-27	8000 attendees
IVGID Pumpkin Patch	10/12/19	250 attendees
		<hr/>
		8,750 total attendees
<i>Water pouches/bike bottles distributed:</i>	300	

November 2019

Staff completed production of the 2019 TWSA Watershed Control Program Annual Report. Distribution is scheduled for the week of Dec. 2, 2019.

It is posted online at: https://www.yourtahoeplace.com/uploads/pdf-public-works/TWSA_2019_Watershed_Control_Program_Annual_Report_-_full_document_11-8-2019_-_NO_MAPS.pdf

Water Station Use:

No events in November 2019. End of season, inspection, maintenance and repair scheduled for Dec. 2019.

TWSA is a sponsor for the Tahoe Film Festival 5, being held on north shore, Dec 5-8, 2019. All proceeds benefit Tahoe Environmental Research Center. <http://tahoefilmfest.com/schedule> .

**INCLINE VILLAGE GENERAL IMPROVEMENT DISTRICT
STATEMENT OF OPERATING SOURCES AND USES**

TAHOE WATER SUPPLIERS ASSOCIATION

CURRENT YEAR TO BUDGET COMPARISON

For Period Ending 11/30/2019

GL Account Number	GL Account Description	Current Month Budget	Current Month Actual	Month Budget Variance	Current YTD Budget	Current YTD Actual	YTD Budget Variance	Total Budget	Remaining Budget
OPERATING SOURCES									
200-28-990-4417	Service & User Fees	0	0	0	149,200	159,200	10,000	199,200	-40,000
	Sales and Fees	0	0	0	149,200	159,200	10,000	199,200	-40,000
	TOTAL OPERATING SOURCES	0	0	0	149,200	159,200	10,000	199,200	-40,000
OPERATING USES									
200-28-990-5010	Regular Earnings	4,010	233	3,777	20,450	17,149	3,301	48,787	31,638
200-28-990-5020	Other Earnings	648	0	648	648	0	648	648	648
	Salaries and Wages	4,658	233	4,425	21,098	17,149	3,949	49,435	32,286
200-28-990-5050	Taxes	311	21	290	1,585	1,327	258	3,782	2,454
200-28-990-5100	Retirement Fringe Ben	703	46	657	3,585	2,892	693	8,552	5,660
200-28-990-5200	Medical Fringe Ben	1,138	261	877	5,691	3,224	2,467	13,658	10,434
200-28-990-5250	Dental Fringe Ben	98	25	74	492	298	195	1,182	884
200-28-990-5300	Vision Fringe Ben	10	3	8	52	35	17	125	90
200-28-990-5400	Life Ins Fringe Ben	13	0	13	66	14	52	158	144
200-28-990-5500	Disability Fringe Ben	20	8	12	100	94	7	241	147
200-28-990-5600	Unemployment Fringe Ben	61	4	57	311	234	76	741	507
200-28-990-5700	Work Comp Fringe Ben	98	7	91	498	426	72	1,187	761
	Employee Fringe	2,453	375	2,077	12,380	8,544	3,836	29,626	21,082
	Total Personnel Cost	7,110	608	6,502	33,478	25,693	7,786	79,061	53,368
200-28-990-6030	Professional Consultants	10,000	0	10,000	20,000	0	20,000	50,000	50,000
	Professional Services	10,000	0	10,000	20,000	0	20,000	50,000	50,000
200-28-990-7010	Advertising - Paid	1,000	0	1,000	5,000	4,091	909	12,500	8,409
200-28-990-7405	Office Supplies	117	0	117	583	0	583	1,400	1,400
200-28-990-7415	Operating	2,358	0	2,358	11,792	2,203	9,588	28,300	26,097
200-28-990-7460	Postage	0	0	0	100	0	100	200	200
200-28-990-7470	Printing & Publishing	792	62	730	3,958	605	3,354	9,500	8,895
200-28-990-7680	Training & Education	833	0	833	4,167	0	4,167	10,000	10,000
200-28-990-7685	Travel & Conferences	150	0	150	1,250	515	735	2,500	1,985
	Services and Supplies	5,250	62	5,188	26,850	7,413	19,437	64,400	56,987
200-28-990-7840	Telephone	0	0	0	135	48	87	540	492
	Utilities	0	0	0	135	48	87	540	492
200-28-990-7980	Central Services Allocation Cs	500	500	0	2,500	2,500	0	6,000	3,500
	Central Services Cost	500	500	0	2,500	2,500	0	6,000	3,500
	TOTAL OPERATING USES	22,860	1,170	21,690	82,963	35,654	47,309	200,001	164,347
	OPERATING SOURCES(USES)	-22,860	-1,170	21,690	66,237	123,546	57,309	-801	124,347

DECEMBER 2019 CHAIRPERSON REPORT

- Attended the October and November Tahoe Keys Stakeholder Committee meetings
- Attended the Placer County Environmental Crimes Task Force meeting
 - California Assistant District Attorneys (CA ADAs) Task Force closed their case against the manufacturers of “flushable” wipes due to lack of evidence.
 - Samples that were provided by NTPUD and others showed that the wipes were ones that are not advertised as flushable.
 - I inquired if the CA ADAs were looking at the plastic water bottle manufacturers regarding microplastics in water.
 - Currently they are not since they don't have any evidence of microplastics in drinking water sources.

To Sink or Swim: A Snapshot Study on the Fate and Type of Plastics in Lake Tahoe

UC Davis Tahoe Environmental Research Center

Contact: Katie Senft, kjsenft@ucdavis.edu, 775-815-6605

Plastics have become ubiquitous in our everyday lives. Once discarded, large plastics items can break down into microplastics which are turning up in everything from the beer in our refrigerators to remote Antarctica seabeds (Kosuth et al., 2018; Munari et al., 2017). It is well established that stormwater, wastewater and atmospheric deposition transport microplastics from anthropogenic sources into the natural environment (Dris et al., 2016; Murphy et al., 2016; Sutton et al., 2019). While major sources of microplastic pollution have been identified, the fate of plastics once they enter the environment is less understood especially in freshwater systems. As the use of plastics across the globe continues to climb every year, it is more important than ever to understand the fate of plastics after they are introduced to the natural environment.

Project Justification and Field Methods

In order to understand the fate of plastics in Lake Tahoe, a comprehensive snapshot study has been developed by the UC Davis Tahoe Environmental Research Center. The study will look at four potential sinks for microplastic pollution in Lake Tahoe. Unless otherwise stated, all samples collected will be sent to the Gjeltema Lab at UC Davis for comprehensive microspectroscopy analysis for all particles $\geq 1\mu\text{m}$ using Raman validation. Data generated during Raman analysis will provide information on particle size, chemical composition and possible source of identified polymers.

1. Distribution of Plastics in Lake Tahoe's Pelagic Water

Two different methods, grab samples and neuston net tows, will be used to evaluate presence/abundance of microplastics in pelagic water. Barrows et al. (2017) concluded both methods are needed in order correctly quantify all size classes of microplastics present as using only one method results in an under representation of smaller particles.

- *Vertical Distribution of Plastics in Lake Tahoe Waters*

Quarterly grab samples will be collected from 6 depths at the mid-Lake Tahoe monitoring site to understand the vertical distribution of plastics in Lake Tahoe. Water will be collected from 0m, 15m, 30m, 50m, 250m and 450m. One field blank will also be

collected during each sampling event to evaluate field procedural contamination. All grab samples will be analyzed at the Gjeltema Lab at UC Davis.

- *Horizontal Density of Plastic Particle Across Lake Tahoe's Northern Gyre*

Using a 335 μ m neuston net, purchased with funds from the Tahoe Water Suppliers Association, monthly trawls will be conducted on the surface and just below the thermocline in the northern gyre of Lake Tahoe. Net samples will be examined at TERC for quantification of microplastics. Four sets of samples, coinciding with the quarterly grab samples for vertical distribution of plastics, will also be sent to the Gjeltema Lab for Raman validation.

2. Deep Water Sediment Sample

Plastics are composed of a variety of polymer types allowing some to float on the surface and others to sink into the sediments. Lake Tahoe has a lower density than seawater and may accumulate a greater proportion of plastic particles in lake sediments than observed in marine systems. Collecting samples from the lakebed allows for characterization of plastic particles that would be missed by only collecting particles suspended in water samples. Plastic particles found in deep lake sediments may be considered no longer biologically available to humans and wildlife, as there is no known transport mechanism to bring them back to shallower depths.

Sediment will be collected from 400m depth with a box core sampler. The sediment will be sent to the Gjeltema Lab for sample processing and Raman analysis.

3. Municipal Tap Water

Drinking water for the Tahoe Basin is sourced directly from the lake. The waters of Lake Tahoe meet the Environmental Protection Agencies filtration exemption standards under the Safe Drinking Water Act. Of the 160,000 public water systems in the United States, there are only 60 filtration exemptions and the Tahoe Water Suppliers Association holds 6 of those. Without any filtration of Lake Tahoe's drinking water, there is a greater potential for microplastics to enter our municipal water supply. In order to do a baseline assessment of this risk, tap water samples will be collected from two drinking fountains or taps supplied with municipal water from Lake Tahoe. All samples will be sent to the Gjeltema Lab for analysis.

4. Uptake of Plastics by Biota

- *Asian Clams*

Su et al., (2018) found Asian clams (*corbicula fluminea*) to be an effective bioindicator of microplastic pollution in freshwater systems, particularly for

sediments. Asian clams are more likely to ingest microplastics than other aquatic species because they occupy the sediment water interface and filter large volumes of water on a daily basis. Asian clams will be collected from Lake Tahoe (3 reps x 10 individuals) using a ponar sediment sampler deployed from a UC Davis research vessel. Clams will be preserved immediately and sent to the Gjeltrema Lab.

- *Kokanee salmon*

Kokanee salmon (*Oncorhynchus nerka*) are zooplanktivorous fish which rely on zooplankton as their primary food source. Research conducted by Kang et al., (2015) found that zooplanktivores have the potential to mistake microplastics for prey items such as immature copepods and cladocerans. Kokanee salmon are consumed by humans as well as black bears, bald eagles and other native Tahoe wildlife serving as a potential vector of microplastics from Lake Tahoe into the food chain. Three kokanee stomachs will be collected in summer of 2020 with the help of local fishing guides. Stomachs will be preserved immediately and sent to the Gjeltrema Lab for enzymatic/chemical digestion of organic materials and Raman validation.

Determining the Types of Plastic Found

Laboratory Methods: Validation of Plastics at the Gjeltrema Lab, University of California, Davis

Plastics from all samples will be isolated onto aluminum-coated polycarbonate filters using density separation, enzymatic/chemical digestion, and vacuum filtration as needed to remove organic material prior to analysis. A Horiba XploRA™ PLUS Raman confocal microscope operated using LabSpec6 software and equipped with a camera for image mapping, cooled charge-coupled device detector, two lasers (785 and 532nm wavelength), and a motorized stage will be used to identify and characterize sample particles. Spectra produced from Raman analysis will be identified by comparison matching to spectra from the Bio-Rad KnowItAll Raman spectral library for plastic polymers. Quality control measures will be strictly adhered to during sample preparation, including the use of a controlled environmental chamber for processing of samples, use of non-plastic tools/equipment, pre-filtering of all liquids used during processing, strict laboratory hygiene, use of natural fiber protective equipment/clothing, and use of procedural blanks.

Conclusion

Once introduced into the natural environment, plastics become a highly persistent part of the ecosystem (Farady, 2019). Plastics do not compost but rather biodegrade into ever smaller pieces which we currently do not have the technology to remove. With large volumes of plastic entering our natural environments, it is critical to evaluate current levels of microplastics present in Lake Tahoe. Knowing if current pollution levels are great enough to be detected in pelagic waters, lake sediments, municipal water and biota will direct the development of future

research proposals. The results from this snapshot study will also supply agencies and policymakers important baseline information to begin conversations around regulations to reduce plastic pollution and prevent future accumulation of plastics in Lake Tahoe.

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LAKE TAHOE
ENVIRONMENTAL
IMPROVEMENT
PROGRAM

**TAHOE REGIONAL
PLANNING
AGENCY**

Upcoming Milestones

- Scoping Report October 31, 2019
- Admin Draft of EIS/EIR February 12, 2020
- Draft EIS/EIR June 22, 2020
- Public Comment DEIS/DEIR July 22, 2020
- Response to Comments September 22, 2020
- Final EIS/EIR Early Spring 2021
- Board Approval/EIS Certification Spring 2021

Tahoe Keys Aquatic Weed Control Methods Test *Scoping Report*

October 31, 2019

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Prepared for:
Tahoe Regional Planning Agency (TRPA)
&
Lahontan Regional Water Quality Control
Board

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1.0 Introduction

The Tahoe Regional Planning Agency (TRPA) and the Lahontan Regional Water Quality Control Board (Lahontan Water Board) (Lead Agencies) released the Notice of Preparation (NOP; Attachment 1) of an Environmental Impact Report (EIR) for the Tahoe Keys Aquatic Weed Control Methods Test (CMT) on June 17, 2019. In conjunction with the NOP release, and with the Tahoe Keys Stakeholder Committee, the Lead Agencies launched a comprehensive public engagement process that ran from June-August 2019. This outreach included a wide range of public meetings and activities that were held to encourage feedback on the proposed project description and scope of environmental analysis while also guiding the formulation of project alternatives. This Scoping Report incorporates key information provided in the NOP, summarizes the Lead Agencies' scoping activities as well as public response to the project, summarizes comments received, and attaches a comment matrix quoting the comments received and indicating where in the EIR/EIS or the CEQA/TRPA process they will be addressed.

2.0 Background Provided in the NOP

In response to the need to control the abundant growth of non-native and nuisance aquatic weeds, the Tahoe Keys Property Owners Association (TKPOA) developed the Tahoe Keys Lagoons Aquatic Weeds Control Methods Test (CMT). The CMT will test various control methods of weed control methods in the Tahoe Keys Lagoons. The CMT was designed using best available science and Integrated Pest Management Principles with significant input from the Tahoe Keys Stakeholder Committee. The Stakeholder Committee was created to ensure a collaborative and transparent environmental review process, and to ensure that a broad range of options was considered in the development of the CMT. The CMT is designed to learn more about the efficacy and potential impacts of new AIS control technologies and the potential use of herbicides in the Tahoe Keys lagoons.

TKPOA is proposing the CMT to test control methods of three target aquatic weeds: Eurasian watermilfoil, curly-leaf pondweed, and coontail. The target aquatic weeds have adversely affected the water quality and ecosystem of the Tahoe Keys lagoons, created optimum habitat for non-native fisheries, and adversely impacted beneficial uses of the waters of the Tahoe Keys lagoons which are: municipal and domestic water supply, groundwater recharge, freshwater replenishment, water-contact recreation, non-water contact recreation, navigation, commercial and sport fishing, cold freshwater habitat, wildlife habitat, preservation of biological habitats of special significance, migration of aquatic organisms, spawning, reproduction and development of fish and wildlife, preservation of rare and endangered species, water quality enhancement and flood peak attenuation/flood water storage. A transparent and efficient regulatory and public review process is necessary so that a range of integrated control methods can be tested for their safety, efficacy, compatibility, and utility in controlling target weed infestations to inform long-term management options in the Tahoe Keys. Implementing long-term management options will aim to prevent irreversible infestations in the greater Lake Tahoe ecosystem.

TKPOA is seeking an exemption to the Water Quality Control Plan for the Lahontan Region (Basin Plan) prohibition of the use of aquatic pesticides and approval from TRPA to test aquatic herbicides as a potential AIS control tool. The specific requirements that were followed can be found in the Basin Plan, Chapter 4.1, Waste Discharge Prohibitions – Exemption Criteria for Controlling AIS and Other Harmful Species, for Projects That Are Neither Emergencies Nor Time Sensitive.

TKPOA initially applied to TRPA and the Lahontan Water Board for a similar test that was reviewed under a TRPA Initial Environmental Checklist and an Initial Study under the California Environmental Quality Act (CEQA). That review identified “Data Insufficiencies” and “Potentially Significant Impacts”. As such, TRPA determined that the proposed project may have a significant effect on the environment and an Environmental Impact Statement shall be prepared (April 2018). That decision initiated this new jointly developed CMT.

2.1 History & Context

In the 1980s and 1990s, the invasive weed Eurasian watermilfoil (*Myriophyllum spicatum*) became established in the Tahoe Keys lagoons and other areas around Lake Tahoe. As of 2012, 18 infestation sites were known with the possibility of more that were not surveyed (Wittmann and Chandra 2015). Then, in 2003, curlyleaf pondweed (*Potamogeton crispus*) was first discovered in Lake Tahoe. Currently, curlyleaf pondweed is limited to the south and southeastern shores of Lake Tahoe with infestations observed from Taylor Creek to Lakeside Marina (Wittmann and Chandra 2015, LTSLT 2016). Newer infestations were also recently found as far north as Elk Point Marina (Anderson 2016, pers. communication) on the Nevada side of Lake Tahoe. Coontail (*Ceratophyllum demersum*) is classified as a native plant to California, but in recent years has grown in abundance in the Lake Tahoe region, specifically in the lagoons. Coontail has heavily infested the deeper channels of all the lagoons, most abundantly in the Marina Lagoon and Lake Tallac Lagoon, where it comprises over 70% percent of the aquatic plant matter (TKPOA 2016a).

The two invasive, non-native aquatic weed populations in the Tahoe Keys lagoons have been growing rapidly. Recent aquatic plant surveys (2014, 2015, 2016, 2017) show the extent and density of excessive plant growth in the lagoons. In recent years, 85% to 90% of the available wetted surface in the lagoons has been infested with target aquatic weeds with a large majority being the non-native invasive species. Of particular concern is the recent rapid growth and spread of curlyleaf pondweed, which has the potential to not only infest significantly more of Lake Tahoe’s aquatic habitat than Eurasian watermilfoil, but can also be more difficult to control due to the large number and dispersal capacity of its asexual turions, which are produced in mid to late summer (Woolf and Madsen 2003, Wittmann et al. 2015, Xie and Yu 2011). Turions are overwintering buds that become detached and spread throughout the waterway and have the potential to remain dormant at the bottom of the water for several years. Curlyleaf pondweed is also capable of growing in deeper, colder waters, which may potentially be more detrimental to Lake Tahoe if allowed to spread unchecked.

Seasonal harvesting has been the main weed control practice in the Tahoe Keys lagoons since the mid- 1980s. Continual harvesting throughout the summer months works to keep the lagoons navigable by boat, however, harvesting operations do not, overall, reduce aquatic weed biomass. Harvesting may actually aid in aquatic weed population growth (Crowell et al. 1994, TKPOA 2015). The expansion and excessive aquatic weed growth in the lagoons is due to several environmental conditions including abundant nutrient availability, relative warm, stagnant and shallow waters with sufficient light for weed growth. The target aquatic weeds introduced to the lagoons have found these to be ideal habitat conditions for prolific growth.

In response to the growing AIS problem in the Tahoe Keys lagoons and the goal to limit non-point sources of pollution, the Lahontan Water Board issued Waste Discharge Requirements to TKPOA on July 14, 2014. As part of these requirements, TKPOA was tasked with developing two planning documents. 1) A Non-Point Source Water Quality Management Plan (NPS Plan) to address potential land-based sources of nutrients (not part of this application) and (2) an Integrated Management Plan (IMP) to address the growth of target aquatic weeds. The purpose of the IMP is to optimize management effects on controlling target aquatic weeds by incorporating a suite of feasible and proven control methods that can be tailored to fit site constraints, infestation size, and urgency of control. TKPOA's exemption application addresses, in part, long-term implementation of the IMP.

The only control methods that can currently be used in the TKPOA IMP are non-chemical control in nature. At the time of the NOP, these methods consist primarily of weed harvesting and bottom barriers. However, due to the size, density, and dominance of the infestation, these control methods have been shown to produce limited results. In addition, the current primary control method, harvesting, results in the production of large quantities of weed fragments (TKPOA 2014). Without proper controls, these fragments may be transported by wind, aquatic animals, and boat traffic within the lagoons and into Lake Tahoe, thus contributing viable weed fragments and turions that can become established and create new populations in nearshore habitats and marinas.

2.2 Project Purpose, Need, & Objectives

Purpose: Tahoe Regional Planning Agency: To preserve and protect natural resources throughout the Tahoe Basin, including water quality.

Lahontan Regional Water Quality Control Water Board: To preserve, protect, and restore water quality in the Lahontan region.

Need: Tahoe Regional Planning Agency: Manage and control aquatic invasive species to achieve compliance with the environmental threshold carrying capacities (thresholds) established to set environmental standards for the Lake Tahoe basin.

Lahontan Regional Water Quality Control Water Board: To control AIS and nuisance plants to prevent future threats to long-term water quality within the context of aquatic weeds. Additionally, to uphold and maintain the beneficial uses and water quality objectives specified in the Lahontan Basin Plan. Beneficial uses designated by LRWQCB include: Cold Freshwater Habitat, Navigation, Water Contact Recreation, and Non-contact Water Recreation.

2.3 Goals & Performance Measures

The Project Description attached to the published NOP (Attachment 1) stated the following Project Goals and Preformation Measures. NOTE: These may be subject to change as the project progresses.

2.3.1 Project Goals

Test a range of large-scale, localized and long-term target aquatic weed control methods to determine what combination of methods within the test areas will:

1. Reduce target aquatic weed infestations as much and as soon as feasible to help protect Lake Tahoe.
2. Bring target aquatic weed infestations to a manageable level.
3. Improve the water quality of the Tahoe Keys lagoons.
4. Improve navigation and recreational use and enhance aesthetic values.
5. Reduce the potential for target aquatic weed re-infestations after initial treatment.

While not a specific goal, it is anticipated that invasive fish species populations will decrease with any measurable decreases in target aquatic weed populations, as the existing conditions in the Tahoe Keys provides such habitat.

2.3.2 Performance Measures

Project effectiveness will be evaluated based on the following performance criteria:

1. Determine the effect on water quality in the Tahoe Keys lagoons through monitoring.
2. Achieve and maintain at least a 75% reduction of target aquatic weed biomass in test locations from baseline (invasive weed biomass from hydroacoustic scans in summer of 2019).
3. Achieve and maintain a minimum three feet of vessel hull clearance within navigation channels year-round to maintain beneficial uses and prevent weed fragment generation and dispersal.

The performance measure to reduce target aquatic weed biomass by at least 75% reflects prior studies on the efficacy of some Group A methods (Anderson 2017). In addition, reducing target aquatic weed biomass by at least 75% presents the most realistic probability for long-term target aquatic weed control that minimizes the need for repeated

long-term use of Group A treatment methods. It is also anticipated that a 75% reduction in biomass would be required to achieve and maintain three feet of vessel hull clearance. With a 75% reduction in target aquatic weed biomass, competition for space, light, and nutrients is expected to be sufficiently reduced such that native aquatic habitat may be re-established.

3.0 Stakeholder Outreach

From the onset of the development of the proposed project, the lead agencies and TKPOA agreed to pursue a robust collaborative stakeholder process to inform and guide the development of the project and the environmental review process. In August 2018, TRPA hired Zephyr Collaboration to serve as third-party neutral facilitators to design and implement the collaborative process. As a first step, an assessment of stakeholder interests, concerns and questions was completed by Zephyr Collaboration in October 2018. The Stakeholder Assessment Report (Attachment 2) summarized various stakeholder interests and perspectives, and included recommendations for a collaborative, transparent, inclusive stakeholder process to inform the Environmental Impact Statement/Environmental Impact Review (EIR/EIS).

Based on recommendations made in the Stakeholder Assessment, the Tahoe Keys Stakeholder Committee and the Tahoe Keys Stakeholder Consultation Circle was formed.

The Stakeholder Committee consisted of the following agencies and organizations:

- Lahontan Regional Water Quality Control Board (listening & advisory role)
- League to Save Lake Tahoe
- Tahoe Keys Property Owners Association
- Tahoe Regional Planning Agency
- Tahoe Resource Conservation District
- Tahoe Water Suppliers Association

The Stakeholder Consultation Circle consisted of the following agencies and organizations:

- California Attorney General's Office
- California Department of Fish & Wildlife
- California State Lands Commission
- California Tahoe Conservancy
- City of South Lake Tahoe
- Key Concerned Citizens
- Lake Tahoe AIS Coordinating Committee
- Lake Tahoe Marina Association
- Lakeside Park Association
- Local Native American Tribes
- Nevada Department of Environmental Protection
- Nevada Tahoe Conservation District

- North Lake Tahoe Resort Association
- Sierra Club
- Southshore Tahoe Chamber
- Tahoe Keys Beach and Harbor Association
- Tahoe Lakefront Homeowners Association
- Tahoe Fund
- Tahoe Interagency Executive Steering Committee
- U.S. Fish & Wildlife Service

Zephyr Collaboration worked with the Stakeholder Committee to design a project website to host all project information: www.tahoekeysweeds.org which was launched in June 2019. The NOP, public workshop announcements, and full project background information is all posted on the project website.

3.1 Scoping Process

The NOP was issued June 17, 2019, inviting public comment on the proposed project, with a 45-day scoping period beginning on the date of issue and closing on August 2, 2019. Generally, the following scoping schedule was followed:

Date	Activity
June 5, 2019	Public Website Launch; Public Workshops Announced
June 17, 2019: Official Scoping Begins	Release of NOP
June 25, 2019	Lahontan Water Board CEQA Scoping Meeting and Public Workshop 1 in South Shore
June 26, 2019	TRPA Governing Board Public Hearing
June 27, 2019	Stakeholder Consultation Circle (SCC) Meeting
July 16, 2019	Public Workshop 2 North Shore
July 17, 2019	Responsible Agencies must respond to the NOP; providing the Lead Agency with specific detail about the scope and content of the environmental information related to the Responsible Agency's area of statutory responsibility within 30 days after receiving the Notice of Preparation.
July 24, 2019	TRPA Governing Board Field Trip and Public Hearing
August 2, 2019: Official Scoping Ends	Close of scoping period; all comments due
September 3, 2019	TRC to provide a draft Scoping Report to the Lead Agencies for Review and approval.
September 17, 2019	Lead Agency comments on draft Scoping Report due to TRC
October 1, 2019	Final Scoping Report delivered by TRC to Lead Agencies.

The NOP included a reference to the TRPA Initial Environmental Checklist/CEQA Initial Study that had been prepared in 2017-2018 leading to the decision to prepare an EIR/EIS. This

document is available for review between the hours of 9:00 a.m. and 4:00 p.m., Monday through Friday (except Tuesday), at the TRPA office, 128 Market Street, Stateline, NV.

3.2 NOP Distribution

In addition to being posted on the aforementioned website, the NOP was sent to a public and agency mailing list consisting of public utilities districts, tribes, state departments of environmental protection and natural resources, and non-governmental organizations (Attachment 3). The mailing lists were developed by the Lead Agencies and the Tahoe Keys Stakeholder Committee. The Lead Agencies also notified potentially affected or interested entities and agencies about the scoping process through the following announcements:

- Posted Notice of Public Hearing in *Tahoe World*, published on May 31, 2019 (Attachment 4)
- Posted Notice of Public Hearing in the *Tahoe Daily Tribune*, published on May 31, 2019 (Attachment 5)
- TRPA posted the Governing Board Agenda items/notice of public hearing one week in advance on the TRPA website: www.trpa.org
- TRPA posted public workshop dates and locations on TRPA website, Facebook page, and Instagram profile
- TRPA distributed project postcards with link to project website at front counter and other public meetings, as appropriate (Attachment 6)
- NOP Notice mailed by Lahontan Water Board to El Dorado County Clerk – June 17, 2019
- NOP Notice Emailed by Lahontan Water Board to interested parties list on June 17, 2019
- Notice of Upcoming Scoping Meetings sent by Lahontan Water Board to interested parties on 6/13/19 via Lahontan WB Lyris Email subscription list for 'reg6_tahoe_keys_restoration'
- Posted Notice of Public Hearings/Scoping Meetings in the *Sierra Sun*, published on June 7, 2019, June 21, 2019, July 5, 2019, July 12, 2019 (Attachment 6)
- NOP Notice mailed by Lahontan Water Board to/ State Clearing house on June 17, 2019
- State Clearinghouse transmittal of NOP to reviewing agencies on June 18, 2019

Submission of comments was invited electronically throughout the scoping period via email address (tahoekeysweeds@trpa.org) provided by the lead agencies, as well as by mail or hand-delivery to a TRPA address. A comment form was provided at all scoping events (Attachment 7).

3.3 Tribal Notification and Consultation

Lahontan Water Board staff have provided AB52 notification of the Project proposal to United Auburn Indian Community (October 17, 2017 and December 13, 2018) Wilton Rancheria (December 13, 2018) and non-AB52 notification to the Pyramid Lake Paiute Tribe (December 13, 2018) and Washoe Tribe of Nevada and California (January 9, 2018 and December 13, 2018). The United Auburn Indian Community was the only tribe to respond to the tribal consultation notice and requested mitigation measures for the inadvertent discovery of Tribal Cultural Resources including a worker tribal cultural resources awareness training program for all personnel involved in the Project. These

measures are being incorporated into the final Mitigation Monitoring Plan for the Project. Tribal consultations were completed in June 2019.

3.4 Scoping Meetings

The NOP announced scoping meetings to be held by TRPA and the Lahontan Water Board and public scoping workshops as given below:

- **Lahontan Water Board CEQA Scoping Meeting: June 25, 2019:** Lahontan Water Board Annex, 971 Silver Dollar Avenue, South Lake Tahoe, CA
- **TRPA Governing Board Scoping Meeting: June 26, 2019:** Tahoe Regional Planning Agency 128 Market Street, Stateline, NV
- **South Lake Public Workshop: June 25, 2019:** Lahontan Water Board Annex, 971 Silver Dollar Avenue, So. Lake Tahoe, CA
- **North Shore Public Workshop 2: July 16, 2019:** North Tahoe Event Center, 8318 North Lake Blvd. Kings Beach, CA

During scoping meetings and workshops, the public and agencies were requested to comment on issues, impacts and alternatives that should be evaluated in the EIR/EIS. Attendees of these meetings were provided with:

- A presentation and overview of the proposed project;
- An outline of the environmental review process including the schedule;
- A discussion of the resources and potential impacts to be evaluated in the EIR/EIS;
- A discussion of potential alternatives to the proposed action including the no action alternative;
- A presentation on opportunities for public engagement including the activities of the Tahoe Keys Stakeholder Committee and the Stakeholder Consultation Circle

At the end of the public workshop presentations, the lead agencies opened the floor for public comment and hosted more opportunity for questions and comments in an “open house” format. Staff from the lead agencies, Zephyr Collaboration, and TRC were available during the open house to receive comments and questions from the public. A total of 36 people signed in to the two scoping meetings, during which, 5 written and 81 verbal comments/questions were collected.

4.0 Summary of Comments Received

Scoping comments were collected in one of two ways:

- **Written comments:** Comments submitted in writing, either by comment form in public workshops, or through the project website, were recorded and catalogued verbatim, as they were received.

- Verbal comments: Comments submitted through discussions in public workshops, were recorded on flip charts by the Zephyr Collaboration team, summarized generally and catalogued.

A total of 316 individual scoping comments were received from 44 commenters, many including more than one comment. Table 1 identifies the comment sources and the comment categories addressed by each. These included 4 commenters who used the scoping Comment Forms and 40 who submitted email letters or messages. In addition, 44 verbal comments were recorded from 26 attendees at the June public workshop , and 37 verbal comments were recorded from the 10 attendees at the July public workshop, and 26 verbal comments were recorded from the Stakeholder Consultation Circle (SCC) Meeting.

Table 1. Number and source of comments received during the scoping period.

Source	Number of Commenters	Number of Comments	
		Individual	Flipchart/Group
Email	40	204	
June Public Workshop	3	4	44
July Public Workshop	1	1	37
SCC Meeting			26
Governors Board Meetings	2	2	
Total	44	211	107
			318

In the NOP, the following potential environmental issue areas were identified to be addressed in the EIS/EIR.

Hydrology and Water Quality	Geology and Soils
Biological Resources	Land Use and Planning
Human Health	Public Services
Hazards and Hazardous Materials	Greenhouse Gas Emissions
Recreation	Global Climate Change

All substantive comments received were compiled and entered into an Excel spreadsheet that was used to prepare this scoping report (Attachment 8). The spreadsheet groups comments into major categories and themes (columns A and B). It indicates some comments were cross-referenced into more than one category and theme, resulting in the total count for all entries being greater than the raw number of comments. Major classifications are shown, by the number of comments received, in Figure 1. The spreadsheet also uses color-coding to indicate where each comment

will be considered or addressed in the EIR/EIS and the CEQA/TRPA process. The summary below includes all resource areas identified in the NOP, even if no comments were received. The number of comments received is indicated in parentheses following each resource header, and additional categories of comments received are added to the summary list below:

- Alternatives – Chemical Alternatives/Herbicides (58)
- Alternatives – Non-Chemical Alternatives (77)
- Alternatives – Proposed Elements of Alternatives (9)
- Alternatives – Proposed Tahoe Keys Modifications (36)
- Alternatives Analysis/Test Protocol (88)
- Anti-Degradation Analysis/Test Analysis (69)
- Aquatic Weeds Management (10)
- Background Information (12)
- Biology/Ecology (21)
- Boating (16)
- Cost/Cost Impacts, Socioeconomics, Financial (11, 2, 13)
- Cumulative & Long-Term Impacts (1)
- Cyanobacteria (12)
- General Opposition or Support (6)
- History (4)
- Hydrology (1)
- Independent Experts and Peer Review (10)
- Indirect Effects (1)
- Jurisdiction (3)
- Mitigation (3)
- No Action Alternative/Risk to Lake Tahoe (5)
- Planning History (7)
- Project Goals and Objectives (1)
- Protection (4)
- Public Outreach and Stakeholder Process (5)
- Recreation (7)
- Regulatory (19)
- Risk Assessment (2)
- Trash (1)
- Water Circulation (7)
- Water Quality (20)
- Water Supply (10)

This summary does not address comments that were not pertinent to the EIR/EIS and the project purpose and need, comments advocating actions contrary to current law and regulation, comments expressing general support or opposition, or purely informational exchanges. Comments addressing project scope, alternatives, and expanded operations are included.

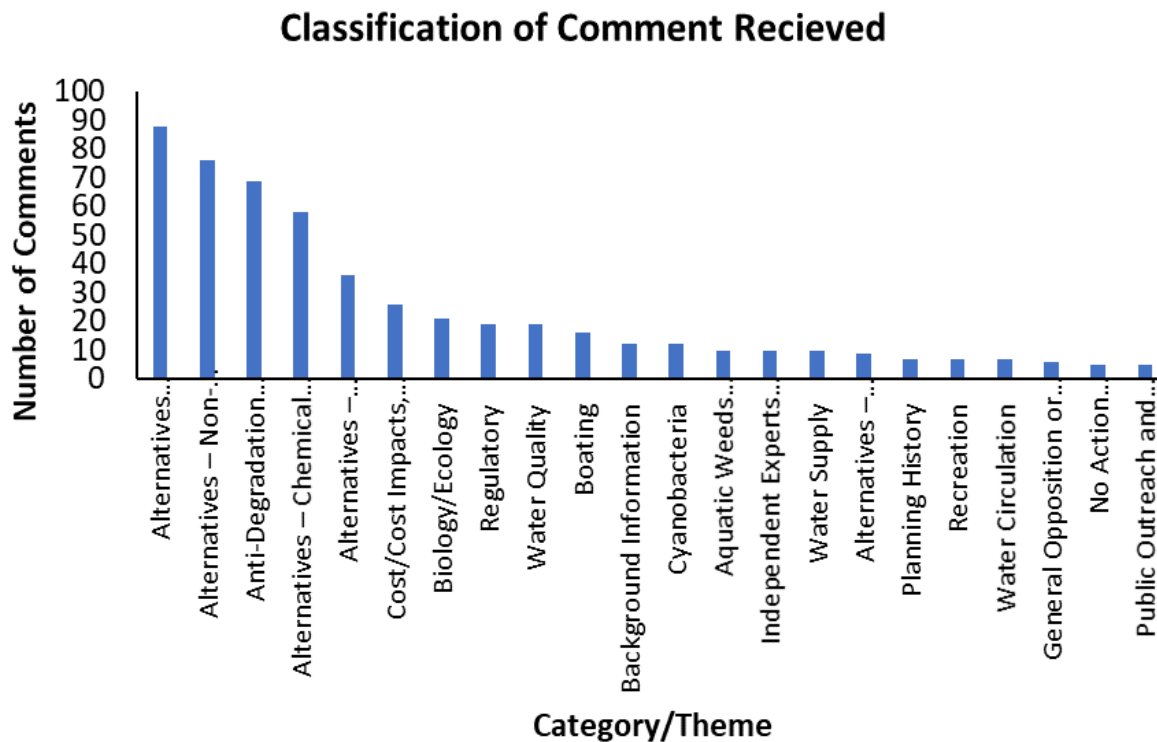


Figure 1. Comment classifications by number of comments received during the scoping period. Note: only classifications with five (5) or more comment are displayed. The following classifications received fewer than 5 comments: history, protection, jurisdiction, mitigation, risk assessment, cumulative & longterm effects, hydrology, indirect effect, project goals & objectives, and trash. More information about the comments within these categories can be found in the comment spreadsheet (Attachment 8).

The comment summary below (Table 2) combines the sorting of comments both by theme and category, and briefly highlights the primary points made in the comments received.

Table 2. Summary of comments received during the scoping period.

Comment Classification	Comment Subject(s)
<u>Alternatives</u>	
<i>Chemical Alternatives/Herbicides</i>	<ul style="list-style-type: none"> Chemical weed control and anti-degradation analysis Background information on chemical treatments Objections to use and rational for use (cost) Regulatory requirements Need for chemical alternatives in CMT Need for independent expert support Better distribution of chemical hazard information
<i>Non-Chemical Alternatives</i>	<ul style="list-style-type: none"> Non-chemical method suggestions and use in CMT Modification of Tahoe Keys Regulatory requirements More analysis of non-chemical methods

Proposed Elements of Alternatives

Weed rollers attached to dock pilings
 UV light
 Bottom barriers
 Use of volunteer divers
 Manage lake level
 Laminar Flow Aeration (LFA)
 Enzymes combined with LFA
 Channel deepening for LFA

Proposed Modifications to Tahoe Keys Lagoons

Dewater and dredge
 Fill lagoons
 Replace lagoon substrate with different substrate
 Deploy barriers between lagoons and marina/lake
 Install temporary inflatable dam during CMT
 Eliminate areas with highest temperature and stagnation
 Eliminate areas with greatest weed density
 Restore entire or portions of lagoons to wetland marsh
 Acquire waterways through eminent domain

Alternative Analysis/Test Protocol

Assess adequate range of alternatives/combinations
 Reinfestation risk/need for perpetual treatment
 Long-term weed control after dieback and follow-up survey protocol
 Conduct cumulative effect analysis (CEQA)
 Origin of weeds
 Explain 75% knockback goal and specific success criteria
 Further define Group A vs. B methods
 Objection against mechanical harvesters
 CMT scale, site spacing and size, methodology, and timeline
 Herbicide utilization, selections, combinations, concentrations, frequency, and duration
 UV light applicability and utility
 Adaptive management programs
 Alternative treatments bear bulkhead channel
 Perform/define control work over summer
 Removal of biomass after treatment
 Boat backup stations and vessel restrictions
 Public/property owner access restriction

Antidegradation and Test Analysis

Relationship between treatment success and long-term management
 Include active herbicide and breakdown products
 Time thresholds and chemical persistence
 Fragment dispersion
 Literature and case-study review of CMT components

	<p>Chemical adaptation/resistance and weed hybridization</p> <p>Analyze follow-up Group B maintenance methods</p> <p>Include storm drains and urban and residential runoff</p>
<u>Aquatic Weeds Management</u>	<p>Historic fish assemblage and algae control</p> <p>Utilize ecological principles and science to create long-term AIS plan</p> <p>Include community support actions</p>
<u>Background Information</u>	<p>Herbicide fate/transport</p> <p>Surfactants and adjuvants</p> <p>Health effects</p> <p>Lake Tahoe quality and value</p> <p>Regulatory process</p>
<u>Biology/Ecology</u>	<p>Fish management and historic ecology</p> <p>Turion treatment/control</p> <p>Temperature effects on weed growth</p> <p>Existing ecology of native plants/animals and effects of CMT</p> <p>Aquatic weed invasion ecology</p> <p>Biological survey/inventory</p> <p>Future ecology of Lake Tahoe and Tahoe Keys</p> <p>Non-target species effects and biomass die-off</p> <p>Bioaccumulation potential</p>
<u>Boating</u>	<p>Manage/eliminate boat travel or create new access points</p> <p>Changes Keys to navigation channel entrance</p> <p>Impacts of native plant recovery to vessel hull clearance</p> <p>Boat inspections, back up station, clean/spray for weed control</p> <p>Maintaining open water increases need for management</p> <p>Low prioritization of boat recreation</p>
<u>Cost & Cost Impacts/ Socioeconomics/Financial</u>	<p>Compensation payments to property owners who lose access</p> <p>Costs of alternative control methods</p> <p>Threshold of cost infeasibility</p> <p>Cost responsibility (TKPOA), practicality, and allocations</p> <p>Economic effects and considerations for the Lake</p>
<u>Cumulative and Long-Term Impacts</u>	<p>Direct, indirect, and cumulative impacts/effects analysis</p>
<u>Cyanobacteria</u>	<p>Suggested background information and experts</p> <p>Associated risks to lake and human health</p> <p>Effects of herbicides and alternatives on HABs</p> <p>Reduction measures and goals</p>
<u>General Opposition or Support</u>	<p>Various levels of opposition or support to CMT and Lead Agencies</p>

<u>History</u>	Historical context of weeds and management Activities undertaken by City of South Lake Tahoe
<u>Hydrology</u>	Delineation of flow between Lake and Keys
<u>Independent Experts & Peer Review, Independent Citizen Review</u>	Utility of independent experts and citizens to review results Tahoe Science Advisory Committee involvement
<u>Indirect Effects</u>	Necessity of official indirect effects analysis
<u>Jurisdiction</u>	CA State Land Commission jurisdiction over navigation channel on bed of Lake Tahoe (leased) City of Lake Tahoe does not claim jurisdiction
<u>Mitigation</u>	Mitigation strategy and plan CDFW requirements Fragment control
<u>No Action Alternative/Risk to Lake Tahoe</u>	Full risk analysis of threats and effects to entire lake if no action is taken
<u>Planning History</u>	Can process expedite long-term management planning City corrected records Environment if Keys were never constructed
<u>Project Goals and Objectives</u>	Include HAB and other nuisance algal species reduction
<u>Protection</u>	Prioritize protection of entire Lake Outstanding National Resource Water requirements Precautionary Principle and lack of certainty
<u>Public Outreach & Stakeholder Process</u>	Meeting and documentation notifications Better outreach campaigns Responsiveness
<u>Recreation</u>	All forms of recreations should be considered Marshland could offer additional opportunities Exclude recreation as beneficial use of Lake
<u>Regulatory</u>	Legality of testing aquatic herbicides Exemption criteria and precedent for exemptions Regulator responsibility Low water treatment permitting Previous/current regulatory violations (e.g., CWA Section 10, BMPs, Basin Plan)

	WDRs for Keys and Marina, NPDES for Keys Flood-Associated Beneficial Use and Minor Wetland Classifications
<u>Trash</u>	Capture trash from properties and boats
<u>Water Circulation</u>	Measures for water circulation Use of existing circulation plant Sprayers, fountains, and sprinklers as treatment Filters on pipes discharging into Lake
<u>Water Quality</u>	Weed problem is rooted in physical, chemical, and biological conditions of lagoons Water quality monitoring and improvement methods Effects of water quality and system on analysis
<u>Water Supply</u>	Effects of herbicides/alternatives to wells and drinking water Prioritization of drinking water over other uses Water company ability to withdraw from Lake

5.0 How Comments will be Used in the EIR/EIS

The EIR/EIS will evaluate potential adverse environmental impacts, alternatives to the proposed action (including a No Action Alternative) and potential mitigation that could avoid or reduce potentially significant impacts.

Public and agency comments are instrumental in determining the issues, range of alternatives, and environmental scope of the EIR/EIS. The comments and issues listed above will be addressed in the EIR/EIS.

Where more than one comment addressed the same substantive issue, they are considered as one. Comments not directly related to the EIR/EIS, are noted but may not require that a specific environmental issue be addressed.

6.0 Project Description & Alternatives

At the time of the NOP, the proposed project and alternatives were presented as they appear below. Based on input received during the scoping process, the Lead Agencies and stakeholder committee continue to refine the project description and develop the corresponding alternatives.

6.1 Proposed Project

Recognizing the environmental review and stakeholder processes for the CMT will guide the ultimate composition of the CMT, the following section describes a generalized test program that TKPOA proposes to demonstrate the safety, efficacy, compatibility, and utility of methods to

control three target aquatic weeds: Eurasian watermilfoil, curlyleaf pondweed, and coontail. The CMT proposes a two-year program to test the use of multiple methods independently and in combination. The CMT will also integrate measures to enhance water quality and minimize the potential for re-infestation or the formation of substantial hazardous algal blooms (HABs). It will also integrate measures to minimize infestations within the Tahoe Keys lagoons from affecting Lake Tahoe. A performance, compliance and mitigation monitoring plan will be developed to track progress towards goals, to ensure control methods are being implemented as approved and that proposed mitigations are effective.

The CMT will include the following treatment methods:

- **Group A:** Large-scale treatment methods for addressing target aquatic weeds using aquatic herbicides and/or large scale Ultraviolet (UVC) light;
- **Group B:** Localized treatment methods for addressing target aquatic weeds, including UVC light spot treatments, bottom barriers, diver-assisted suction and diver hand pulling techniques.

6.2 Project Detail

To determine an optimal suite of target aquatic weed control methods for the Tahoe Keys lagoons setting, the CMT will include tests of direct, large-scale (Group A) and localized (Group B) target aquatic weed control methods to determine the best combination of methods for initial large-scale knock-down of target aquatic weeds and subsequent management of follow-on target aquatic weed growth. The long-term methods for controlling environmental factors favorable to target aquatic weed growth and methods for controlling dispersal of target aquatic weeds may also be effective in addressing adverse environmental effects of direct treatment methods and serve as measures to mitigate those impacts identified during environmental review of the CMT.

The 18 treatment sites and three control sites reflect the range of heterogeneity in the Tahoe Keys lagoons. This heterogeneity includes differences in water depths, water clarity, nutrient inputs, water circulation, shoreline conditions (e.g. bulkheads vs rocky or irregular shores), density and size of docks, and effects of wind and weather. The control sites are a similar size as the proposed treatment sites and exhibit a similar weed distribution and abundance. Control sites would be managed using current standard harvesting operations (existing conditions). The test sites are composed of the following:

- Twelve (12) sites that use only a single Group A technique
- Six (6) sites that use a combination of Group A techniques
- Three (3) control sites

A total of 18 sites are proposed for treatment with Group A methods in year one of the CMT. Currently, two techniques have been identified for Group A methods, as such, a set of treatment sites will receive one of the Group A techniques, another set will receive the other technique, and some will receive a combination. Among these 18 sites, the total area proposed for treatment, is 28.96 acres. This represents approximately 17% of the total surface area (172 acres) of the Tahoe Keys lagoons. An additional three sites would be demarcated as control/reference sites for comparison.

Triplicate testing for each Group A technique is proposed in order to satisfy the requirement for normally accepted and statistically robust comparisons of data both within treatment site and within control sites. The replications provide data on variability among like-treatments (or controls) and documenting this variability which is the basis for detecting significant effects of the treatments.

The year following Group A treatments (year 2 of the CMT), Group B methods will be applied to the 18 test sites to spot-treat target aquatic weed growth following large-scale treatment.

One or more of the Group B techniques would be selected based on considerations including: 1) effectiveness of Group A treatment (i.e. total biovolume of weeds reduced after primary treatment), 2) types of weeds that re-emerge, 3) size of infestation, and 4) limitations and constraints to treatment type based on lagoon geography. The use of some methods (in both Group A and B) are constrained by the space within which an infestation occurs and the underlying topography/geography of the area. Rocky areas and areas with other submersed obstructions are often a poor match for follow-up maintenance actions.

In addition, long-term water circulation and sediment and water quality improvement methods will be tested over the course of the project to evaluate methods for controlling related environmental factors favorable to target aquatic weed growth. The initial suite of methods proposed include laminar-flow aeration (LFA), floating island wetlands, algae control technologies, and targeted water circulation methods. These methods are expected to require long-term implementation to shift existing environmental factors related to circulation that include eliminating water stagnation in dead-ends of the lagoons and breaking up anoxic zones in the lagoons. These methods are also expected to require long-term implementation to shift existing environmental factors related to sediment and water quality including reducing organic sediment muck layers rich in nutrients favorable to target aquatic weed growth to mineralized substrate and controlling water quality factors favorable to algal growth, occurrence of harmful aquatic algae blooms and target aquatic weed growth.

To control target aquatic weed dispersal that can lead to re-infestation of previously treated areas and areas in greater Lake Tahoe, multiple techniques will be tested to contain fragments of target aquatic weeds generated through routine use of the lagoons and, potentially, as a result of implementing direct treatment methods. The initial suite of methods proposed to be tested includes bubble curtains (with or without bottom barriers), Sea Bins, and boat backup stations.

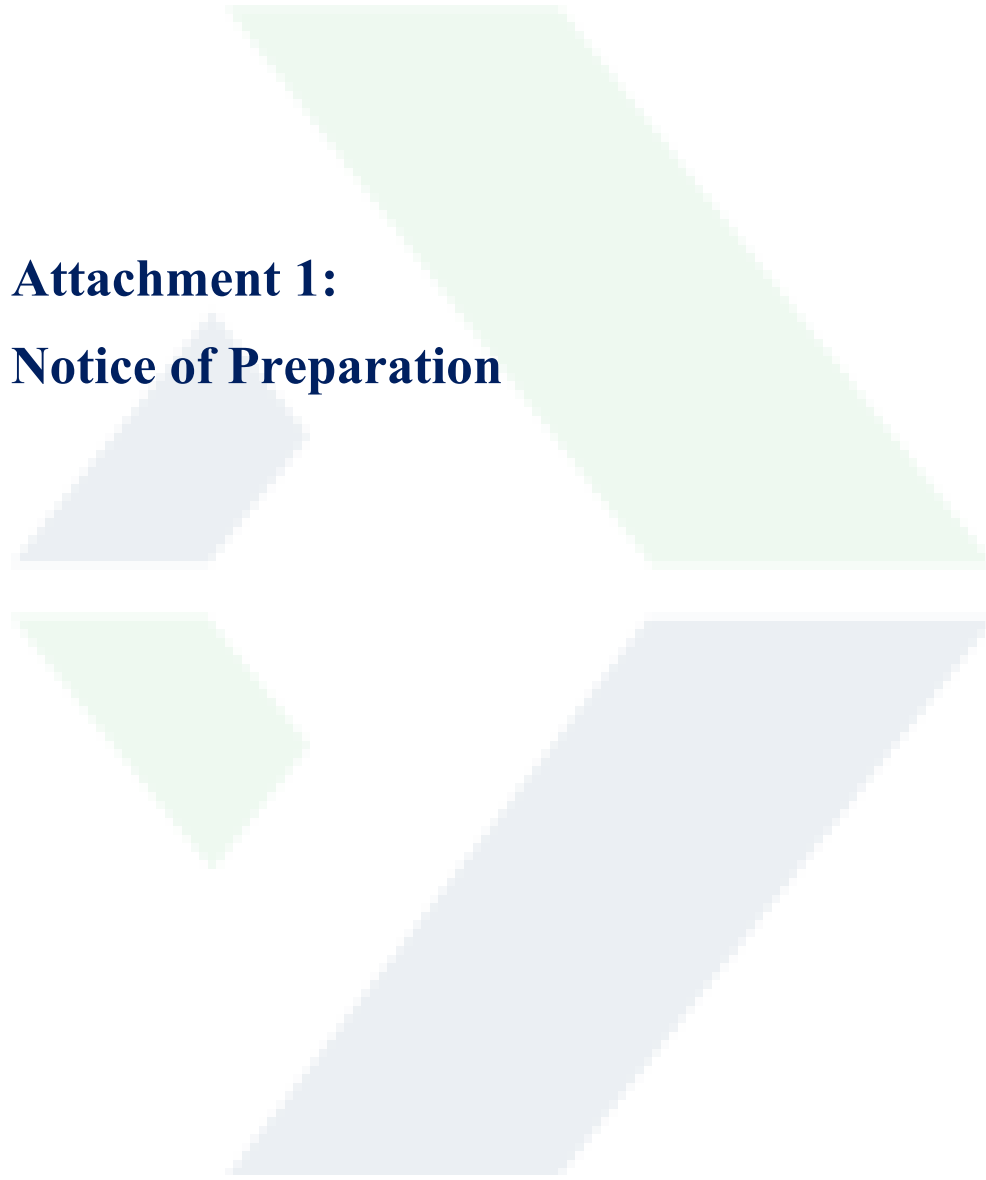
- Bubble curtains are applied across a water channel and direct aquatic weed dispersal to areas where they can be concentrated and collected. As the name implies, a bubble curtain will prevent aquatic weed fragments from passing through the curtain in the water column thus preventing infestation of areas beyond the curtain.

- Sea Bins are a trade name for a patented device that can collect and contain aquatic weed fragments. Sea Bins are typically installed in conjunction with bubble curtains and placed where the curtain concentrates the aquatic weed fragments to facilitate containment and collection of the fragments.
- Boat back-up stations also prevent dispersal of aquatic weeds that become entangled on boat engine propellers, keels and rudders. These stations require boaters to enter a taxi lane, backup the boat and then exit the station when travelling from infested to uninfested areas. A Sea Bin or manual skimming is employed to collect and contain the aquatic weed fragments freed from boats in the backup station. Lastly, methods to control target aquatic weed fragment dispersal to previously treated areas and areas outside the Tahoe Keys lagoons in greater Lake Tahoe will be tested to evaluate effectiveness in preventing re-infestations and new infestations.

7.0 Future Opportunities for Involvement & Ways to Comment

There will be multiple opportunities for public engagement through the environmental review process. Environmental analysis of the proposed alternatives will occur over the next year. The lead agencies will continue to hold Tahoe Keys Stakeholder Committee meetings and SCC meetings during this timeframe. A Draft EIS/EIR will be released for public review in 2020, with a Final EIS/EIR anticipated in spring of 2021. Public workshops will be held to gain feedback and comments on the Draft EIS/EIR and written comments will be accepted during a comment period which will be announced at the time the draft is posted for public review.

**Attachment 1:
Notice of Preparation**



**NOTICE OF PREPARATION for the
TAHOE KEYS LAGOONS AQUATIC WEED CONTROL METHODS TEST**

DATE: June 17, 2019

TO: California State Clearinghouse
California Responsible Agencies
California Trustee Agencies
El Dorado County, County Clerk
US Fish and Wildlife Service
U.S. Army Corps of Engineers
Nevada State Clearinghouse
Other Interested Agencies
Washoe Tribe of Nevada and California
United Auburn Indian Community
Interested Parties and Organizations
Affected Property Owners

FROM: Tahoe Regional Planning Agency (TRPA)
Lahontan Regional Water Quality Control Board

LEAD AGENCIES:

<p>Tahoe Regional Planning Agency P.O. Box 5310 128 Market Street Stateline, Nevada 89449</p>	<p>Lahontan Regional Water Quality Control Board 2501 Lake Tahoe Boulevard South Lake Tahoe, CA 96150</p>
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CONTACTS:

<p>Dennis Zabaglo, Aquatic Resources Program Manager Tahoe Regional Planning Agency (775) 589-5255 dzabaglo@trpa.org</p>	<p>W. Russell Norman, P.E. Water Resources Control Engineer Lahontan Regional Water Quality Control Board (530) 542-5435 russell.norman@waterboards.ca.gov</p>
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SUBJECT

TRPA and Lahontan Regional Water Quality Control Board Notice of Preparation (NOP) to prepare an Environmental Impact Report (EIR) in accordance with the California Environmental Quality Act (CEQA) and a TRPA Environmental Impact Statement (EIS) for the proposed Tahoe Keys Lagoons Aquatic Weed Control Methods Test ("Project"). The joint environmental document will analyze the potential environmental effects of the Project.

PUBLIC REVIEW AND COMMENT PERIOD

The Lead Agencies invite public comment on the scope of the project and content of the EIR/EIS in response to this NOP. Pursuant to Section 15082 of the State CEQA Guidelines, this NOP will be circulated for a minimum 45-day review period beginning on June 17, 2019 and ending on August 2, 2019. In your response, include your name, the name of your agency or organization (if applicable), and contact information.

Comments on the NOP may be received via e-mail to tahoekeysweeds@trpa.org, or via U.S. mail to Dennis Zabaglo, Aquatic Resources Program Manager, at the above TRPA mailing address by 5:00 p.m. on **August 2, 2019**. In addition, comments may be provided at the public scoping meetings, noticed below.

PUBLIC SCOPING MEETINGS

The Lead Agencies have scheduled public scoping meetings at the times and locations indicated below. The purposes of the public scoping meetings are to receive verbal and written input on the scope of the proposed project, project alternatives and environmental document. The Lead Agencies will consider all comments, written and oral, in determining the final scope of the evaluation to be included in the EIR/EIS.

Public Scoping Meetings:**Tuesday, June 25, 2019, 5:00 p.m.**

Lahontan Regional Water Quality Control Board
Annex Building
971 Silver Dollar Avenue
South Lake Tahoe, CA

Wednesday, June 26, 2019, 9:30 a.m.

Tahoe Regional Planning Agency
Governing Board Meeting
128 Market Street
Stateline, NV

Tuesday, July 16, 2019, 5:00 p.m.

North Tahoe Event Center
8318 North Lake Boulevard
Kings Beach, CA

BACKGROUND

The Project site is in the lagoons of the Tahoe Keys. The Tahoe Keys was constructed in the 1960s by excavating lagoons in the Upper Truckee River Marsh, and now includes more than 1,500 homes and townhomes, a commercial marina, and a commercial center. Eurasian watermilfoil (*Myriophyllum spicatum*) became established in the 1980s and 1990s, and curlyleaf pondweed (*Potamoetion crispus* L.) was discovered in Lake Tahoe in 2003. Surveys document aquatic weeds growing rapidly to occupy up to 90 percent of the lagoon areas in recent years. Seasonal harvesting has been the main weed control practice since the mid-1980s, removing more than 10,000 cubic yards of biomass annually. Aquatic weeds have the potential to impact all the marinas around Lake Tahoe, and their continued spread constitutes the most immediate threat to the lake, according to the University of Nevada's 2015 Implementation Plan for the Control of Aquatic Invasive Species within Lake Tahoe. The goal of the project is to test control techniques of the populations of aquatic weeds in the designated test areas and reduce the spread of these plants to other parts of Lake Tahoe.

PROJECT DESCRIPTION AND LOCATION

See attachment

POTENTIAL ENVIRONMENTAL IMPACTS

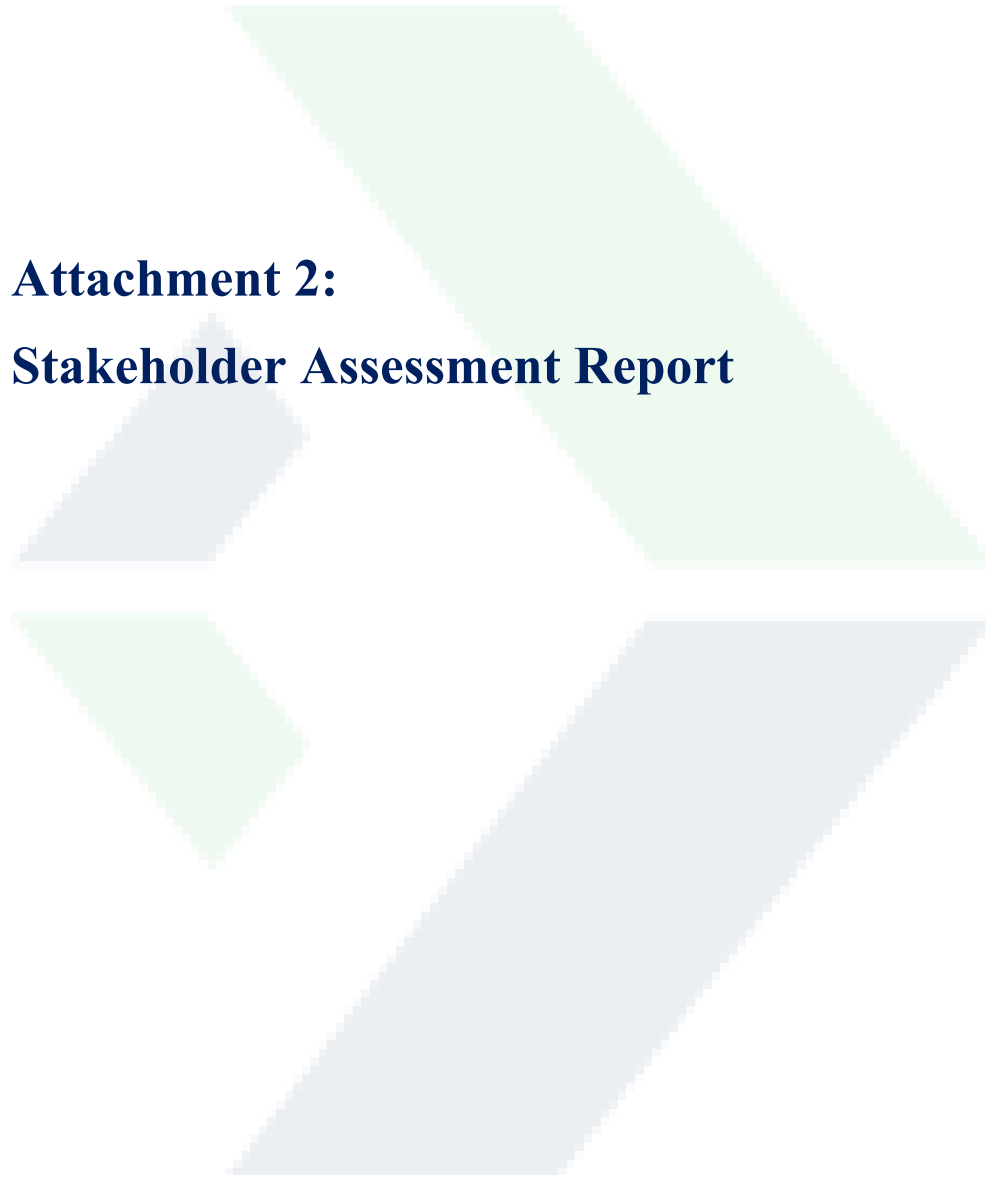
At a minimum, each of the following environmental issue areas below will be addressed in the EIS/EIR.

Hydrology and Water Quality
Biological Resources
Human Health
Hazards and Hazardous Materials
Recreation

Geology and Soils
Land Use and Planning
Public Services
Greenhouse Gas Emissions
Global Climate Change

The NOP and the project file, including the Initial Study/Initial Environmental Checklist prepared under CEQA and TRPA regulations, are available for review between the hours of 9:00 a.m. and 4:00 p.m., Monday through Friday (except Tuesday), at the TRPA office, 128 Market Street, Stateline, NV. Project information may also be found at www.tahoekeysweeds.org. The project file is also available Monday through Friday, between the hours of 8:00 a.m. and 5:00 p.m. at the Lahontan Regional Water Quality Control Board office, 2501 Lake Tahoe Boulevard, South Lake Tahoe, CA.

Attachment 2:
Stakeholder Assessment Report



Tahoe Keys Aquatic Invasive Species Integrated Management Plan Stakeholder Assessment Report

Prepared by Zephyr Collaboration

At the Request of Tahoe Regional Planning Agency

October, 2018

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Introduction

This document is a summary of interests, themes and questions surrounding Aquatic Invasive Species (AIS) treatment and water quality issues within the Tahoe Keys. This summary is derived from 29 interviews with 44 stakeholders between August and October 2018.

It includes:

- A summary of the range of stakeholders' concerns, interests and perspectives regarding AIS, water quality and the future of the Tahoe Keys and Lake Tahoe
- Stakeholder perspectives on a range of alternatives for weed control in an environmental analysis (EIR/EIS)
- Recommendations for a Stakeholder Committee process and timeline
- Recommendations for coordination among stakeholders, the public, technical experts and the EIR/EIS team
- Recommendations for public outreach and engagement

The information in this document summarizes the perspectives of the stakeholders interviewed, and is intended to set the stage for a constructive Stakeholder Committee (SC) process and coordination with the Environmental Impact Review / Environmental Impact Study (EIR/EIS) team, once selected. This document is a draft, intended for review and represents the facilitators' best attempts to summarize the range, breadth and nature of interests.

Executive Summary

Aquatic invasive species infestations in the Lake Tahoe Keys (Keys), particularly of the plants Eurasian watermilfoil and curlyleaf pondweed, have been expanding since the early 1990s and now have reached a level of urgency that threatens native species, and contributes to the diminished water quality of Lake Tahoe. Low water quality has led to recent cyanobacteria blooms which pose a health threat and limits recreation access. Longstanding efforts to manage the problem, such as harvesting, contribute to the growth of AIS in the Keys, increase risk of migration to other areas of Lake Tahoe and its tributaries, and are not economically viable with ever-increasing costs.

Lake-wide Problem

All interviewed are keenly interested in finding long term, durable solutions to AIS in the Lake Tahoe Keys and Marina. Interviewees describe AIS in the Keys as a lake-wide problem, with the Keys and Marina as priority locations for management controls. Respondents differ widely on who should bear financial responsibility for solutions. After almost thirty years of combating AIS in the Keys, one measure of success for this collaborative stakeholder process and associated EIR/EIS may be reaching a point where key partners can consider how to fund a set of agreed upon long-term solutions.

AIS and Water Quality

In addition to being considered a lake-wide problem, virtually all stated that they hope the purpose, alternatives and criteria of this EIR/EIS can be framed more broadly than just AIS mitigation, and instead can include criteria for water quality and ecological health in the Keys and the lake, with a long-term perspective.

Long Term Solutions Desired

There is virtual unanimity that herbicide treatment should be the last resort for AIS mitigation in Lake Tahoe, a unique and treasured environment, and one of few Tier 3 “Outstanding National Resource Waters” under the Clean Water Act. However, there are a wide range of perspectives as to whether we have fully considered or exhausted other treatment methods, how much we know about herbicide treatment and the implications of its use, and how to combine the range of treatment methods for effective, long term mitigation.

Strong and Varied Views on Potential Use of Herbicide

Use of EPA approved aquatic herbicides as a potential treatment method is perceived as one of the most divisive and controversial choices for Lake Tahoe. After several years of stakeholder and independent technical review of herbicide and other treatments, some are convinced herbicides offer the only method to effectively treat the AIS crisis in the Keys. Others may be convinced that a limited application of herbicides may be necessary to change the trajectory of AIS in the Keys, but are deeply concerned about paving the way for herbicide use in perpetuity. Some believe herbicide, if used, would be the next giant, regrettable mistake for the ecology, economy and communities of Lake Tahoe.

Adaptive Management Process

While there is expected to be additional information coming in late 2018 and in the summer of 2019 regarding the efficacy of cutting-edge treatment methods such as ultraviolet radiation and laminar flow aeration, there will nonetheless remain throughout the timeframe of this collaborative stakeholder process and associated EIR/EIS a dearth of information in advance of treatment about how to package treatment methods together, how, where and how often to treat different areas of the Keys, and how to prevent and mitigate secondary or unintended impacts from all treatment methods, including the potential use of herbicide. For these reasons, a preferred alternative for weed control that enjoys broad support from the public and key implementation partners will likely need to include a phased, adaptive process for permitting, treatment and monitoring, and environmental documentation.

Comprehensive Consideration and Study of Alternatives for Treatment Options

For the development of a preferred approach to weed control to be credible and defensible, the stakeholder process and associated EIR/EIS should analyze a range of options that address the key interests and concerns of stakeholders. A multi-stakeholder Stakeholder Committee (SC) should be convened to consider the wide range of interests, develop feasible options for consideration, explore focused technical and procedural questions, and participate in the development of recommended criteria and alternatives for the EIR/EIS.

Independent Technical Experts

Additional and ongoing independent expertise will likely be useful in the near term for commenting on an SC joint fact-finding process, and perhaps to help develop management targets and metrics which are adaptive. New subject matter experts may be needed to supplement the comments of local and regional experts who are seen by some as biased and/or to have fixed opinions.

EIR/EIS Team

In order that the development of the EIR/EIS document be an efficient and timely process it is important to recruit a technical team that can build on previous work to develop a thorough, rigorous and accessible environmental document. Due to the precedent and passion surrounding Lake Tahoe, the technical team should have, or be able to recruit, capacity for developing highly effectively multimedia public education materials including videos, digital and geospatial media.

Stakeholder Committee

To meet the desired timelines for permitting and treatment, it will be important that the Stakeholder Committee commit to an ambitious work plan through the end of 2019. Wherever possible this committee should strive for consensus recommendations. As a tool for expediency, the SC may agree to milestones whereby they define agreement, describe disagreement and identify key remaining questions, and then proceed to the next phase of deliberations. These milestones may include developing a joint fact-finding report, providing suggestions on how criteria are considered and integrated, commenting on a range of feasible treatment approaches, and recommending a preferred option.

Broad Support

There are several indications that suggest it is possible to develop a preferred approach to weed control in the Keys and Marina that enjoys broad support among the public as well as the boards and staff of key implementation partners. All interviewed are deeply committed to finding durable solutions for AIS and water quality in the Keys. The urgency of the problem, coupled with the uniqueness of Lake Tahoe, means that it is likely that resources can be brought to bear to develop, implement and monitor context-specific, cutting edge solutions.

Board Engagement

In order for a preferred alternative to be selected and implemented, it is critical that the boards of all key implementation partners be engaged early and throughout the EIR/EIS development, permitting, and public engagement processes. This is especially important for the decision makers, regulatory authorities, and for the EIR/EIS lead agencies - TRPA and Lahontan Regional Water Quality Control Board (LRWQCB).

Timeline and Milestones

Due to an increasing sense of urgency around containing AIS, feasible and effective management controls in the Keys and Marina are increasingly important to containing the spread of invasive weeds around the Lake. For this reason, a rigorous schedule of Stakeholder Committee meetings is recommended, with monthly meetings to undertake the work of joint fact finding and development of recommendations.

Of consideration is a limited window of opportunity during late spring that is appropriate for testing and application of herbicides, and an IMP that includes their use needs to be approved and permitted by early spring of the year applications are slated to begin. To give lead regulatory agencies enough time for staff and board review and approval of the associated EIR/EIS it is desirable to have it submitted the previous fall.

A more specific timeline of activities and milestones will be developed during the initial meetings of the SC, in coordination with lead agencies and the EIR/EIS team.

Background

AIS Management is a Priority in the Lake Tahoe Basin

Combatting and controlling AIS in Lake Tahoe is one of the highest priorities identified for the basin's Environmental Improvement Program (EIP). Recognizing the threat that AIS poses to the quality of water in Lake Tahoe, the Basin's multi-sector partnership formed the Lake Tahoe Aquatic Invasive Species Coordination Committee (LTAISCC) to develop and oversee a comprehensive Lake Tahoe Region AIS program with the goal of controlling AIS. The LTAISCC and other stakeholders helped advise on the 2009 Lake Tahoe Region AIS Management Plan, which was updated into the 2014 [Lake Tahoe Region Aquatic Invasive Species Management Plan, California-Nevada](#), and both plans were approved by the national Aquatic Nuisance Species Task Force (ANSTF). In 2015, scientists at the University of Nevada, Reno developed an [Implementation Plan for the Control of Aquatic Invasive Species within Lake Tahoe](#) overseen by the LTAISCC. This implementation plan ranks the Tahoe Keys and Tahoe Keys Marina as the number one and two priorities for control of AIS, and recommends an integrated program for control of AIS and removal of unwanted biomass. Specifically, the authors stated:

"due to the notable abundance of invasive and nuisance native aquatic plants in [the Tahoe Keys] system, an integrated program for removal which not only includes the use of non-chemical removal efforts such as bottom barriers and diver assisted suction removal, but other actions such as the reduction of nutrient loads, plant fragment collection, and herbicide application is recommended to reduce unwanted plant biomass" (p. 39).

AIS Management Work is Ongoing in the Tahoe Keys

The Tahoe Keys began working toward mitigating aquatic plants in the 1970s, increasing control efforts in the 1990s and 2000s while consulting and collaborating with various organizations and agencies also working on the problem of AIS in the Lake Tahoe Basin.

In 2015, the Tahoe Keys Property Owners Association (TKPOA) launched a two-year stakeholder planning process that included input from an expert panel to develop a plan for testing various control methods (including herbicides) to evaluate the efficacy and environmental effects of proposed control methods prior to developing a long-term Integrated Management Plan (IMP). In December 2017, an application for permits was submitted to TRPA and LRWQCB to implement a test in the Keys that would have involved a one-time application of three herbicides (to treat three targeted species, Eurasian watermilfoil, curlyleaf pondweed, and coontail) followed by two years of non-herbicide control methods. The test was to be within limited areas of the West Lagoon of the Tahoe Keys to test and evaluate the safety, efficacy, compatibility, and utility of the three aquatic herbicide products, in combination with subsequent non-herbicide treatment methods, as the basis for an integrated methods strategy for bringing aquatic invasive plants under control. This triggered the need for an EIR/EIS as regulatory agencies concluded that an EIS/EIR would be necessary to fully analyze the effects of the implementation of the IMP and would be a more effective path forward.

Summary of Interests Related to AIS, Water Quality and Lake Tahoe

AIS in the Tahoe Keys and Marina are seen by all interviewed as a primary and urgent threat to water quality throughout Lake Tahoe. All are keenly interested in finding implementable and durable solutions. Themes below are those which were commonly referenced in interviews.

- AIS in the Keys is a lake-wide problem. TRPA asserts that "strategies need to be developed that recognize that the Tahoe Keys AIS issue is a shared lake-wide problem and not solely the problem of the TKPOA" (TRPA, 2018, p.3). All stakeholders interviewed agree. If AIS cannot be controlled in the Tahoe Keys and Marina, it will continue to be a growing issue, with impacts to the water quality and ecology of the entire Lake.
- The Tahoe Keys and AIS is a water quality problem. In terms of drinking water certification and standards, status as Tier 3 waters under the Clean Water Act, and the goals for clearer lake waters, the criteria and alternatives should all be framed to include the larger context of overall water quality.
- Stakeholders desire to act decisively in the near-term, but seek long-term solutions. All acknowledge the urgency of AIS infestation in the Keys and that we may be near a threshold, that if crossed, would result in rapid AIS expansion in other parts of the Lake and its tributaries. Therefore, all seek near-term action. However, virtually every person interviewed came with warnings of selecting a quick fix over long term, durable and sustainable solutions.
- This EIR/EIS sets the stage for future weed treatment protocols lake-wide. All understand that the scope of this EIR/EIS must focus on management actions within the Tahoe Keys and Marina in order to complete a robust and actionable environmental document. In addition, most suggest that the approaches decided upon and permitted during this process will likely set precedent for weed treatment protocols lake-wide.
- Public safety and health are now at risk in the Keys. Weed proliferations have created conditions conducive to algal blooms. The resulting water quality conditions have posed health threats to residents, visitors and pets who come into contact with water in certain areas of the Keys.
- If not addressed, AIS in the Keys may accelerate other AIS infestations. Not only are these species noxious and damaging unto themselves, the propagation and die-off of these species affect water chemistry, turbidity, temperature and nutrient loading, which may increase risk of additional aquatic invasive species (animal and plant) establishing themselves in the Keys.
- All solutions impact real property values and recreation access. There are a variety of levels of sympathy for Tahoe Keys property owners and perceptions of their role and responsibility for the problem and any solutions. No matter how one perceives culpability for the existence of the Keys and the development of AIS problems, it is clear that TKPOA and their members are most immediate to the problems resulting from AIS, and will necessarily have to be at the center of any durable solution.

Topics for Joint Fact Finding

Since there have been several iterations of technical, stakeholder and agency review of management plans in the last decade, as much as possible, the Stakeholder Committee should build on rather than replicate past work and focus on remaining questions that are important for developing, implementing and monitoring an Integrated Management Plan.

However, this collaborative stakeholder approach is an opportunity to restart discussions with a range of constituencies, and as such it will be important to review key technical and procedural information. While there are a suite of unanswered technical and policy questions, the following are the questions most frequently referenced in interviews. It is upon these questions that a joint fact-finding process for the SC should focus.

- How effective will herbicides be, and what are the potential impacts?
 - What are the standards for anti-degradation of Tier 3 waters, and what does that mean for the potential for herbicide use?
 - Will the use of herbicide incentivize or even necessitate future use?
 - Are there physical barriers or other methods which mitigate the risk of errors, accidents or incidents during application and treatment?

- How much can be mitigated using a combination of management tools and strategies other than herbicide?
 - What is known about emerging technologies such as UV and LFA and their application in Tahoe? How much more will we know with preliminary results from pilot projects?
 - What are the costs/benefits and efficacy of combining multiple treatment methods?

- How can the EIR/EIS alternatives, and any subsequent permitting, be structured to allow for sequential testing, learning, permitting and monitoring?
 - For what timeframe should alternatives be constructed and how does this match with the duration of permits?
 - How to construct and analyze adaptive alternatives? How to permit adaptive management strategies?

Perspectives on Analyzing a Range of Alternatives

In order to have a credible study with thorough analysis, and to develop a preferred alternative which can enjoy broad support, the range of alternatives should be developed with the following considerations in mind:

- Define a geographic scope of treatment options that include the Tahoe Keys Marina. Any analysis or alternatives that do not consider the Marina would result in an incomplete EIR/EIS, potentially wasting funds and time.
- Develop treatment options and approaches which support adaptive learning and management. Given the uncertainty around the efficacy and potential side effects of using herbicide in the Tahoe Keys, as well as the limited information available about emerging technologies, and how to implement management tools together, AIS management in the Keys is by definition experimental. Therefore, stakeholders expressed a strong desire that alternatives be constructed to foster adaptive management and learning, with specific targets and metrics to evaluate any treatments.
- Explore methods to physically separate Keys and lake water during treatment and/or seasonally. Whether with temporary or permanent infrastructure, many want physical barriers to stop water flow between the Keys and the lake to be included in alternatives analysis, or explain why this element is not feasible or suitable for analysis.
- Examine partial restoration of the Keys. No interviewee suggested it is within the realm of feasibility to restore the Tahoe Keys to pre-development conditions. However, many are interested in an examination of whether partial restoration of parts of the Keys to wetlands can be a part of AIS and water quality solutions, while also serving recreation, wildlife and property value goals.
- Define criteria which have a long-term (50+ year) perspective. Few believe that these AIS species can be completely eradicated from the Keys. Even if possible, the conditions of the Keys relative to circulation, temperature, and nutrient loading will require ongoing management for water quality and to prevent/mitigate AIS in perpetuity. Therefore, even while the alternatives analyzed may describe treatment plans that take place in the near term, criteria to evaluate alternatives should maintain a long-term perspective of addressing mutually desired outcomes.
- Develop a range of treatment options that incorporate, but do not duplicate, past and existing plans. The TKPOA has spent extensive time and resources developing multiple IMPs and permit applications at the request of regulatory agencies, as well engaging the public and seeking independent expert review of previously proposed plans.

Recommendations for Coordination with an EIR/EIS Technical Team

The following are recommendations for reviewing and selecting a technical team to assist with the development, analysis, framing and production of a high quality environmental document.

- Select a team that can incorporate past work and move quickly. If the goal is to implement new treatment regimens as soon as possible, it will be necessary to complete associated studies and analysis in 2019 in order to draft permits and receive and respond to public comments by 2020. Therefore, the technical team will need to be able to construct alternatives and conduct analysis efficiently.
- Ensure that the technical team has public media and outreach capacities. Particularly, the following skills, experiences and resources will be helpful.
 - Generate multimedia materials including video, digital and geospatial information.
 - Manage logistics for public events such as meetings and open houses.
 - Develop and distribute notices to relevant media outlets and organizations. Specific experience working with home owners' associations would be helpful.
 - Collect, collate and develop responses to submitted comments during official comment periods.
 - Capacity to effectively address highly technical and emotionally charged public policy issues.
- Find a team that has experience developing adaptive alternatives in an EIR/EIS. This will be a pioneering effort to develop alternatives which are suitable for adaptive management, and which can meet the needs of permitting from lead agencies. Experience with constructing and analyzing adaptive alternatives may be the most desirable qualification for a technical EIR team.

Recommendations for Convening a Stakeholder Committee

Based on interviews and experience with similar resource management questions, it does appear possible and desirable to convene a multi-stakeholder Stakeholder Committee to help frame planning priorities and treatment options, and to participate in a collaborative process in regards to the development, analysis and recommendation of alternatives. In order to serve the goals of inclusion, expediency and informed decision making, we recommend the Stakeholder Committee include the following elements.

- Lead agencies are active members of the Stakeholder Committee, but maintain decision making authority on the preferred alternative. The lead agencies, TRPA and LRWQCB, are the conveners of, participants in, and audience for the Stakeholder Committee. Agencies' staffs will be important information resources for SC members, taking into consideration interests, recommendations and key questions which will inform eventual selection of a preferred alternative.
- Periodically engage key partners and interested parties. The SC will have an ambitious and demanding work schedule and work load. There are likely stakeholders that would like regular updates and opportunities to inform SC work but who are not able or suitable for regular SC participation. These can include the resource agencies' staffs of California and Nevada, homeowners' and shoreline associations, and drinking water purveyors and marina operators who are not on the SC. It will also be important to coordinate with existing committees focused on AIS, such as the AISCC and Tahoe Interagency Executive Steering Committee (TIE). Approximately quarterly, the SC can engage a broader circle of stakeholders for updates, input and comment. For this, the establishment of a Stakeholder Consultation Circle (SCC) is recommended.
- Encourage participation by the Tahoe Keys Marina. Numerous attempts to engage the Keys Marina in the stakeholder assessment were unsuccessful. Many stakeholders note that solutions that do not include the Keys Marina will be incomplete. All desire to find a way to engage the Marina in a collaborative process for developing and implementing an IMP.
- Develop a joint fact-finding report focused on key important questions. Compiling a report that documents existing technical information and outstanding questions to be reviewed and commented on by independent technical experts is recommended, both to inform the SC process and as a summary report of technical data for peer review. Except for some information about the use of UV and LFA technology, there has not been, nor will there be, a substantial tranche of new data regarding treatment methods since the last round of public engagement and technical review of the proponent's permit application. Joint fact-finding should focus on technical questions related to the effects and side effects of treatment methods, as well as procedural questions about analyzing adaptive alternatives and associated permitting. One of the first tasks of the Committee will be to agree on a range of joint fact-finding questions. It is advisable to

consult with the Stakeholder Consultation Circle on the range of JFF questions in order to ensure key questions aren't omitted.

- Utilize independent technical expertise to review joint fact-finding report. The SC can develop a joint fact-finding report which identifies areas of agreement, the nature of disagreement and remaining questions for future study. This report should be developed by the SC based on existing data and information, and agreed upon independent technical experts can then review and comment on this joint fact-finding report. Rather than convening a panel of advisors that meets regularly, a broad range of agreed upon experts can comment on the joint fact-finding report(s) as they are released. Any comments or findings from technical experts will serve to inform Stakeholder Committee work, and will provide additional information for consideration by the EIR team in their analysis of alternatives.
- Utilize existing resources for independent technical expertise, and reach to new experts. Because some local and regional experts are seen by some as either biased or to have fixed opinions, the SC members should agree early on a process to select independent technical experts with whom they can consult during the joint fact-finding process.
- Considerations for identifying SC members.
 - Small and nimble. Given the workload and timeline, the SC needs to be able to coordinate efficiently and effectively.
 - Representative. SC members should represent a clear constituency of the range of stakeholder perspectives.
 - Time available. Members need to be able to commit to a rigorous schedule of meetings and data review.
- Strive for consensus, prioritize informed decision making. Consensus recommendations will be sought wherever possible. When there is not consensus, it will be important to note the levels and nature of agreement and disagreement, along with any questions for future inquiry or monitoring. In some instances, a lack of full consensus with a full record of interests and reasons may better inform agency decisions than consensus agreements built on compromise, especially if there are strong disagreements about technical information or foundational assumptions.

Recommendations for Public Engagement

Citizens and stakeholders in Lake Tahoe, California, Nevada, across the country and around the world are interested in the management practices and fate of Lake Tahoe. Therefore, a robust public outreach and engagement plan is critical.

- Utilize Summer of 2019 for public and board education and engagement. Coordinate with key stakeholders to assist with outreach recommendations, efforts and materials.
- Meet locals where they are. Hold public meetings in North and South Lake Tahoe, and utilize local media outlets such as KRLT, Tahoe Mountain News, Tahoe Weekly, Lake Tahoe Daily Tribune, and Moonshine Inc. Work directly with HOAs to outreach to members.
- Meet non-locals where they are. Offer webinars during important public engagement phases. Develop accessible, creative multimedia portals and materials that curious citizens can easily locate for quality information.
- Communicate regularly with friends of the Stakeholder Committee. Ensure all stakeholders are updated on the SC process and emergent information, as well as have the opportunity to provide feedback. A list of suggested stakeholders is provided in Appendix C.
- Develop a focused strategy for board engagement. Engage boards of SC members and other stakeholders early and often in the process to ensure they are informed and updated along the way.
- Create a project website. Coordinate with lead agencies and stakeholders to link the website to pertinent AIS and project information, continuously updating the website with content for public education.

Appendix A: Stakeholder Committee Membership Recommendations

Lead Agencies

- Lahontan Regional Water Quality Control Board
- Tahoe Regional Planning Agency

Recommended Core Stakeholder Committee (meet approximately monthly)

- Lahontan Regional Water Quality Control Board
- League to Save Lake Tahoe
- Tahoe Keys Property Owners Association
- Tahoe Keys Marina
- Tahoe Regional Planning Agency
- Tahoe Resource Conservation District
- Tahoe Water Suppliers Association

Recommended Stakeholder Consultation Circle (meet approximately quarterly)

- California Attorney General's Office
- California Department of Fish & Wildlife
- California State Lands Commission
- California Tahoe Conservancy
- City of South Lake Tahoe
- Key Concerned Citizens
- Lake Tahoe AIS Coordinating Committee
- Lake Tahoe Marina Association
- Lakeside Park Association
- Local Native American Tribes
- Nevada Department of Environmental Protection
- Nevada Tahoe Conservation District
- North Lake Tahoe Resort Association
- Sierra Club
- Southshore Tahoe Chamber
- Tahoe Keys Beach and Harbor Association
- Tahoe Lakefront Homeowners Association
- Tahoe Fund
- TIE Steering Committee
- U.S. Fish & Wildlife

Appendix B: List of Stakeholder Interviewees

California Department of Fish & Wildlife, Gabriele Quillman, Scientific Aid
 California Department of Fish & Wildlife, Patrick Moezsinger, Senior Environmental Scientist
 California State Lands Commission, Jason Ramos, Senior Environmental Scientist
 California Tahoe Conservancy, Patrick Wright, Executive Director
 City of South Lake Tahoe, Jason Burke, Stormwater Program Coordinator
 Elise Fett, concerned citizen
 Harold Singer, former Executive Officer, Lahontan Regional Water Quality Control Board
 LRWQCB, Bruce Warden, Environmental Scientist
 LRWQCB, Doug Smith, Assistant Executive Officer and Ombudsman
 LRWQCB, Russel Norman, Water Resources Control Engineer
 Lake Tahoe Marina Association, Jim Phaelan, General Manager
 Lakeside Park Association, Andy Englehardt, Board President
 Lakeside Park Association, Bob Loding, Water Manager
 League to Save Lake Tahoe, Darcie Goodman, Chief Executive Officer
 League to Save Lake Tahoe, Jesse Patterson, Chief Strategy Officer
 Nevada Department of Environmental Protection, Jennifer Carr, Deputy Director
 Nevada Division of State Lands, Elizabeth Kingsland, Tahoe Program Manager
 North Lake Tahoe Resort Association, Cindy Gustafson, CEO
 Sierra Club, Jennifer Quashnick, Consultant
 UC Davis, Dr. Geoff Schladow, Professor of Civil and Environmental Engineering
 Tahoe Fund, Amy Berry, CEO
 Tahoe Keys Beach and Harbor Association, Betsy Sommerfelt, Manager
 Tahoe Lakefront Homeowners Association, Jan Brisco, Executive Director
 Tahoe Resource Conservation District, Mollie Hurt, Director of Programs
 Tahoe Resource Conservation District, Nicole Cartwright, Executive Director
 Tahoe Water Suppliers Association, Madonna Dunbar, Executive Director
 TKPOA, Andy Kopania, Chair of Water Quality Committee
 TKPOA, Bonnie Halleran, Board President
 TKPOA Greg Hoover, Water Quality Manager
 TKPOA, Jim Jones, Water Quality Committee
 TKPOA, Jo Ann Wilson, Administrative Assistant
 TKPOA, Kirk Wooldridge, General Manager
 TRPA, Dennis Zabaglo, Aquatic Resources Program Manager
 TRPA, Joanne Marchetta, Executive Director
 TRPA, Julie Regan, External Affairs Chief
 TRPA, Kim Caringer, Environmental Improvement Division Manager
 TRPA, Paul Nielsen, Environmental and Land Use Consultant
 University of Nevada Reno, Dr. Sudeep Chandra, Associate Professor of Biology
 U.S. Army Corps of Engineers, Laura, Whitney, Program Manager
 U.S. EPA, Jacques Landy, Lake Tahoe Basin Coordinator
 U.S. Fish & Wildlife, Corene Jones, Fish Biologist
 U.S. Fish & Wildlife, Roger Peka, Fish Biologist
 U.S. Fish & Wildlife, Stephanie Byers, Senior Fishery Biologist
 U.S. Forest Service, Jeff Marsolais, Lake Tahoe Basin Management Unit Forest Supervisor

Appendix C: References

TRPA (Tahoe Regional Planning Agency). 2018. Tahoe Keys IWMP Facilitation RFP.

TRPA (Tahoe Regional Planning Agency). 2014. Lake Tahoe Region Aquatic Invasive Species Management Plan California-Nevada.

Wittmann, M.E. and Chandra, S. 2015. Implementation Plan for the Control of Aquatic Invasive Species within Lake Tahoe. Lake Tahoe AIS Coordination Committee.

APPLICATION FOR THE TAHOE KEYS LAGOONS AQUATIC WEED CONTROL METHODS TEST INCLUDING AN EXEMPTION TO THE BASIN PLAN PROHIBITION ON THE USE OF PESTICIDES

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1. Project Information

1.1. Introduction to the Application

This is a joint application submitted by the Tahoe Keys Property Owners Association (TKPOA) to the Lahontan Regional Water Quality Control Board (Lahontan Water Board) and the Tahoe Regional Planning Agency (TRPA) to implement the Tahoe Keys Lagoons Aquatic Weeds Control Methods Test (CMT). The CMT will test various control methods of invasive aquatic weeds and undesired native weeds (target aquatic weeds) in the Tahoe Keys lagoons. The CMT was designed using best available science and Integrated Pest Management principles with significant input from the Aquatic Invasive Species (AIS) Stakeholder Committee¹. The Stakeholder Committee was created to ensure a collaborative and transparent environmental review process, and to ensure that a broad range of options is considered in

¹ The Stakeholder Committee was convened by TRPA, the Lahontan Water Board and includes representatives from the TRPA, the Lahontan Water Board, the Tahoe Resource Conservation District (TRCD), the League to Save Lake Tahoe, the Tahoe Water Suppliers Association (TWSA), and the Tahoe Keys Property Owners Association (TKPOA) as the project applicant. The Stakeholder Committee is facilitated by Zephyr Collaboration, LLC.

the development of the CMT. The CMT is designed to learn more about the efficacy and potential impacts of new AIS control technologies and the potential use of herbicides in the Tahoe Keys lagoons.

TKPOA is proposing the CMT to test control methods of three target aquatic weeds: Eurasian watermilfoil, curly-leaf pondweed, and coontail. The target aquatic weeds have adversely affected the water quality and ecosystem of the Tahoe Keys lagoons, created optimum habitat for non-native fisheries, and adversely impacted beneficial uses of the waters of the Tahoe Keys lagoons which are: municipal and domestic water supply, agricultural water supply, groundwater recharge, freshwater replenishment, water-contact recreation, non-water contact recreation, navigation, commercial and sport fishing, cold freshwater habitat, wildlife habitat, preservation of biological habitats of special significance, migration of aquatic organisms, spawning, reproduction and development of fish and wildlife, preservation of rare and endangered species, water quality enhancement and flood peak attenuation/flood water storage. A transparent and efficient regulatory and public review process is necessary so that the efficacy of a range of integrated control methods can be tested for effectiveness in preventing irreversible infestations in Lake Tahoe's ecosystem, and so that adverse economic and social impacts related to such infestations can be avoided.

TKPOA is seeking an exemption to the Water Quality Control Plan for the Lahontan Region (Basin Plan) prohibition of the use of aquatic pesticides and approval from TRPA to test aquatic herbicides as a potential AIS control tool. This application was prepared to address the Basin Plan requirements for an exemption to the prohibition on the discharge of pesticides² to surface or ground waters, and the TRPA Code of Ordinances. The specific requirements that were followed can be found in the Basin Plan, Chapter 4.1, Waste Discharge Prohibitions – Exemption Criteria for Controlling AIS and Other Harmful Species, for Projects That Are Neither Emergencies Nor Time Sensitive.

TKPOA initially applied to TRPA and the Lahontan Water Board for a similar test that was reviewed under a TRPA Initial Environmental Checklist and an Initial Study under the California Environmental Quality Act (CEQA). That review identified "Data Insufficiencies" and "Potentially Significant Impacts". As such, TRPA determined that the proposed project may have a significant effect on the environment and an Environmental Impact Statement shall be prepared (April 2018). That decision initiated this new jointly developed application for the CMT.

1.2. Location and Site Description

The area addressed by this application is the Tahoe Keys lagoons on the south edge of Lake Tahoe. The lagoons are part of the Tahoe Keys, a multi-use development situated on approximately 372 acres of land and 172 acres of waterways (known as the lagoons). The Tahoe Keys development was constructed in the 1960s on the Upper Truckee River Marsh by excavating the lagoons and capping the soil with sand to form stable building sites. The development includes 1,529 homes and townhomes, a commercial marina, and a commercial center. Three primary man-made water features exist in the Tahoe Keys: 1) the Main Lagoon

²As defined in Chapter 4, Section 4.1, Waste Discharge Prohibitions, of the Water Quality Control Plan for the Lahontan Region (Basin Plan), "Aquatic Pesticides" are pesticides registered by the California Department of Pesticide Regulation (DPR) and formulated for use in water to control aquatic animal or plant pests. An aquatic pesticide is any substance (including biological agents) applied in, on, or over the waters of the State or in such a way as to enter those waters for the purpose of inhibiting the growth or controlling the existence of any plant or animal in those waters.

(also known as the West Lagoon), 2) the Marina Lagoon (also known as the East Lagoon), and 3) the Lake Tallac Lagoon (Figure 1).

The lagoons are connected to Lake Tahoe via two narrow, direct channels: The West Channel which connects the Main Lagoon; and the East Channel, which connects the Marina Lagoon. Boat access to Lake Tahoe from the lagoons is restricted to these two channels. The Lake Tallac Lagoon flows into Pope Marsh, to the west of the Tahoe Keys, as shown on Figure 1.

1.3 Background

1.3.1 History and Current Status of Aquatic Weeds in the Lagoons

In the 1980s and 1990s, the invasive weed Eurasian watermilfoil (*Myriophyllum spicatum*) became established in the Tahoe Keys lagoons and other areas around Lake Tahoe. As of 2012, 18 infestation sites were known with the possibility of more that were not surveyed (Wittmann and Chandra 2015). Then, in 2003, curlyleaf pondweed (*Potamogeton crispus*) was first discovered in Lake Tahoe. Currently, curlyleaf pondweed is limited to the south and southeastern shores of Lake Tahoe with infestations observed from Taylor Creek to Lakeside Marina (Wittmann and Chandra 2015, LTSLT 2016). Newer infestations were also recently found as far north as Elk Point Marina (Anderson 2016, pers. communication) on the Nevada side of Lake Tahoe. Coontail (*Ceratophyllum demersum*) is classified as a native plant to California, but in recent years has grown in abundance in the Lake Tahoe region, specifically in the lagoons. Coontail has heavily infested the deeper channels of all the lagoons, most abundantly in the Marina Lagoon and Lake Tallac Lagoon, where it comprises over 70% percent of the aquatic plant matter (TKPOA 2016a).

The two invasive, non-native aquatic weed populations in the Tahoe Keys lagoons have been growing rapidly. Recent aquatic plant surveys (2014, 2015, 2016, 2017) show the extent and density of excessive plant growth in the lagoons (Figures 2 and 3). In recent years, 85% to 90% of the available wetted surface in the lagoons has been infested with target aquatic weeds with a large majority being the non-native invasive species. Of particular concern is the recent rapid growth and spread of curlyleaf pondweed, which has the potential to not only infest significantly more of Lake Tahoe's aquatic habitat than Eurasian watermilfoil, but can also be more difficult to control due to the large number and dispersal capacity of its asexual turions, which are produced in mid to late summer (Woolf and Madsen 2003, Wittmann et al. 2015, Xie and Yu 2011). Turions are overwintering buds that become detached and spread throughout the waterway and have the potential to remain dormant at the bottom of the water for several years. Curlyleaf pondweed is also capable of growing in deeper, colder waters, which may potentially be more detrimental to Lake Tahoe if allowed to spread unchecked.

Seasonal harvesting has been the main weed control practice in the Tahoe Keys lagoons since the mid-1980s. Continual harvesting throughout the summer months works to keep the lagoons navigable by boat, however, harvesting operations do not, overall, reduce aquatic weed biomass. Harvesting may actually aid in aquatic weed population growth (Crowell et al. 1994, TKPOA 2015).

The expansion and excessive aquatic weed growth in the lagoons is due to several environmental conditions including abundant nutrient availability, relative warm, stagnant and shallow waters with sufficient light for weed growth. The target aquatic weeds introduced to the lagoons have found these to be ideal habitat conditions for prolific growth. Agency and TKPOA Response to the Infestation

In response to the growing AIS problem in the Tahoe Keys lagoons and the goal to limit non-point sources of pollution, Lahontan Water Board issued Waste Discharge Requirements to TKPOA on July 14, 2014. As part of these requirements, TKPOA was tasked with developing two planning documents. 1) A Non-Point Source Water Quality Management Plan (NPS Plan) to address potential land-based sources of nutrients (not part of this application) and (2) an Integrated Management Plan (IMP) to address the growth of target aquatic weeds. The purpose of the IMP is to optimize management effects on controlling target aquatic weeds by incorporating a suite of feasible and proven control methods that can be tailored to fit site constraints, infestation size, and urgency of control. This application addresses, in part, long-term implementation of the IMP.

The only control methods that can currently be used in the TKPOA IMP are non-chemical control in nature. At this time, these methods consist primarily of weed harvesting and bottom barriers. However, due to the size, density, and dominance of the infestation, these control methods have been shown to produce limited results. In addition, the current primary control method, harvesting, results in the production of large quantities of weed fragments (TKPOA 2014). Without proper controls, these fragments may be transported by wind, aquatic animals, and boat traffic within the lagoons and into Lake Tahoe, thus contributing viable weed fragments and turions that can become established and create new populations in nearshore habitats and marinas.

2. Project Description

Recognizing the environmental review and stakeholder processes for the CMT will guide the ultimate composition of the test, the following section describes a generalized test program that TKPOA proposes to demonstrate the safety, efficacy, compatibility, and utility of methods to control three target aquatic weeds: Eurasian watermilfoil, curlyleaf pondweed, and coontail. The CMT proposes a two-year program to test the use of multiple methods independently and in combination. The CMT will also integrate measures to enhance water quality and minimize the potential for re-infestation or the formation of substantial hazardous algal blooms (HABs). It will also integrate measures to minimize infestations within the Tahoe Keys lagoons from affecting Lake Tahoe. A performance, compliance and mitigation monitoring plan will be developed to track progress towards goals, to ensure control methods are being implemented as approved and that proposed mitigations are effective.

The CMT will include the following treatment methods:

Group A: Large-scale treatment methods for addressing target aquatic weeds using aquatic herbicides⁴ and/or large scale Ultraviolet (UVC) light;

Group B: Localized treatment methods for addressing target aquatic weeds, including UVC light spot treatments, bottom barriers, diver-assisted suction and diver hand pulling techniques.

⁴ Three aquatic herbicides have been identified as potential methods of treatment based on the weeds they are intended to target: Endothall, Triclopyr, Penoxsulam, and ProcellaCOR.

2.1. Goals and Performance Measures

2.1.1. Project Goals:

Test a range of large-scale, localized and long-term target aquatic weed control methods to determine what combination of methods within the test areas will:

1. Reduce target aquatic weed infestations as much and as soon as feasible to help protect Lake Tahoe.
2. Bring target aquatic weed infestations to a manageable level.
3. Improve the water quality of the Tahoe Keys lagoons.
4. Improve navigation and recreational use and enhance aesthetic values.
5. Reduce the potential for target aquatic weed re-infestations after initial treatment.

While not a specific goal, it is anticipated that invasive fish species populations will decrease with any measurable decreases in target aquatic weed populations, as the existing conditions in the Tahoe Keys provides such habitat.

2.1.2 Performance Measures

Project effectiveness will be evaluated based on the following performance criteria:

1. Determine the effect on water quality in the Tahoe Keys lagoons through monitoring.
2. Achieve and maintain at least a 75% reduction of target aquatic weed biomass in test locations from baseline (invasive weed biomass from hydroacoustic scans in summer of 2019).
3. Achieve and maintain a minimum three feet of vessel hull clearance within navigation channels year-round to maintain beneficial uses and prevent weed fragment generation and dispersal.

The performance measure to reduce target aquatic weed biomass by at least 75% reflects prior studies on the efficacy of some Group A methods (Anderson 2017). In addition, reducing target aquatic weed biomass by at least 75% presents the most realistic probability for long-term target aquatic weed control that minimizes the need for repeated long-term use of Group A treatment methods. It is also anticipated that a 75% reduction in biomass would be required to achieve and maintain three feet of vessel hull clearance. With a 75% reduction in target aquatic weed biomass, competition for space, light, and nutrients is expected to be sufficiently reduced such that native aquatic habitat may be re-established.

2.2. Project Detail

To determine an optimal suite of target aquatic weed control methods for the Tahoe Keys lagoons setting, the CMT will include tests of direct, large-scale (Group A) and localized (Group B) target aquatic weed control methods to determine the best combination of methods for initial large-scale knock-down of target aquatic weeds and subsequent management of follow-on target aquatic weed growth. The long-term methods for controlling environmental factors favorable to target aquatic weed growth and methods for controlling dispersal of target aquatic weeds may also be effective in addressing adverse environmental effects of direct treatment methods and serve as measures to mitigate those impacts identified during environmental review of the CMT.

The 18 treatment sites and three control sites reflect the range of heterogeneity in the Tahoe Keys lagoons. This heterogeneity includes differences in water depths, water clarity, nutrient inputs, water circulation, shoreline conditions (e.g. bulkheads vs rocky or irregular shores), density and size of docks, and effects of wind and weather. The control sites are a similar size as the proposed treatment sites and exhibit a similar weed distribution and abundance. Control sites would be managed using current standard harvesting operations (existing conditions). The test sites are composed of the following:

- Twelve (12) sites that use only a single Group A technique
- Six (6) sites that use a combination of Group A techniques
- Three (3) control sites

A total of 18 sites are proposed for treatment with Group A methods in year one of the CMT. Currently, two techniques have been identified for Group A methods, as such, a set of treatment sites will receive one of the Group A techniques, another set will receive the other technique, and some will receive a combination. Among these 18 sites, the total area proposed for treatment, is 28.96 acres. This represents approximately 17% of the total surface area (172 acres) of the Tahoe Keys lagoons. An additional three sites would be demarcated as control/reference sites for comparison.

Triplicate testing for each Group A technique is proposed in order to satisfy the requirement for normally accepted and statistically robust comparisons of data both within treatment site and within control sites. The replications provide data on variability among like-treatments (or controls) and documenting this variability which is the basis for detecting significant effects of the treatments.

The year following Group A treatments (year 2 of the CMT), Group B methods will be applied to the 18 test sites to spot-treat target aquatic weed growth following large-scale treatment.

One or more of the Group B techniques would be selected based on considerations including: 1) effectiveness of Group A treatment (i.e. total biovolume of weeds reduced after primary treatment), 2) types of weeds that re-emerge, 3) size of infestation, and 4) limitations and constraints to treatment type based on lagoon geography. The use of some methods (in both Group A and B) are constrained by the space within which an infestation occurs and the underlying topography/geography of the area. Rocky areas and areas with other submersed obstructions are often a poor match for follow-up maintenance actions.

In addition, long-term water circulation and sediment and water quality improvement methods will be tested over the course of the project to evaluate methods for controlling related environmental factors favorable to target aquatic weed growth. The initial suite of methods proposed include laminar-flow aeration (LFA), floating island wetlands, algae control technologies, and targeted water circulation methods. These methods are expected to require long-term implementation to shift existing environmental factors related to circulation that include eliminating water stagnation in dead-ends of the lagoons and breaking up anoxic zones in the lagoons. These methods are also expected to require long-term implementation to shift existing environmental factors related to sediment and water quality including reducing organic sediment muck layers rich in nutrients favorable to target aquatic weed growth to mineralized substrate and controlling water quality factors favorable to algal growth, occurrence of harmful aquatic algae blooms and target aquatic weed growth.

To control target aquatic weed dispersal that can lead to re-infestation of previously treated areas and areas in greater Lake Tahoe, multiple techniques will be tested to contain fragments of target aquatic

weeds generated through routine use of the lagoons and, potentially, as a result of implementing direct treatment methods. The initial suite of methods proposed to be tested includes bubble curtains (with or without bottom barriers), Sea Bins, and boat backup stations.

- Bubble curtains are applied across a water channel and direct aquatic weed dispersal to areas where they can be concentrated and collected. As the name implies, a bubble curtain will prevent aquatic weed fragments from passing through the curtain in the water column thus preventing infestation of areas beyond the curtain.
- Sea Bins are a trade name for a patented device that can collect and contain aquatic weed fragments. Sea Bins are typically installed in conjunction with bubble curtains and placed where the curtain concentrates the aquatic weed fragments to facilitate containment and collection of the fragments.
- Boat back-up stations also prevent dispersal of aquatic weeds that become entangled on boat engine propellers, keels and rudders. These stations require boaters to enter a taxi lane, backup the boat and then exit the station when travelling from infested to un-infested areas. A Sea Bin or manual skimming is employed to collect and contain the aquatic weed fragments freed from boats in the backup station. Lastly, methods to control target aquatic weed fragment dispersal to previously treated areas and areas outside the Tahoe Keys lagoons in greater Lake Tahoe will be tested to evaluate effectiveness in preventing re-infestations and new infestations.

Figure 1, a map of the proposed treatment sites, illustrates the location and size of each of the 18 proposed treatment sites, as well as identifying the location and size of the three control sites. Table 1 corresponds to Figure 1 and identifies the treatment type and site acreage.

Figure 1. Map of Proposed Treatment Sites



The 18 treatment sites and three control sites reflect the range of heterogeneity in the Tahoe Keys lagoons. This heterogeneity includes differences in water depths, water clarity, nutrient inputs, water circulation, shoreline conditions (e.g. bulkheads vs rocky or irregular shores), density and size of docks, and effects of wind and weather. The control sites are a similar size as the proposed treatment sites and exhibit a similar weed distribution and abundance as treatment sites.

Table 1. Site number, treatment type, site acreage and area of herbicide treatment planned per site

Site Number	Site Description	Area (ac)	
1	Treatment	1.02	
2	Treatment	1.00	
3	Treatment	1.10	
4	Treatment	1.45	
5	Control	1.41	
6	Treatment	1.89	
7	Control	1.95	
8	Treatment	0.85	
9	Treatment	3.22	
10	Treatment	1.20	
11	Treatment	1.34	
12	Treatment	1.52	
13	Treatment	1.54	
14	Treatment	1.98	
15	Treatment	2.24	
16	Treatment	2.00	
17	Treatment	1.12	
18	Treatment	2.15	
19	Treatment	2.07	
20	Treatment	1.27	
21	Control	2.06	
TOTAL ACREAGE		34.38	
Total Treatment Area Acreage			28.96

Figure 2. Example of Combination Treatment

