Water Quality Town Hall Forum

October 21, 2021

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WQ Town Hall Agenda

•	Introductions	k
•	Review of 2021 Harvesting Operations & Plans for 2022	6
•	Status of Invasive Weeds in the Keys	0
•	Collaborative AIS Program	F
•	The Control Methods Test	F
•	Long Term Solution & Timeline	F
•	Member "Call to Action"	F
•	Member Q&A	A

Kirk W. Greg H. Greg H. Rick L. Rick L. Pete W. Pete W. All

2021 Harvesting Strengths

- <u>Minimum</u> requirements of WDR
- Homeowners' participation with maintaining docks, shoreline and weed pile program
- Systems in place
- Increase in staffing when wages were increased

2021 Harvesting Challenges and Weaknesses

- Staffing
 - 33%-66% percentage for season
 - 57% turnover rate
 - Low initial pay rates
 - COVID / Unemployment Benefits
- 3 pieces of equipment never hit the water
- Air Quality Index (AQI) / Weather
- Fire Evacuation
- Homeowner communication
- Homeowner complaints
- Low water levels

2021 Harvesting Operations Report Card

June through September



2021 Harvesting Operations Report Card

October to Present





History of AIS in Lagoons

• Open house poster from station #1

Stakeholder Collaboration to Resolve Lake Tahoe's No. 1 Aquatic Invasive Species Threat



530-542-6444 TAHOEKEYSPOA.COM









CMT Test map



Final test sites and proposed test methods for each site may change depending on Spring 2022 conditions and final agency approvals/permits.

Remaining Steps for CMT Implementation



*Dates are approximate and may change based on weather, lake level, and lagoon conditions.

LAHONTAN REGIONAL WATER QUALITY CONTROL BOARD

• California Environmental Quality Act (CEQA)

Environmental Impact Report

 \bullet Basin Plan Exemption and Clean Water Act/

National Pollutant Discharge Elimination System

Permit

TAHOE REGIONAL PLANNING AGENCY (TRPA)

- Environmental Impact Statement
- Environmental Improvement Program Permit

OTHER KEY AGENCY REVIEWS

- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- California Department of Fish and Wildlife

CMT Project Decision Agencies

AIS Program Future

<u>The Good</u>

- Solid collaboration effort TKPOA can't succeed alone
- Considerable progress over last 5 years

<u>The Bad</u>

- Regulatory process is complex
- Long-term timetable is problematic
- No silver bullet

<u>The Tab</u>

- TKPOA investing \$1.35M in CMT (current 3-year funding)
- Includes \$600/property 3rd Special Assessment (approved in 2017)
- Budget for Control Methods Test in final stages
- Comprehensive, lasting solution will cost more than harvesting & fragment control



The Control Methods Test -- A "Fork in the Road"

OPEN HOUSE GOALS

- Highlight the importance of the collaborative AIS effort, and the Control Methods Test
- Urge attendees to submit comments to Lahontan in support of the "draft permit" for testing

APPROVAL of Herbicide Test

- Control Methods Test
- Continued Collaboration
- Cooperative Funding
- Comprehensive AIS Control Plan
- Improved Water Quality

DECISION PERIOD FOR CMT

- Public comment period runs from 15 September to 1 November
- TKPOA-sponsored AIS Open Houses scheduled for October 9th and 29th
- Go/No Go decision by TRPA &
 Lahontan Water Quality Boards in January 2022



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Timeline of Invasive Weeds Management in the Tahoe Keys Lagoons



HELP BATTLE AQUATIC INVASIVE SPECIES IN LAKE TAHOE

Aquatic Invasive Weeds are a serious lake-wide threat to Tahoe's native ecology, pristine water quality, vibrant recreation economy, and worldfamous clarity. The problem needs to be controlled before the weeds become further established in Lake Tahoe. The status quo is unacceptable. We urge you to support the broad private/public collaborative effort to test treatment methods and define a comprehensive, lasting solution.

HAVE YOUR VOICE HEARD - IMPACT THE DECISION

Submit your comment to the Lahontan Regional Water Quality Control Board. Written public comments on the Control Methods Test draft permit are being accepted until **Nov. 1, 2021, at 5 p.m.**

Comment letters may be submitted electronically, via **email**, with the **subject "Tahoe Keys Weeds Control Test"** to the following e-mail address: **lahontan@waterboards.ca.gov** or submitted in hard copy to: 2501 Lake Tahoe Boulevard, South Lake Tahoe, CA 96150, attention: Russell Norman. (Suggestions for effective public comments attached.)

WQ Town Hall Forum 21 October 2021 Handouts

- How to submit a public comment
- TKPOA AIS Postcard
- AIS A Critical Milestone
- History of Public-Private Partnership
- TKPOA's 4 Decade Battle
- League to Save Lake Tahoe Editorial
- TRPA Editorial (Joanne Marchetta)

- The TKPOA's Invasive Weeds Effort -- A Four-Decade Long Battle
- Aquatic invasive species (AIS) are a serious threat to Lake Tahoe's water quality. Roughly 90% of the Tahoe Basin's invasive weeds are in the Tahoe Keys Lagoons.
- Invasive weeds have been here for 4 decades. Curly Leaf Pondweed was first observed in 2003 and now occurs in ~50% of survey samples. It is the biggest threat to the lake today as it grows in deeper, colder water than other species, and has reproductive "turions" that can remain dormant for 5 or more years before sprouting.
- Mechanical weed harvesting has kept lagoon channels open for navigation but does nothing to control the spread of invasive weeds. Fragment control methods have mitigated the spread from the lagoons into the lake, but the invasive weeds continue to proliferate.
- For 10 years, the Tahoe Keys Property Owners Association (TKPOA) has led an effort to fight the invasive weeds, working with the prominent regulatory agencies the Tahoe Regional Planning Agency (TRPA), the League to Save Lake Tahoe (Keep Tahoe Blue), the Lahontan Regional Water Quality Control Board (LRWQCB) and many others.
- The agencies and local advocacy groups have mobilized their teams, and collectively invested millions of dollars over the last 5 years to help battle invasive weeds. The level of collaboration has been remarkable, and future success depends on maintaining that high level of coordination and commitment.
- While we must proceed with appropriate care and diligence, there is a great sense of urgency to find a solution. The status quo is unacceptable.
- Next step is a small-scale test to evaluate the most viable treatment alternatives for environmental impact, safety, and efficacy. This project is the Control Methods Test (CMT).
- The CMT will evaluate the use of aquatic herbicides and ultraviolet light, alone and in combination, inside the lagoons of the Tahoe Keys. Laminar flow aeration and other treatment alternatives will also be tested.
- The herbicide products chosen for the test are EPA approved (both Federal and CA), and have been used successfully in other regions of the U.S.A. They are selective in terms of the species they impact. They break down relatively quickly into harmless compounds.
- The ultraviolet light treatment (UV-C) is effective at controlling weeds but is not selective. Currently, the focus is on improving the cost and logistics of using UV-C inside the Keys.
- The TRPA paved the way for the test with extensive environmental analysis and evaluation of alternative solutions.
- The LRWQCB has worked with the TKPOA to develop detailed specifications for testing & monitoring. Lahontan's technical team recently issued a draft permit for the CMT.
- There is a public comment period for the draft permit for the CMT that runs from September 15th through November 1st. Members of the public are encouraged to submit comments to the TRPA and the LRWQCB in support of the CMT.
- The CMT decision will be made in January 2022 by both the TRPA and LRWQCB boards.
- The GO/No Go decision on the CMT is an important "fork in the road" for Lake Tahoe's invasive weeds effort. An approval (as proposed) allows the collaborative effort to move forward. A rejection or reduction in scope would be a significant setback, with unknown consequences.
- The CMT, if approved, will take 3 years. The test would then be followed by another major, multi-year effort focused on environmental impact and permits for a comprehensive weeds management program.
- Implementation of a comprehensive approach to controlling invasive weeds is still at least 5-6 years down the road based on current plans and regulatory constraints.

WQ Town Hall Forum 21 October 2021 Back-up Material

Waste Discharge Requirement (WDR)

The WDRs issued to the TKPOA state five objectives that the IMP was to accomplish. These objectives are:

- Eliminate the spread of aquatic invasive species from the Tahoe Keys to greater Lake Tahoe.
- Enhance the overall water quality of the Tahoe Keys lagoons and Keys Marina thereby improving Lake Tahoe water quality and associated clarity.
- Reduce habitat for non-native fish and enhance habitat for native fish in the Tahoe Keys lagoons and Keys Marina.
- Restore and maintain established beneficial recreational uses, including water contact safety in the Keys lagoons and commercial uses in the Keys Marina.
- Implement a combination of cost-effective control measures that are feasible for long-term management of aquatic invasive plants. The TKPOA AIS Programs aim to effectively implement solutions to fulfill these objectives.

2021 AIS Programs Projects Completed

Projects Completed

- Floating Island Treatment
- West Channel Bottom Barrier
- 7 TRPA Tours
- Swim Zone Installation / Removal
- BUS Installation / Removal
- LFA- State Boards data entry
- 7 LTSLT Cigarette Butt Collector

Sampling and Monitoring

- LFA Sampling / Monitoring- 15
- WQ Monitoring-7
- Lake Tallac WQ- 7
- WC LFA Sampling / Monitoring- 7
- FTW Monitoring- 4
- Sediment Sampling- 5
- First Flush- 1
- Hydroacoustic Scans- 85
- Macrophyte Survey- 5 days
- Logger monitoring

2021 AIS Programs Strengths

- Education / Experience
- Staffing
- Staff Commitment
- Communication
- Outreach Platform
- Systems in place

2021 AIS Programs Challenges and Weaknesses

- Air Quality Index (AQI)
- Fire Evacuation
- Homeowner knowledge and support of projects
- Project Prioritization
- Administrative / project planning requirements
- Equipment issues

2016 TKPOA BOD Guidelines

May 20th, 2016 Board of Directors Meeting

16-376	uatic Weed Harvesting Level of Service for 2016: The program is set to begin on 06/01/2016; the			
	Board reviewed a proposed process and procedure and directed staff to determine a set schedule for the			
	harvesters to complete service in areas depending on the day instead of providing special service for a			
	cost. Part of the harvesting service provided will include harvesting weeds in boat slips if they are empty			
	and the harvester is able to safely fit. Weeds stacked on docks will be picked up based on the pre			
	scheduled days for each area.			

The Board of Directors approved providing one uniform level of service to all TKPOA lagoon-front property owners for 2016. The Board action was:

- Weed harvesting will be scheduled and the schedule will be published. Information
 on the depth and density of the aquatic weeds will be used as the basis for the
 schedule;
- The area to be harvested is the navigation channel, the accessible area between docks, and boat slips provided that there is no boat in the slip and that the scheduled harvester is capable of harvesting the boat slip; and
- Areas that cannot be accessed by a harvester are the responsibility of the owner/user of the docks. Weeds harvested by hand will be picked up on scheduled days.

What a Comprehensive AIS Control Plan Might Look Like

Final Plan Subject to CMT Approval, Testing, and Subsequent Planning & Permitting Processes

UV-C Light Treatment (\$60k/acre+/-)

- Kills AIS Weeds and Algae
- Effective But Not Selective
- Best in clear, open water
- Early Season treatment

Diver Hand Pulling (\$6-25k/acre)

- Expensive, but effective
- Limited Use in Clear Water

Suction Dredge (>\$100k/acre)

- Spot treatment of problem areas
- Very Limited Area
- Customized equipment
- Disposal of Biomass & Sediment

Homeowners Maintain Shoreline

- Contractor Referrals
- Equipment Recommendations
- BMP's Created
- TKPOA Disposes of Weeds (potential 1-2k cubic yards/year)



Upgrade Circulation System (Capital Inv.)

- Net Inflow from Lake
 - Lagoon Water for Irrigation
 - o Outflow into Marsh Wetlands
- Lower Water Temps, Reduced AIS
- Reduce Turbidity
- Remove Nutrients from Lagoons
- Conserve Potable Water

Herbicides (\$.5k/acre)

- Selectively target AIS
- Rapid Breakdown into non-toxic by-products
- Apply in "fully isolated" Channels
- Use every few years as required
- Rotating Locations

Laminar Flow Aeration (Capital \$'s)

- Bubblers implemented
 throughout Keys Channels
- Increase dissolved O₂
- Reduce Organic Sediment
- Accelerate Nutrient Breakdown
- Increased Water Clarity

Other Complementary Tools

- Lagoon Friendly Landscapes
- BMP's for Drains & Runoff
- Continued Fragment Control
- Bubble Curtain
- Back-up Station
- Extensive Monitoring

AIS Treatment Options

Treatment Option	Cost/Acre	Other Costs	Pro's & Con's
Bottom Barriers	\$70-100K		Effective, but expensive small scale solution
Rotovation	\$30-60K		Not long term, potential to increase curly leaf infestation
Automated Sweeper	\$52-108K		Small scale, incompatible with navigation, fragments
Harvesting	\$3-4K		Effective for navigation, but not weed control
Suction Dredge	\$140K	Custom Equipment	Expensive, environmentally challenging
Circulation	< \$1-5k	\sim \$10M upgrades	Not a tool for AIS, but could help water quality
Aeration	< \$.1K	~ \$1-2M equipment	Not effective as AIS control, but improves water quality
Diver Hand-Pull	\$6-25K		Effective on small scale with reasonable visibility
UV-C Light	\$60K +/-	Boat Development	Effective, non-selective control, logistical challenges
Herbicide	\$.5K		Effective, selective treatment, successful at large scales
Drain, Clear & Resurface	N/A		Not feasible due to lagoon hydrology, scale, infrastructure

Source: Tahoe Keys Application to Test Combinations of Aquatic Weed Control Methods, 30 April 2021 (tahoekeysweed.org/environmental analysis) https://3ovs9mxsv9l3frcrzkxuutt-wpengine.netdna-ssl.com/wp-content/uploads/2021/09/Tahoe-Keys-Application-to-Test-Combinations-of-Aquatic-Weed-Control-Methods-Complete-Full-Application-2021.pdf

- Greg, I think we want to hit harvesting ops first (as below), then do a very superficial version of the open house (w/o station #5)... with lots of back-up material to pull for questions. We'll need to get material from Rick as well. in terms of creation, the only new slide I can think of might be a 3rd assessment refresher. Can we have a quick walk-thru/slide assembly on Wed or Thurs? When does material have to get posted... or can it just be presented live and posted later???
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- Review of 2021 operations & plans for 2022
- 2. Status of permit to test herbicides in the Keys Lagoons
- 3. Overview of the Collaborative Effort with the TRPA, Keep Tahoe Blue, and others
- 4. What a solution might look like and when you can expect to see results