TAHOE KEYS LAGOONS AQUATIC WEED CONTROL METHODS TEST YEAR 1 PRELIMINARY RESULTS

Tahoe Keys
PROPERTY OWNERS ASSOCIATION
356 Ala Wai Boulevard South Lake Tahoe CA 96150
530-542-6444 tahoekeyspoa.com

FEBRUARY 10, 2023

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Prepared for
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356 Ala Wai Boulevard South Lake Tahoe CA 96150
530-542-6444 TAHOEKEYSPOA.COM

Prepared by
Sierra Ecosystem Associates

sea
Sierra Ecosystem Associates

2311 Lake Tahoe Blvd., Ste. 8
South Lake Tahoe, CA 96150

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EXECUTIVE SUMMARY

The Aquatic Weed Control Methods Test (CMT) was initiated in Spring 2022 in the Tahoe Keys (Keys) West Lagoon and Lake Tallac Lagoon to evaluate new and improved approaches and methods to managing invasive aquatic weeds in the Keys. The CMT will specifically test which methods might achieve a large-scale knockback of invasive aquatic weeds to provide future management control, and which non-herbicide methods may be able to sustain control in the long-term. Ultimately, the results of the CMT will inform a large-scale aquatic weed control plan for the Keys.

Aquatic weeds, particularly curlyleaf pondweed and Eurasian watermilfoil, pose near-term threats to the health and values of Lake Tahoe's ecosystem, water quality, recreation, and economy. These threats to Lake Tahoe galvanized many interested stakeholders to work together towards a sustainable solution. The planning, design, permitting, and initiation of the CMT was a 5-year, sustained collaboration among Tahoe Keys homeowners, regulatory agencies [Lahontan Regional Water Quality Control Board (Lahontan Water Board) and Tahoe Regional Planning Agency (TRPA)], the League to Save Lake Tahoe (League) and other stakeholders, with a high-level of public input and interest. Major funding for the CMT has been and continues to be provided by the Tahoe Keys Property Owners Association (TKPOA), as well as by TRPA for the independent monitoring. The League is supporting the Laminar Flow Aeration (LFA) study and participating in CMT evaluations. The 3-year CMT Project implementation costs are expected to range between $10 million and $12 million and are dominated primarily by the extensive environmental monitoring and data collection.

The Keys' unique environment and Lake Tahoe's strong regulatory protections required an innovative approach to finding solutions to control the lake's largest aquatic weed infestation. The CMT is both unique and complex not only in its highly collaborative approach, but also because the CMT was the first ever permitted use of aquatic herbicides in Lake Tahoe. While aquatic herbicides specifically target invasive weed species and have proven effective in other high elevation lakes, herbicides have never been tested as a tool for a one-time knockback followed by maintenance with non-chemical methods. The CMT is also unique in its approach and its first-time use of large-scale testing of ultraviolet (UV at the "C" wavelength) light treatment systems in the Keys for the same purpose.

Lake Tahoe is classified as one of the nation's Outstanding National Resource Waters (ONRW), which is a special designation with stringent anti-degradation rules under the federal Clean Water Act. To ensure protection of Lake Tahoe including the Tahoe Keys, the CMT included intensive monitoring of water quality for all test methods for the entire duration of the Project, and frequent and specific sampling for herbicides and their by-product degradants. To further protect Lake Tahoe, herbicide application areas were separated from the main West Lagoon and Lake Tallac by double turbidity curtains. These curtains were maintained until herbicides reached 'non-detect' levels in late September 2022.

For the long-term, removal of all three target invasive aquatic weeds from the Keys lagoons is unlikely. This includes both the non-native curlyleaf pondweed and Eurasian watermilfoil and the native coontail. However, the CMT is assessing what combination of control methods would be able to initially knockback these invasive weeds, allow native plants to increase in the lagoons, and then manage ("sustain control of") the regrowth of invasive weeds. The CMT success criteria of 75% or greater biovolume reduction for invasive aquatic weed species represents the target threshold for which native aquatic habitat conditions can be restored over time and unwanted and invasive aquatic weed populations can be feasibly controlled in perpetuity. Because the lagoons have a range of conditions (e.g., water depths and shorelines), variability is expected in achieving 75% biovolume reduction in target weeds across the test sites and ultimately throughout the lagoons.

Four types of tests were initiated in 2022: 1) herbicides only, 2) UV light only, 3) herbicides and UV light ("combination sites"), and 4) Laminar Flow Aeration only. All types of CMT Year 1 treatments began in 2022. However, the timing and full scale of all tests as proposed were not achieved. For example, extended deployment of the double turbidity curtains prevented the UV treatment vessels from accessing "combination sites." To help gather needed test data, additional UV treatments have been scheduled for 2023.

CMT monitoring of Year 1 treatments revealed four key outcomes thus far:

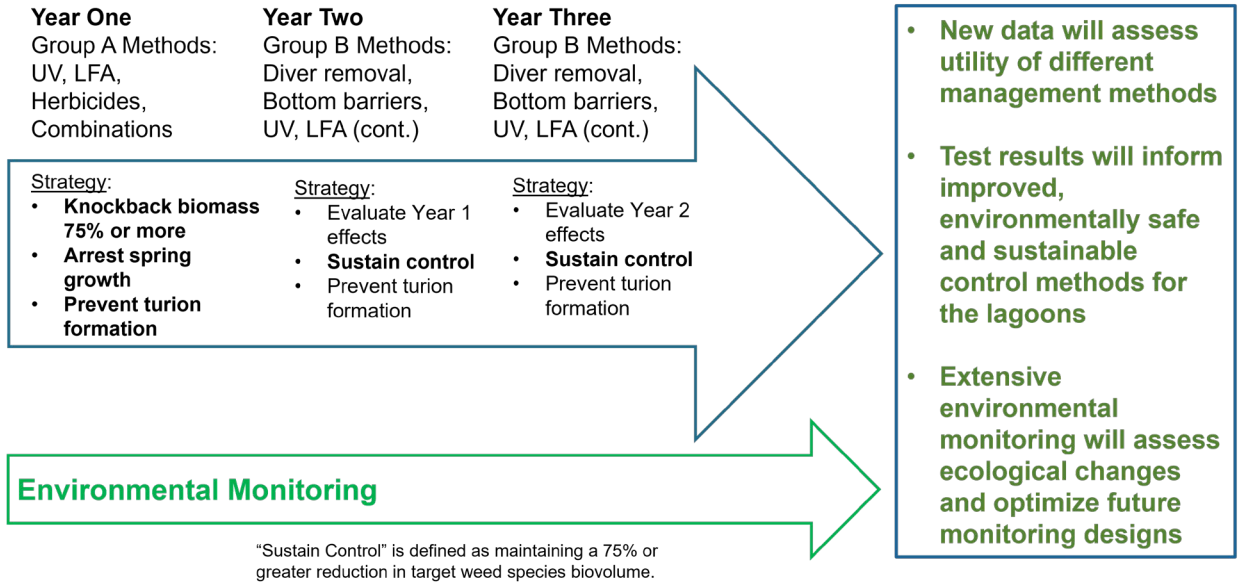
1. Although data from Year 1 are still being evaluated to determine if and where a 75% reduction in biovolume was achieved, the CMT herbicide and UV treatments reduced the prevalence of invasive target weed species and their biovolume. Certain herbicide (Endothall) treatments knocked back the invasive weeds, substantially increasing the relative presence of desirable and beneficial native plants.
2. Herbicides were successfully contained: No herbicides or degradants reached locations anywhere near the West Channel that connects with Lake Tahoe.
3. The CMT provided flexibility and adaptation to shifting environmental conditions.
4. LFA did not show reductions in target invasive weeds or total aquatic plant biovolume in Year 1, but will operate continuously through the entire 3-year CMT and be monitored for its long-term effectiveness in helping to control invasive aquatic weeds. For the CMT, LFA is being tested for its ability to reduce nutrients available for growth of invasive plants.

Year 2, which does not include herbicide applications, relies on the continuation of the UV stand-alone treatments at certain sites, continued and new implementation of UV treatments at Year 1 herbicide/UV combination sites, and the addition of site-specific treatments at multiple sites using bottom barriers and diver assisted suction hand-pulling. Selection of the Year 2 CMT sites will be based on the results of Year 1 treatments, 2022 aquatic plant data at those sites, and results of aquatic plant surveys planned for Spring 2023. (See Section 3 for details of Year 2 planning.)

1.0 PURPOSE OF THIS REPORT

This second progress report on the CMT serves as an update to the TKPOA members, public, and interested stakeholders on the CMT. This report focuses on preliminary results of Year 1 including examples of the effectiveness (or efficacy) of Year 1 CMT treatments. As described later in this report, over 75,000 data points were collected by TKPOA and TRPA in Year 1. These extensive data sets are being analyzed and the final results and analyses from Year 1 will be submitted in a separate detailed report to the Lahontan Water Board and TRPA in March 2023. This progress report also outlines the approach for Years 2 and 3 of the CMT, and highlights features of a possible long-term solution to the aquatic invasive weeds problem as well as long term management of the water quality in the lagoons. The CMT 3-year Project is outlined in Figure 1 below.

Figure 1. 3-Year CMT Timeline



The first progress report for the CMT (September 2022 Special Report on CMT Project Implementation [Anderson 2022]) summarized the CMT's initiation of Year 1 control method testing. This second report on Year 1 presents preliminary results from the Year 1 Group control methods testing. A comprehensive report on Year 1 test results, permit compliance, and other analyses will be submitted to the Lahontan Water Board and TRPA by March 2023.

2.0 WHAT ARE THE PRELIMINARY RESULTS FROM YEAR 1 OF THE CMT?

Figure 2 shows the final CMT Year 1 treatment (termed "Group A" methods) test and Control (no treatment) sites. Figure 3 shows the water quality related monitoring and sample data

collection sites in relation to the test and Control sites for 2022. In addition to these monitoring locations for the test and Control sites, over 7,500 point samples of aquatic plants were collected with a rake that pulls existing plants from specific locations (rake samples). In addition to the rake pulls, hydroacoustic scans for aquatic plant biovolumes were gathered twice monthly. These groups of data together allow for a scientific comparison of changes in aquatic plant species populations and biovolume throughout Year 1 in both the CMT treatment and Control sites.

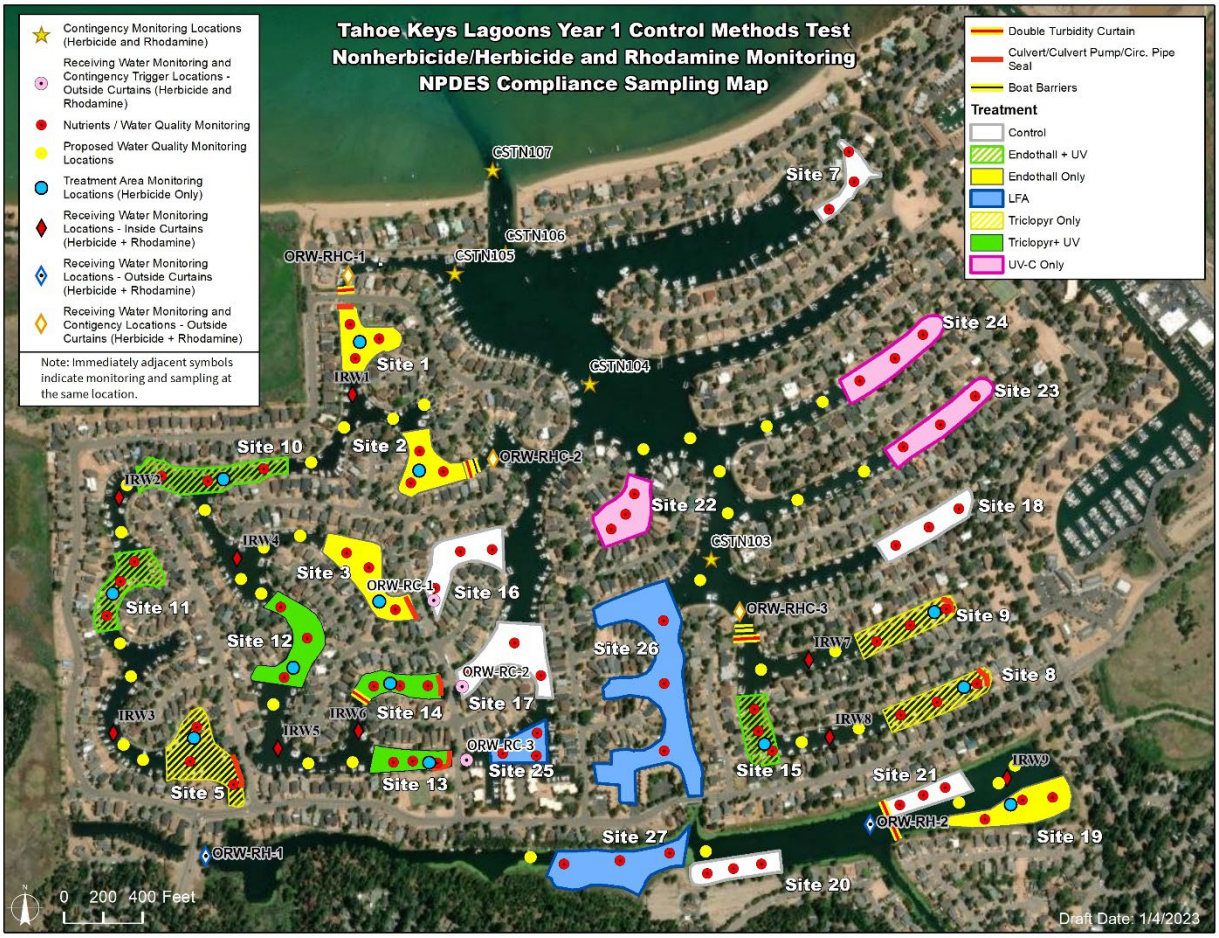
Figure 2. Year 1 CMT Final Treatment Sites

Figure 2 map depicts Year 1 restricted boating areas separated from the West Lagoon by sets of double turbidity curtains (A, B, and C) and boat barriers (A and B). The shaded zones also show where boating entrance and egress were prohibited from pre-herbicide applications (May 25, 2022) until removal of barrier curtains from each area.

The purpose of Year 1 of the CMT Project was to test the effectiveness of herbicides alone, UV alone, and herbicides in combination with UV to 'knockback' (by 75% or more) the biovolume of the targeted invasive weeds compared to "Control" (untreated) sites. Laminar Flow Aeration is being tested as a longer-term treatment method.

Two types of aquatic herbicides were tested in Year 1 of the CMT. Both types represent target-weed specific herbicides. The first herbicide, Endothall, is a contact herbicide that targets all three aquatic weed species (non-native Eurasian watermilfoil, non-native curlyleaf pondweed, and the nuisance native coontail). The second, Triclopyr, is a systemic herbicide that targets only Eurasian watermilfoil. UV light is a new technology using the "C" wavelength of light to break down the cellular structure of aquatic plants. UV light is not plant species specific and requires good water quality conditions to sufficiently transmit the light intensity needed to reach the plants from the boat light array. Two boats, one with a 20-foot long array and one with a 40-foot long array, were utilized in 2022. As noted earlier, Laminar Flow Aeration does not treat the plants directly, but rather oxygenates the water at the sediment layer to accelerate the breakdown of decaying biovolume and reduce nutrients available to aquatic plants.

Figure 3. Overview Map of Year 1 CMT Sites and Monitoring Locations



2.1 Categories and Completeness of Year 1 CMT Data Collection

Completed Year 1 CMT field monitoring, water quality sampling, and other data collection extended from April/May 2022 into November 2022. Sixteen categories of monitoring and sampling data plus daily field report forms and lab analysis reports on water and sediment samples were collected, compiled, and analyzed as Year 1 activities progressed. Table 1 presents a summary listing of the monitoring categories and number of data points collected for the CMT during Year 1. More than 92 percent of anticipated data collection was completed despite the challenges of extended Project duration and in-field data collection along with changing environmental conditions. These challenges included equipment malfunction, loss of sensors deployed in the water due to bears, and severe weather.

Table 1. Summary of Monitoring Activities and Number of Data Points Collected During Year 1 CMT

Monitoring Activity	Number of Data Points
Continuous WQ (Temperature (Temp.) and Dissolved Oxygen (DO)) daily averages of 50 loggers at treatment and Control sites)	14,586
Standard WQ (Inside Test Areas) (Temp., DO, pH, Turbidity, (Oxygen Reduction Potential (ORP)and Specific Conductivity (SPC)) collected at 75 buoys at treatment and Control sites)	17,460
Standard WQ (Outside Test Areas) (Temp., DO, and pH) collected at 47 monitoring stations outside treatment areas)	3,321
Herbicide/RWT Dye monitoring (Samples analyzed for herbicides, degradants, RWT Dye) at 39 treatment and contingency stations	3,600
Nutrient Grab WQ Monitoring including forms of phosphorus and nitrogen) at 25 treatment and Control sites	1,088
Macrophyte Point Rake Samples (30 rake samples per site analyzed for species present) at 25 treatment and Control sites	7,799
Macrophyte Health Ratings (Ratings for each plant species present on rake)	18,129
Total Macrophyte Photos (with at least 1 photo per rake sample)	8,140
Turbidity Curtain Monitoring (Hourly measurements taken on 26 days of installation/ removal)	188
Cyanobacteria Grabs (Samples collected at all cyanotoxin triggered Control and treatment sites)	271
Hydroacoustic scans (Number of scans completed of the lagoons)	15
Benthic Macroinvertebrate (BMI) Sampling (Samples analyzed for BMI at 25 treatment and Control sites)	168
Well Water Monitoring (Samples analyzed for herbicides/ residues at all 3 wells)	66
Inspection of Culvert Plugs/ Curtains (Number of days Inspections were completed)	132
Spill Response/ Prevention (Number of treatment sites Spill Response/ Prevention was conducted)	13
West Lagoon Channel Hydrologic Monitoring	90
Total:	**75,066**

The September 2022 Special Report on CMT Project Implementation (Anderson 2022) described certain data collection categories and total data points that differ from Table 1. The differences are due to different time periods, different approaches used to compile the total number of data points (e.g., hourly daily v. daily data averages), and differences in the number of sites included in the counts.

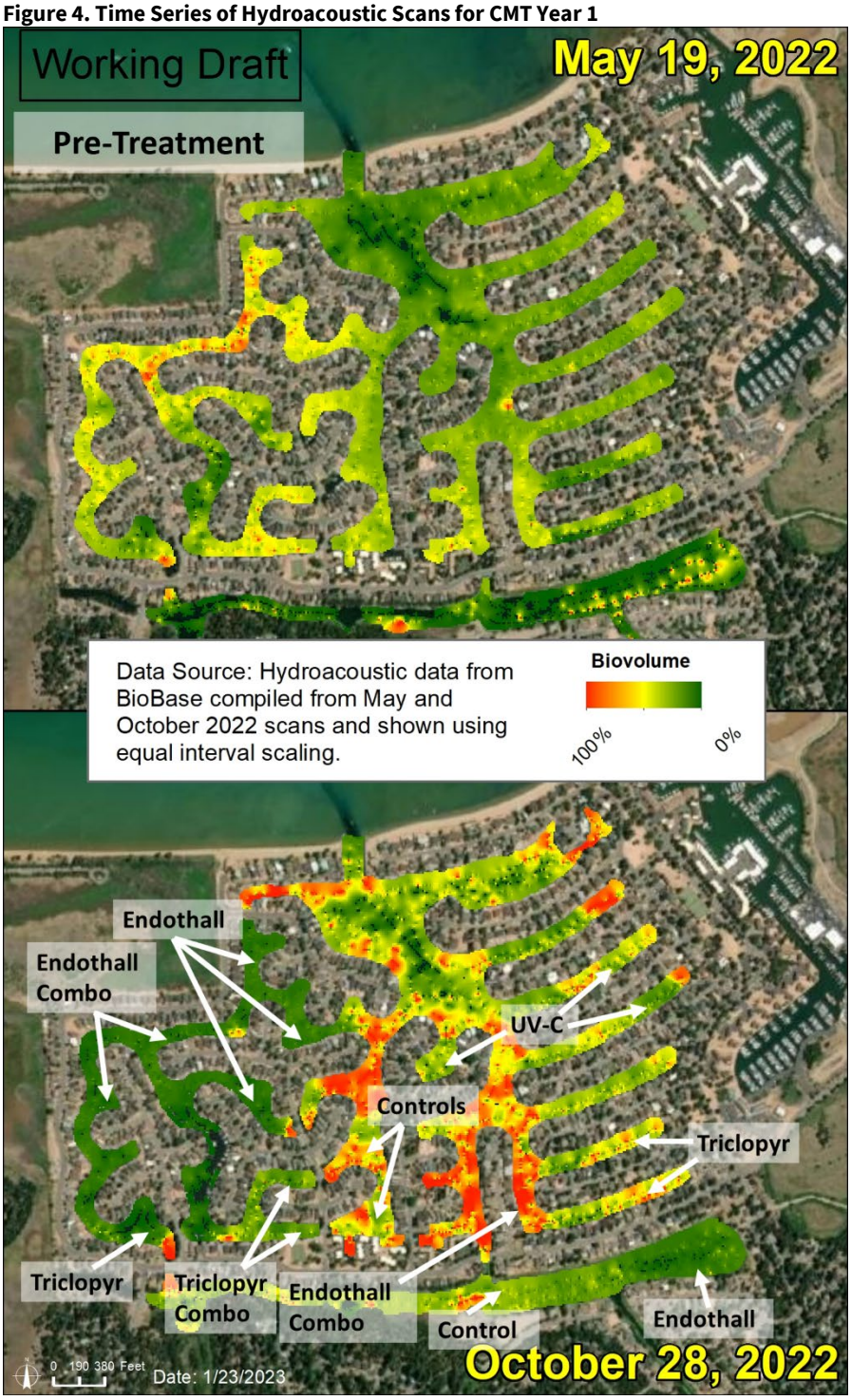
2.2 Comparison of Year 1 Group A Control Method Effects on Weeds

Preliminary analyses were completed on the effectiveness (or efficacy) of the four Group A treatments: herbicide only, UV light only, combination herbicide/UV light, and LFA. These initial analyses are preliminary, but are yielding some positive results from Year 1 treatments.

To assess changes in aquatic plant biovolume (without regard to plant species), pre- and post-CMT treatment hydroacoustic scans can be compared over time for treated and untreated (Control) areas. Figure 4 presents hydroacoustic scans for 2022 showing the overall changes in aquatic plant biovolume within the CMT Group A treatment, CMT Control, and non-CMT areas within the West Lagoon and the Lake Tallac Lagoon. Clear differences in biovolume densities can be seen between herbicide treated areas and Control sites, and also between UV light treated areas and Control sites.

However, the objectives of the CMT are not to reduce total biovolume by 75%, but to reduce specific plant species biovolume, namely the target aquatic weed species Eurasian watermilfoil, curlyleaf pondweed, and coontail. To assess the treatment effects on these specific targeted plants, over 7,500 point rake samples of aquatic plants within the test sites and photographs of the rake samples were collected by TRPA's monitoring consultant. Every two weeks, thirty rake samples and photographs of each rake sample were taken at each CMT site to record the species presence, the percent of the sample comprised of each species and the "condition" (health) of the plants.

Figure 4. Time Series of Hydroacoustic Scans for CMT Year 1



The preliminary example results for this report are limited to analyzing the effects of treatments during 2022 for the following: 1) Endothall treatment at herbicide-only Sites 1, 2 and 3; 2) UV only treatment at UV only Site 24; 3) Triclopyr only treatment at Sites 5, 8 and 9; and 4) LFA treatment at LFA only Site 26.

The figures below compare the relative abundance of plant species from rake pulls with the methods deployed in Year 1. Figure 5 compares the Endothall-only treatment sites (1, 2 and 3) to the three Control sites (16, 17 and 18). Figure 6 compares the UV only treatment site (24) to the three Control sites (16, 17 and 18). Figure 7 compares the Triclopyr only treatment sites (5, 8, and 9) to the three Control sites (16, 17 and 18). Figure 8 compares the LFA only site (26) to the three Control sites (16, 17 and 18).

Figure 5. Endothall Only Sites 1, 2, and 3: Changes in Relative Abundance of Plant Species Over Year 1

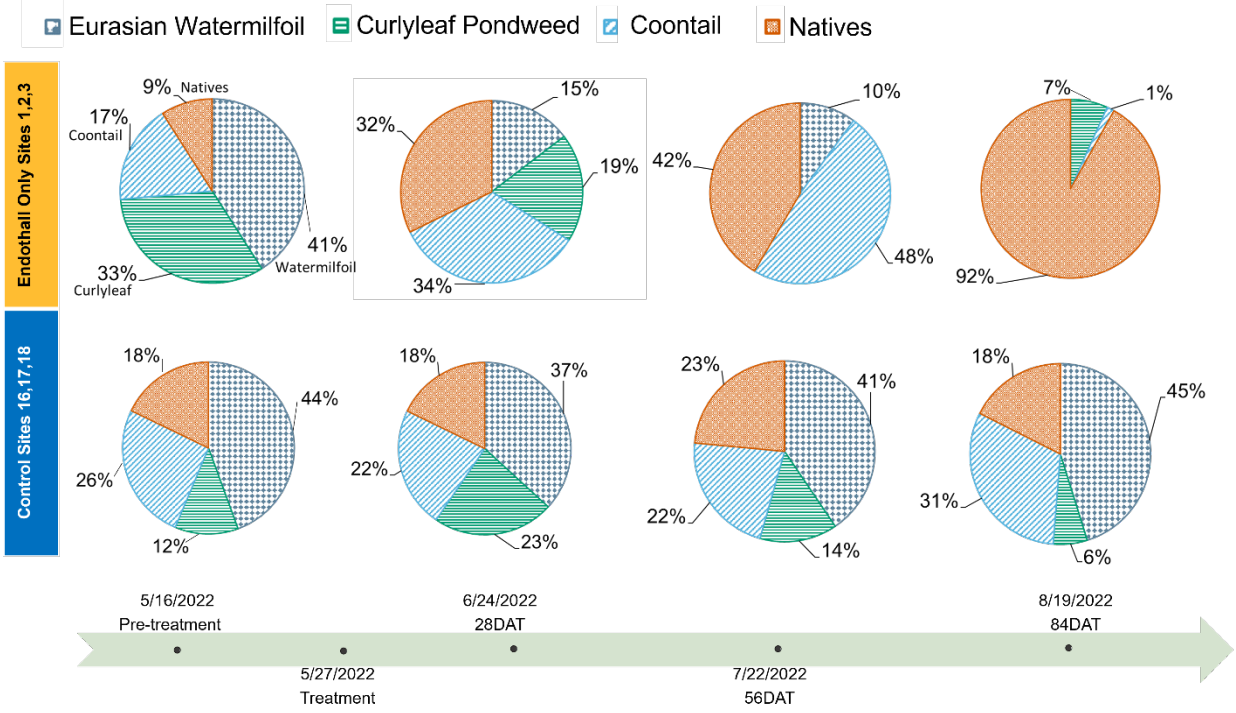


Figure 6. UV Only Site 24: Changes in Relative Abundance of Plant Species Over Year 1

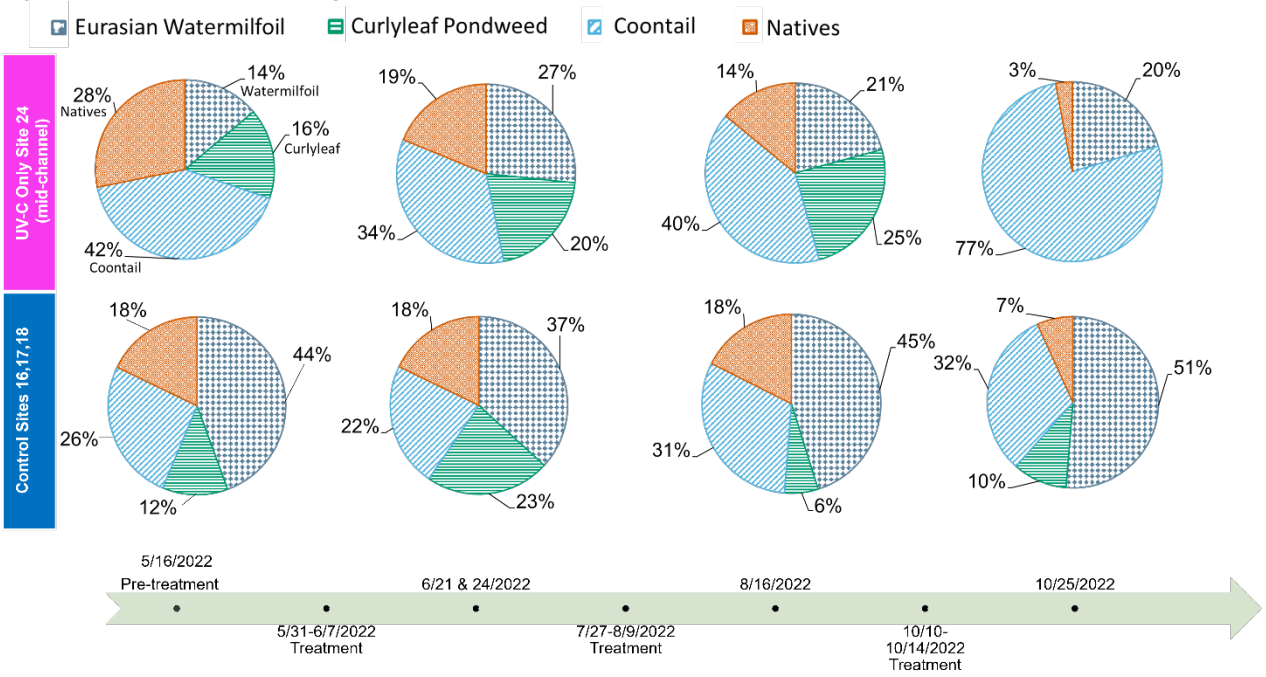


Figure 7. Triclopyr Only Sites 5, 8, and 9: Changes in Relative Abundance of Plant Species Over Year 1

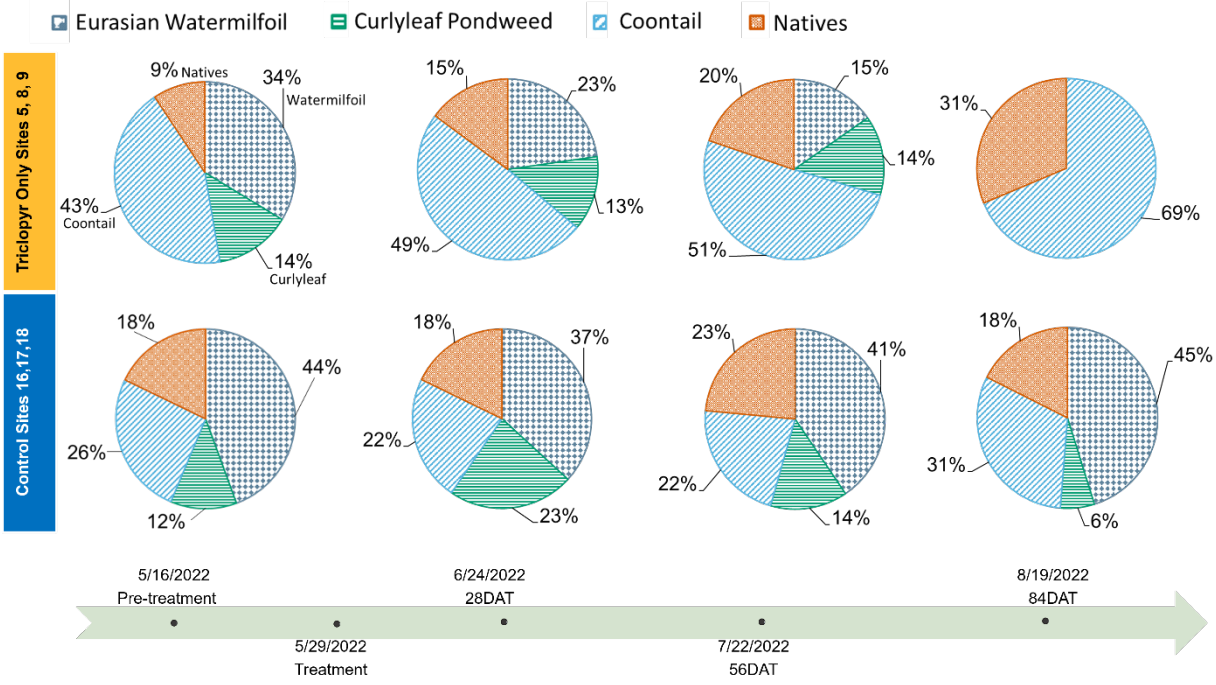
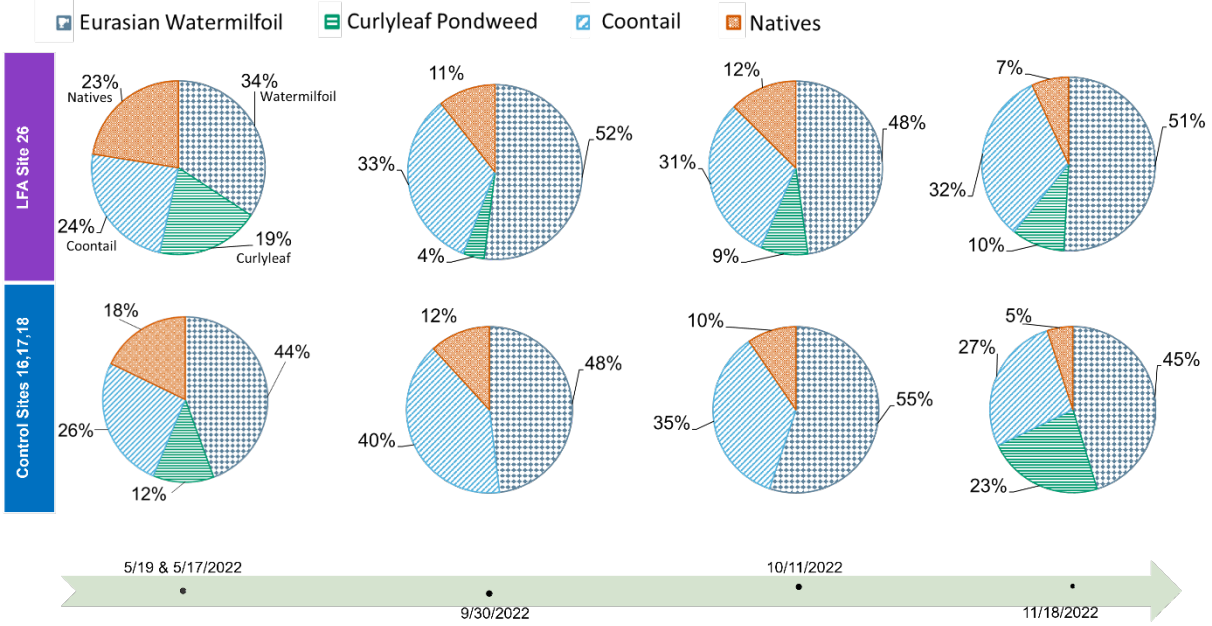


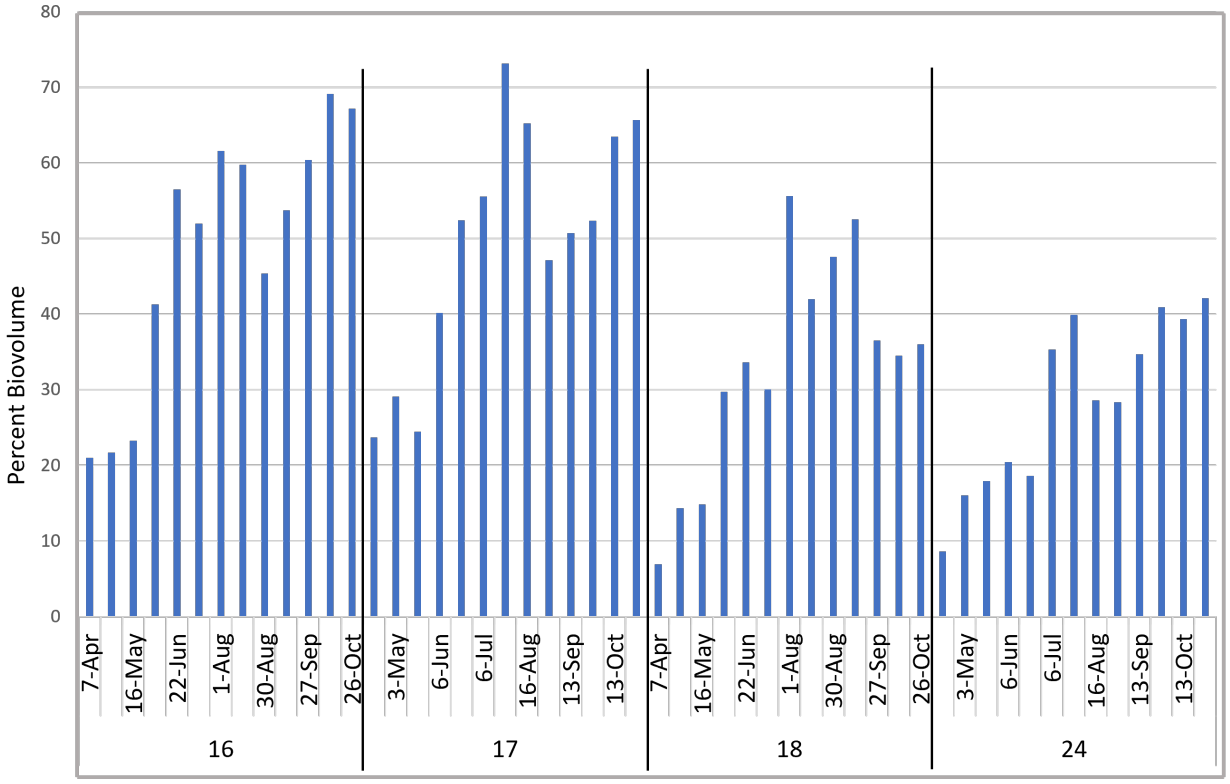
Figure 8. LFA Site 26: Changes in Relative Abundance of Plant Species Over Year 1



The rake sampling results above demonstrate that Endothall-only treatments greatly reduced target weed populations compared to Control sites (Figure 5). UV only treatments at Site 24 also reduced specific target weeds (Figure 6), as well as the total aquatic plant (native plants and target weeds) biovolume (Figure 9).

Dramatic decreases in Eurasian watermilfoil can be seen in Figure 7 where Triclopyr treatments were applied at Sites 5, 8 and 9. Note that the relative abundance of the other target weed species compared to Control sites was not greatly reduced in Sites 5, 8 and 9 (since Triclopyr only targets Eurasian watermilfoil). Figure 7 also shows a substantial increase in the relative abundance of coontail at Sites 5, 8 and 9 compared to Control sites. No trends appear in Figure 8 for LFA Site 26 to date since LFA is designed as a long-term control method intended to reduce decaying biovolume and nutrients available for plant growth at the sediment layer.

Figure 9. UV Only Site 24 Changes in Average Biovolume Comparison to Control Sites 16,17, and 18



While Endothall as a contact herbicide controlled all three invasive aquatic weeds, Triclopyr is a systemic herbicide that shows promise for longer-term control of Eurasian watermilfoil over the course of a season and potentially longer in a one-time application. Eurasian watermilfoil inhabits shallow areas of the lagoons where UV light treatment from boats is difficult to apply, so Triclopyr may prove to be an effective combination tool for control of Eurasian watermilfoil in the near-shore areas of lagoons with UV light treatment in the deeper zones of the lagoons.

Other preliminary conclusions can be derived from Figures 5 through 8. First, there were increases in the relative abundance of native plants in both the Endothall and Triclopyr treated sites (Figures 5 and 7). This can be contrasted with the relatively unchanged abundance of desired native plants in the Control sites (16, 17 and 18). Also of interest for long-term control of curlyleaf pondweed are: 1) the reduction in pondweed's occurrence for most treated and Control sites at 84 days after treatment (DAT), likely due to that plant's normal decline in the late Fall; and 2) the return (small increase) of curlyleaf pondweed in the Endothall sites in late August/early September, most likely due to turions in the sediment layer sprouting from the current year's plant production, as well as some turions produced in previous years.

2.3 Schedule and Scope for Year 1 Final Report

Data collection during CMT Year 1 activities included three primary purposes: 1) to track compliance with conditions of the Lahontan Water Board and TRPA permits; 2) to generally monitor environmental conditions and potential impact issues identified in the EIR/EIS; and 3) to evaluate the success and effectiveness of the four Year 1 (Group A) treatment methods for knocking back the target weeds (i.e., which sites/methodologies achieved a 75% or greater reduction) for subsequent years testing of Group B methods to sustain the knockback.

The preliminary results presented above for CMT Year 1 Group A treatment effectiveness represent a small subset of the data collected. These results are still subject to revision based on additional independent analyses underway as part of the Year 1 Final Report preparation. After the comprehensive CMT Year 1 Final Report is submitted to the Lahontan Water Board and TRPA in March 2023, summaries of that report will be released to the public and the stakeholder group that helped shape the final CMT Project design. TKPOA will summarize the results for its homeowners via Town Hall forums and other homeowner communications.

3.0 WHAT WILL BE DONE IN YEARS 2 AND 3 OF THE CMT?

Year 2 of the CMT will include: 1) testing of small-scale, site-specific Group B treatments at multiple sites using bottom barriers, diver assisted suction hand-pulling, and UV spot treatments; 2) continuation of Group A UV only treatment at the UV only Year 1 test sites; 3) continuation of the LFA systems operations; and 4) starting and in some cases continuing UV treatment in the mid-channels of the previous combination UV/herbicide treatment sites (see Figure 2). No herbicides will be applied in Year 2.

3.1 Year 1 Results to Inform Scope and Location of Year 2 Tests

The selection of the Year 2 CMT Group B method test locations will be based on the results of Year 1 treatments, a comparison of 2022 aquatic invasive plant data at those sites, and results of aquatic plant surveys to be performed in Spring 2023. The continuation and restarting of Group A UV treatments will be at the same locations as the Year 1 Group A UV sites. LFA treatments will continue at the same sites as during CMT Year 1 operations.

3.2 Scale of Years 2 and 3 Control Methods Testing

The scale of the Year 2 Group B methods to test the ability to "sustain control" of reduced target weed biovolume cannot be determined until the aquatic plant survey data is collected in the Spring of 2023. This data will identify where the target aquatic weeds are regrowing, and to what extent. This adaptive management approach was anticipated as part of the design and

strategy of the CMT (Figure 1) and is necessary because it is difficult to predict where and how widespread the target species may reappear within the CMT Year 1 Group A treatment sites. The same adaptive management approach will be used to identify the scale and location of Group B method testing for Year 3. The Year 2 testing results and Spring 2024 surveys will help inform the locations for Group B method testing in Year 3.

Table 2 presents a preliminary breakdown of the approximate acreages for Group A and Group B treatments anticipated for Year 2 of the CMT. With Table 2, Group B site treatments and testing will be achieved per CMT design goals while meeting CMT funding and budget objectives. All Group A continuing and Group B new treatments in Year 2 will occur within the Year 1 Group A treatment sites, however, not all Group A treatment areas will include Group B testing in 2023.

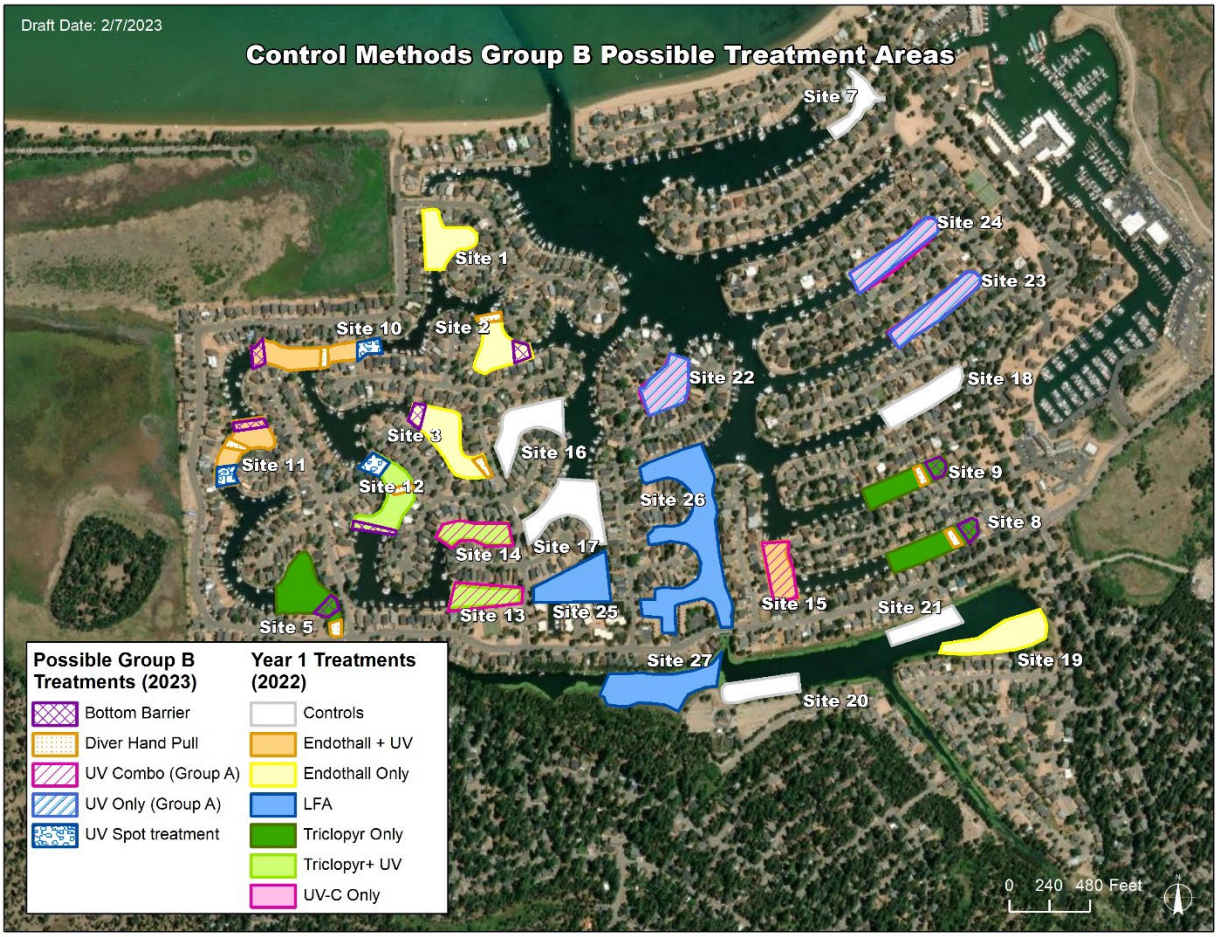
Figure 10 shows a conceptual layout of possible Group B treatment testing within CMT Year 1 (Group A) test sites. Group B test sites will be smaller, subset areas of Year 1 test sites. The Control sites for Year 2 will remain the same as Year 1 Control sites.

Table 2. Year 2 CMT Group B Treatment Preliminary Estimates

Methods:	Number of Sites	Approx. Acreage per Site	Total Acreage	Potential Locations	Type of CMT Year 1 Test Sites	Contractor
UV Only (Group A)	3	1.5	4.7	22,23,24	UV Only	Inventive Resources, Inc.
UV Combo (Group A)	6	0.5	3.0	10,11,12	Combo	Inventive Resources, Inc.
UV (Spot Treatments)	6	0.5	3.0	1,2,3	Endothall	Inventive Resources, Inc.
Diver Hand Pull*	8	0.13	1	2,3 10,11,12* 5,8,9	Endothall Combo Triclopyr	TBD
Bottom Barrier*	8	0.23	1.8	2,3 10,11,12* 5,8,9	Endothall Combo Triclopyr	TBD
LFA	3	4.3	12.9	25,26,27	LFA	CleanFlo
Control	5	0.9	5.5	7,16,17, 18, 20	Control	N/A

*Sites 1 & 19 also represent options for Year 2 testing of diver hand pull and bottom barrier
*Diver hand pull and bottom barrier to be used on Site 26 per Lahontan Water Board approval

Figure 10. Possible CMT Year 2 Group B Treatment Areas



4.0 WHEN WILL THE CMT BE COMPLETED AND WHAT HAPPENS AFTERWARDS?

The CMT is projected to be a 3-year project with Group A (knockback) method testing in Year 1 and Group B (follow-up) method testing in Year 2 and Year 3. Some repeated treatments of Group A UV only and UV mid-channel applications in combination sites are planned for Year 2 and could be carried into Year 3 depending on the locations and extent of aquatic weed regrowth. LFA will operate continuously during all three years.

4.1 CMT Project 3-Year Timeline

Figure 1 shows a general timeline of the 3-year CMT Project. The approach and strategy for the Year 1 (Group A) and the Years 2 and 3 (Group B) control method testing are summarized in the timeline, along with the expected outcomes from the CMT.

4.2 Long-Term Goals for a Long-Term Solution

Removal of all target aquatic weeds from the Keys lagoons is unlikely. However, the CMT is assessing what combination of (Group A) control methods would be able to initially knockback the invasive weeds, allow native plants to increase in the lagoons, and then manage ("sustain control of") the remaining invasive weeds with (Group B) control methods. The CMT success criteria of 75% or greater biovolume reduction for aquatic weed species represents the target threshold for which native aquatic habitat conditions can be restored over time and unwanted and invasive aquatic weed populations can be feasibly controlled in perpetuity.

Water quality is another key consideration for sustaining improved ecologic health of the Keys lagoons. For several decades, scientists (e.g., Oswald 1990 and Green 1998), engineers (e.g., RO Anderson 2016, and Domenichelli and Associates 2018), and TKPOA's Water Quality Committee have recognized the need to renovate the Keys' circulation and nutrient removal treatment system. Since the late 1990s, the large-scale circulation and treatment system has not operated properly and has not operated at all since the early 2000s. Key design and operational issues include the need to lower the circulation system intake elevations due to drought cycles, modify the nutrients removal and turbidity reduction process, add lagoons fragment management, and consider restoring the hydrology and wetland functions of Pope Marsh (that was hydrologically isolated when the Keys were developed). Based on the past five years of water quality studies for the CMT, additional issues that need to be addressed include mitigating harmful algae blooms, exploring potential synergies with clean-up of regional groundwater contamination, addressing stormwater nutrient runoff into Lake Tallac Lagoon, and evaluating renewable energy options to operate the system.

The CMT will inform the preparation of a large-scale, lagoons-wide plan to knockback and then maintain aquatic weeds at manageable levels. As the large-scale plan is developed and implemented, overhaul of the circulation and treatment system to improve water quality in the lagoons should also be pursued to support the long-term success of the aquatic weed management program as well as support the overall restoration of the lagoons for maintaining the multiple public, private, and environmental beneficial uses of the Keys and Lake Tahoe.

4.3 Possible Long-Term Solution

After the comprehensive CMT Year 1 report is completed and submitted to the Lahontan Water Board and TRPA in March 2023, TKPOA along with partner agencies and stakeholders will begin reviewing the success of the CMT Group A ("knockback") methods to begin developing options for the large-scale plan to bring the aquatic weeds under control throughout the Keys. That plan will be adapted as CMT testing continues into Years 2 and 3. Group A method success means achieving an initial 75% or greater biovolume reduction for the invasive weed species within the test sites. Technical, economic, environmental, and feasibility considerations for large-scale use of each of the Group A (as well as Group B) CMT methods will be important in designing the Keys-wide plan.

Planning using the results of CMT Year 1 activities will move ahead because of the continued, growing threat of curlyleaf pondweed and Eurasian watermilfoil in the Keys and the survey evidence of these highly invasive weeds infesting the near-shore areas of Lake Tahoe. The Tahoe Keys Marina in the East Lagoon is the largest public boat launch on the lake, and future public, commercial, institutional, and private boating from the East and West lagoons will continue to threaten aquatic invasive plant spread to the lake.

The September 2022 Special Report on CMT Project Implementation (Anderson 2022) details 'lessons learned' that must be considered in the large-scale plan. In particular, the turbidity curtains took significantly longer than anticipated to remove due to extended degradation times for one of the herbicides (Triclopyr). The longer herbicide degradation time presumably resulted from a combination of stagnant conditions behind the curtains, high water temperatures and related increases in turbidity which in turn reduced the light-driven breakdown of Triclopyr.

Once a large-scale plan is developed, additional rigorous public and scientific environmental review and permitting processes for the lagoons-wide plan will occur before any plan can be implemented. This process is projected to take 2-3 years to complete. As a result, TKPOA's application for a large-scale plan would likely be completed in 2024 or 2025 and implemented in the years after 2027. However, the urgency and threat of aquatic weeds to all of Lake Tahoe requires that action be taken as soon as possible to bring these aggressive weeds under control.

ACKNOWLEDGMENTS

This report was prepared by Rick Lind of SEA, who wishes to acknowledge the following CMT collaborators that supplied data analyses, treatment information, and graphics, along with helpful reviews and constructive suggestions. Document formatting and production were performed by Renae Lewis and Rayann La France of SEA.

Dr. Lars Anderson

Tahoe Keys Property Owners Association
Kristine Lebo
Pete Wolcott

Tahoe Regional Planning Agency
Kimberly Chevallier
Dennis Zabaglo

The League to Save Lake Tahoe
Laura Patten
Jesse Patterson

Environmental Science Associates (ESA)
Dr. Toni Pennington

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