

Tahoe Keys West Lagoon
Integrated Control Methods Test

Joint TRPA Initial Environmental Checklist and CEQA
Initial Study

Tahoe Regional Planning Agency
Lahontan Regional Water Quality Control Board
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1. INTRODUCTION

The proposed project is an Integrated Methods Test to demonstrate the safety, efficacy, compatibility, and utility of three aquatic herbicide products, in combination with subsequent non-herbicide treatment methods, to control target aquatic weeds in the Tahoe Keys lagoons: Eurasian watermilfoil, curlyleaf pondweed, and coontail. The project will test the efficacy of three herbicides followed by two years of non-herbicide control methods within limited areas of the West Lagoon of the Tahoe Keys to evaluate the effectiveness of an integrated methods strategy for bringing aquatic invasive plants under control. A one-time application of aquatic herbicides would be made in spring of 2018 by California licensed applicators, to test treatments at nine locations in the Tahoe Keys main lagoon. The total treatment area amounts to 13.7 acres, or approximately 8 percent of the total 172-acre surface area of the Tahoe Keys lagoons. A more detailed project description is provided in Section 2, Project Description. The applicant has proposed to install a water barrier at the West Channel entrance to isolate the main lagoon from Lake Tahoe, and an additional mitigation recommended in this document is impermeable turbidity curtains or other containment to isolate herbicide products and their chemical transformation products within each treatment area.

1.1 INITIAL ENVIRONMENTAL CHECKLIST/INITIAL STUDY

This joint Initial Environmental Checklist (IEC) and Initial Study (IS) has been prepared to assist the Tahoe Regional Planning Agency (TRPA) and Lahontan Regional Water Quality Control Board (Lahontan Water Board) in evaluating the Tahoe Keys West Lagoon Integrated Control Methods Test (Methods Test). An IS is prepared pursuant to the California Environmental Quality Act (CEQA) as a preliminary environmental analysis used by a Lead Agency as a basis for determining whether an Environmental Impact Report (EIR), a Mitigated Negative Declaration (MND), or a Negative Declaration will be required for CEQA compliance. An IEC is a document prepared under TRPA regulations to provide preliminary environmental analysis for determining whether an Environmental Impact Statement (EIS), a Mitigated Finding of No Significant Effect, or a Finding of No Significant Effect (FONSE) is required.

The IEC/IS contains a project description, a description of the environmental setting, identification of potential environmental effects using an expanded checklist (supplemented by a brief narrative). The IEC/IS briefly explains potential environmental effects, discusses mitigation for significant effects, evaluates the project's consistency with existing, applicable land use controls, and identifies the persons who prepared the study.

This IS/IEC has been prepared pursuant to the California Environmental Quality Act of 1970, Cal. Pub. Res. Code Section 21000 *et seq.*, and the requirements of Article VI of the Tahoe Regional Planning Agency (TRPA) Rules of Procedure and Chapter 3 of TRPA's Code of Ordinances. TRPA is the lead agency for the IEC. The CEQA lead agency for this project is the Lahontan Water Board.

1.2 BACKGROUND

The proposed Methods Test represents an important step toward controlling aquatic invasive weed infestations that originated in the Tahoe Keys lagoons and increasingly threaten the extraordinary natural and recreational resources of Lake Tahoe, particularly the nearshore. 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 (*Potamogeton crispus* L.) was discovered in Lake Tahoe in 2003. Surveys document aquatic plants 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 annually at a cost up to \$400,000 per year. Aquatic invasive plants affect all of 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 Tahoe Keys locations were the two top-ranked locations "due to the magnitude of the plant and fish infestations as well as the high recreational use of these areas by Tahoe boaters" (UNR 2015).

Beginning in 2001, Tahoe Keys Property Owners Association (TKPOA) increased their efforts to control the aquatic weeds by (1) researching control methods, (2) experimenting with bottom barriers, (3) collaborating with the TRPA and the Tahoe Resource Conservation District, and (4) consulting with the Lahontan Water Board, Lake Tahoe Aquatic Invasive Species Coordinating Committee, and others. Lahontan Water Board modified the Waste Discharge Requirements (WDRs) permit for Tahoe Keys in 2014, requiring a Nonpoint Source Plan to reduce nutrient inputs from land management and an Integrated Management Plan (IMP) to control aquatic invasive species. Over the past 2 years, TKPOA has focused on further research and collaboration to develop an IMP reviewed by an Independent Scientific Panel, conduct a stakeholder planning process, implement a Nonpoint Source Plan, and develop a study plan for the Methods Test to evaluate the efficacy and environmental effects of proposed control methods before a long-term IMP is undertaken. Recognizing that complete eradication of invasive plants is infeasible, the goal of the IMP is to reduce weed biomass by at least 80 percent to bring the infestation under control and limit its expansion into Lake Tahoe.

The purpose of the proposed Methods Test is to determine the potential for integrating the limited use of aquatic herbicides in the IMP. In January 2017, TKPOA applied for an exemption to the Lahontan Region Water Quality Control Plan (Basin Plan) prohibition on the use of aquatic herbicides. The Exemption Application describes the Method Test's current study design, which was prepared to meet the exemption criteria and guidance from Lahontan Water Board. In addition to the exemption, the project requires a permit and an IEC to meet requirements of the TRPA Regional Plan and an IS to meet requirements of CEQA. .

1.3 PROJECT LOCATION, SETTING, AND SURROUNDING LAND USES

Lake Tahoe is a unique alpine lake on the California-Nevada border. The lake is known worldwide for the clarity and purity of its outstanding blue waters, and was designated an Outstanding National Resource Water (ONRW) by the State of California and the U.S. EPA in 1980. The lake offers many recreational opportunities and is enjoyed year-round for its scenic beauty.

The Tahoe Keys lagoons (Figure 1) are part of the Tahoe Keys, a multi-use development situated at the southern end of Lake Tahoe on approximately 372 acres of land. Located 60 miles south of Reno, Nevada; 195 miles east of San Francisco; 100 miles northeast of Sacramento, 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 (also known as the West Lagoon), 2) the Marina Lagoon (also known as the East Lagoon), and 3) the Lake Tallac Lagoon. These three water features are referred to as the “Tahoe Keys lagoons” throughout this document.

The Tahoe Keys 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 Tahoe Keys lagoons is restricted to these two channels (Figure 1).



Figure 1. Overview of Tahoe Keys Lagoons

Source: APAP (TKPOA 2017a)

The Tahoe Keys lagoons have much shallower water than Lake Tahoe with an average depth of 12 feet and 1,000 feet, respectively. Water temperatures also differ, with Tahoe Keys lagoons tending to be much warmer during spring and summer and much cooler at times during the fall and winter months. The waters of the Tahoe Keys lagoons are typically more turbid than the clear waters for which Lake Tahoe is famous. Lastly, the bottom layer of the Tahoe Keys lagoons is composed of fine sediments, a remnant of the marsh that previously occupied the area. By contrast, coarse, decomposed granite often characterizes the bottom of Lake Tahoe.

The Tahoe Keys development includes beaches, swimming pools, tennis courts, basketball courts, a pedestrian pier to Lake Tahoe, boat docks, and park areas. The development also includes water wells and a potable water distribution system, a water treatment facility, and a lagoon water circulation system.

The lagoons provide boating access to Lake Tahoe, and are used by residents and visitors for recreational boating and fishing. These waterways are among the key attractions for residents and visitors. TKPOA is responsible for maintaining the common areas of the development and is tasked with maintaining navigation in the waterways of the Tahoe Keys lagoons.

The U.S. Army Corps of Engineers (USACE); has jurisdiction over the waters of Lake Tahoe, north of the Tahoe Keys; the areas west and south of the development are under the jurisdiction of the U.S. Forest Service. The Tahoe Keys development is zoned High Density Residential in the South Lake Tahoe General Plan.

1.4 PROJECT OBJECTIVES/PURPOSE AND NEED

The purpose of the Methods Test is to investigate the effectiveness of three United States Environmental Protection Agency (EPA) and California Department of Pesticide Regulation (CDPR) approved aquatic herbicides in the site-specific conditions of the Tahoe Keys lagoons. As documented in Table 1 of the TKPOA Amended Supplemental Exemption Application (TKPOA 2017b), aquatic herbicides have been used in lakes, ponds, reservoirs, streams, irrigation canals, flood control channels and wetland sites in other regions against the same target aquatic plants found in Tahoe Keys lagoons: Eurasian watermilfoil, curlyleaf pondweed, and coontail (*Ceratophyllum demersum*). These aquatic plants adversely affect the water quality and ecosystem of the Tahoe Keys lagoons, creating optimum habitat for non-native fisheries and adversely impacting beneficial uses of the waters of the Tahoe Keys lagoons, including aesthetic, navigation, and recreational uses.

The need for the proposed project is to determine the utility of and potential for integrating the limited use of aquatic herbicides into the IMP along with non-herbicide methods to better control the aquatic invasive plants in the Tahoe Keys lagoons. The expected result in the test area will be improvement in initial control of the invasive plants (using a one-time application of herbicides) that can then be followed in subsequent years with other (non-herbicide)

methods. This combination control method approach is proposed to effectively and efficiently manage the test areas for several of the beneficial purposes described for the South Tahoe Hydrologic Area and Tahoe Lake Body Hydrologic Area, which include, but are not limited to, REC-1, REC-2, COLD, and NAV (Lahontan Water Board 2015). The Methods Test protocols are designed to assess: (1) the responses of both target plants and non-target native plants to use of herbicides; (2) field data on the movement and dissipation of aquatic herbicides applied to typical infested sites; and (3) the effectiveness of methods to mitigate potential adverse effects of herbicide use, including a temporary barrier to separate the Tahoe Keys waters from the waters of Lake Tahoe itself.

The need for this project stems from the introduction, establishment, and spread of nonnative invasive aquatic plants that have compromised water quality and degraded beneficial uses of the Tahoe Keys lagoons, including wading, boating, fishing, sightseeing, aquatic life, and preservation of aquatic habitats that support cold water ecosystems. The abundant growth of non-native and nuisance aquatic plants degrades the environment in several ways including providing habitat for non-native warm water fish and driving variations in pH, dissolved oxygen, and temperature. The plant growth also impedes boating, is hazardous to swimmers, contributes to sediment loading, releases nutrients to the water column that can contribute to harmful algal blooms (HAB), and provides sources of continuing infestations of Aquatic Invasive Species (AIS) in the near-shore areas of Lake Tahoe.

Because the Tahoe Keys is primarily a boating community and has a high density of vacation rentals, the number of boat trips in and out of the Keys is much greater than most other locations around Lake Tahoe. This, coupled with the dense infestation of aquatic invasive plants, makes the Tahoe Keys a primary source for new infestations around the lake, including such popular destinations such as Emerald Bay, Sand Harbor and marinas.

Each summer in the Tahoe Keys lagoons, at least five mechanical harvesting machines are necessary to keep the waterways navigable. These machines cut the tops off the plants approximately three to five feet below the water surface and place the bulk of the cut plant materials on an on-board conveyor and storage system. The cut plants are then transferred to trailers, dried, and transported to a disposal site outside the Tahoe Basin. During the past 30 years, there has been a trend toward an increasing mass of harvested weeds. Current harvests total over 10,000 cubic yards annually with 10,125 cubic yards reported in 2016.

If the current trend continues, the aquatic weed infestation may reach unmanageable levels that could lead to the loss of beneficial uses of the Tahoe Keys lagoons and further threaten the nearshore areas of the remainder of Lake Tahoe. Unless the source of the problem is controlled, TKPOA believes that the work that is currently being done to manage small infestations around the lake may have limited effectiveness as populations reestablish themselves, necessitating additional control actions.

The ability to use all state and federally approved methods for aquatic plant control, including registered aquatic herbicides, is proposed to address the AIS problem and prevent adverse impacts Lake Tahoe's unique water quality.

The Findings of the Lahontan Water Board in the Tahoe Keys WDRs (Lahontan Water Board Order No. R6T-2014-0059) state that:

Excessive growth of aquatic plants within the [Tahoe Keys] Facility impairs beneficial uses of water, such as Cold Freshwater Habitat, Navigation, Water Contact Recreation, Non-contact Water Recreation and possibly Rare, Threatened, or Endangered Species. The excessive aquatic plant growth has caused several adverse effects to cold water ecosystems: impaired navigation of vessels, potential health and safety risk associated with entanglement of swimmers in aquatic vegetation and lack of visibility of submerged swimmers, impairment of fishing and aesthetic quality, and increased predation of native fish species by invasive fish species.

The herbicides proposed for this Methods Test have been used throughout California and in other high elevation water bodies for decades to control the same aquatic plants. The overall goal of the proposed Integrated Methods Test project is to evaluate the effectiveness of aquatic herbicides approved by the U.S. EPA and CDPR as an initial tool in the control of invasive aquatic plants.

The aquatic weed control goals for the Methods Test are:

- Achieve and maintain an 80-90% reduction of invasive plant biomass within the treatment areas over the three-year study period (based on 2016/2017 levels);
- Double the observational frequency of native plants in the treatment areas from the frequency observed in the 2017 annual macrophyte survey; and
- Maintain a minimum of 3 feet of vessel hull clearance in the treatment areas throughout the duration of the Methods Test.

The effectiveness of the Methods Test will be evaluated based on a monitoring and reporting plan that will include assessment of the treatment areas with respect to the project goals. In addition, the monitoring and reporting program will:

- Determine the effectiveness and specificity of the tested herbicides on the invasive aquatic plants present under the conditions of the Tahoe Keys lagoons;
- Monitor the effects of the herbicide application on water quality parameters of dissolved oxygen, pH, temperature, turbidity, and conductivity;
- Confirm anticipated "no adverse effects" on non-target organisms including fish and native plants;
- Assess the potential for integrating continued one-time herbicide use throughout the rest of the Tahoe Keys with subsequent year non- herbicide methods for long-term control of the invasive plants; and

- Summarize the results of the Methods Test project to provide science- based data that is Tahoe Keys-specific. The summary information will help regulatory agencies in their review and evaluation of the utility, benefits, risks, and limitations of herbicides as part of the integrated plan designed to sustainably manage aquatic weeds in the Tahoe Keys lagoons.

1.5 DOCUMENT ORGANIZATION

This IEC/IS follows the standard content for environmental documents under CEQA and TRPA Code of Ordinances and Rules of Procedure. This IEC/IS is a full disclosure document, describing the plan and its environmental effects in sufficient detail to aid decision-making.

Chapter 5 contains a summary of the environmental effects and mitigation measures, if applicable.

1.6 PUBLIC INVOLVEMENT

Opportunities for public participation in the environmental document review process will be provided to promote open communication and better decision-making.

1.7 RELATIONSHIP TO LAND USE PLANS, POLICIES, AND REGULATIONS

The proposed project is under the jurisdiction of the City of South Lake Tahoe and TRPA. TRPA has powers to establish environmental threshold carrying capacities and to adopt and enforce a regional plan and implementing ordinances that achieve and maintain such capacities for orderly growth and development (Article I (b), Tahoe Regional Planning Compact). The City of South Lake Tahoe retains all its police powers under applicable federal and state law, court cases, and the federal and California constitutions, while acknowledging the role of TRPA to adopt environmental thresholds regulating carrying capacities and a regional plan to achieve the long-term protection of Lake Tahoe. In addition, federal and state agencies exercise varying levels of control concerning specific resources. This section identifies each agency's responsibility relative to the Methods Test, as well as the plans and policies with which the test must comply. The Methods Test will be conducted in the main lagoon of the Tahoe Keys, considered part of Lake Tahoe, therefore this section primarily addresses plans, policies and regulations related to water rather than land use.

1.7.1 Federal

1.7.1.1 U.S. EPA Antidegradation Policy

Lake Tahoe is designated as an ONRW. ONRWs are provided the highest level of protection (i.e., Tier III) under the EPA's Antidegradation Policy, stipulating that states may allow some limited activities that result in temporary and short-term changes to water quality, but that such

changes should not adversely affect existing uses or alter the essential character or special uses for which the water was designated an ONRW. 40 CFR 131.12(a)(3) prohibits any action which would lower water quality in an ONRW, which could include any new or increased discharge even if that discharge is in compliance with water quality objectives and no beneficial uses are adversely affected. For example, the detectable presence of any herbicide active ingredients or chemical degradation products, or other lowering of water quality as a result of project activities, including herbicide discharges, for a period greater than “short-term”, would constitute degradation.

A complete Antidegradation Analysis (AA) will be required for the Methods Test, following the Administrative Procedures Update on Antidegradation Policy Implementation for National Pollutant Discharge Elimination System (NPDES) Permitting (State Water Board 1990), and policy originating from the process developed to allow for exemptions to the Basin Plan prohibition on use of aquatic pesticides and herbicides. The AA will include an evaluation of whether the project has any unreasonable effects on beneficial uses, such as long-term water quality degradation, exceedance of Basin Plan water quality objectives, and impacts to non-target native species. The AA will also analyze economic impacts and costs from the proposed Methods Test and alternative approaches to aquatic weed control at the Tahoe Keys lagoons test areas.

The federal Clean Water Act (CWA) §301(a) broadly prohibits the discharge of any pollutant (including herbicide products) to waters of the U.S., except in compliance with an NPDES permit. The State of California is delegated to implement this CWA provision via statewide general and individual permits.

1.7.1.2 Lahontan Water Board Water Quality Control Plan for the Lahontan Region and Amendment

The primary responsibility for the protection of water quality in California rests with the State Water Resource Control Board (State Water Board) and nine Regional Water Quality Control Boards (Lahontan Water Board). The State Water Board sets statewide policy for the implementation of state and federal laws and regulations. The Lahontan Water Board adopted and implemented Water Quality Control Plans (Basin Plan), which recognizes regional differences in natural water quality, actual and potential beneficial uses, and water quality problems associated with human activities.

The Basin Plan for the Lahontan Region is the basis for the Lahontan Water Board's regulatory program. It sets forth water quality standards for the surface and ground waters of the region, which include both designated beneficial uses of water and the narrative and numerical objectives which must be maintained or attained to protect those uses. It identifies general types of water quality problems, which can threaten beneficial uses in the region. It then identifies required or recommended control measures for these problems. In some cases, it prohibits

certain types of discharges in particular areas. The plan summarizes applicable provisions of separate State Water Board and Lahontan Water Board planning and policy documents, together with water quality management plans adopted by other federal, state, and regional agencies. It also summarizes past and present water quality monitoring programs, and identifies monitoring activities, which should be carried out to provide the basis for future Basin Plan updates and for waste discharge requirements or conditional waivers.

The Lahontan Water Board may initiate amendments to the Basin Plan at any time in response to issues of concern. In 2011, the Lahontan Water Board approved Resolution R6T-2011-0102, *Approval of Amendment to the Water Quality Control Plan for the Lahontan Region to Replace the Regionwide Pesticide Water Quality Objective with a Regionwide Waste Discharge Prohibition on Pesticides with Exemption Criteria for Aquatic Pesticide Applications and Certification of Substitute Environmental Documentation*. The State Water Resource Board approved the Basin Plan amendment in 2012, and the EPA certified it on September 5, 2015. This Basin Plan amendment provides a means for the Lahontan Water Board to regulate aquatic herbicide applications and other aquatic pesticides, where appropriate. The Lahontan Water Board only allows a prohibition exemption if aquatic herbicide use is proposed for purposes of protecting public health or safety or ecological preservation and only if such projects satisfy specific exemption criteria. Granting an exemption to the use of pesticides is a discretionary action by the Lahontan Water Board. Consistent with these requirements, the Lahontan Water Board may find that the benefits of the project render acceptable any impacts of the project. Conversely, the Lahontan Water Board may find that impacts of the proposed aquatic herbicide applications outweigh the impacts of the invasive species.

1.7.2 Regional

1.7.2.1 TRPA Regional Plan

The TKPOA is required to obtain a TRPA permit to implement the Methods Test. The IEC is the first level of TRPA environmental documentation that will evaluate the potential adverse environmental effects of the proposed project. An Environmental Assessment or Environmental Impact Statement will be required if the IEC identifies areas where existing data is insufficient to make an impact determination or if the IEC identifies unmitigated potentially significant effects. TRPA is a bi-state planning agency with authority to regulate land use, growth and development within the Lake Tahoe Region. TRPA implements that authority through its Regional Plan, Code of Ordinances, land use regulations, and agreements with other agencies and public service providers. The Regional Plan Goals and Policies establish an overall framework for development and environmental conservation in the Lake Tahoe Region. In December 2012, the TRPA Governing Board adopted an updated Regional Plan. Other jurisdictions may enact plans, ordinances, rules, regulations, and policies, so long as they are in compliance with the Regional Plan. Key provisions with respect to the Methods Test include:

- Goal FI-1, Policy FI-1.9 of the Regional Plan is to: “Prohibit the release of non-native aquatic invasive species in the region in cooperation with public and private entities. Control or eradicate existing populations of these species and take measures to prevent accidental or intentional release of such species.”
- Policy VEG-1.9 of the Regional Plan is to: “Work to Eradicate and prevent the spread of invasive species.

Scientific study projects are a “special use” in the shorezone and lakezone of Lake Tahoe, in accordance with Section 81.3.3 of the TRPA Code of Ordinances.

TRPA Environmental Improvement Program

Launched in 1997 as an effort to improve the Regional Plan, the Lake Tahoe Environmental Improvement Program (EIP) is a partnership of federal, state, and local agencies, private interests, and the Washoe Tribe, created to better protect and enhance the extraordinary natural and recreational resources of the Lake Tahoe Basin. EIP partners implement projects that range from new bike trails to creek restorations to programs that protect the lake from aquatic invasive species. The EIP Update, Restoration in Progress (TRPA 2010), focuses on six categories—Watersheds, Habitat, and Water Quality; Forest Management; Air Quality and Transportation; Recreation and Scenic Resources; Applied Science, and Program Support—and outlines the following land use goals relevant to implementation of the Methods Test:

- Restoring and protecting the Lake Tahoe Basin’s watersheds and stream environment zones
- Adopting and implementing a comprehensive aquatic invasive species management plan
- Improving Lake Tahoe access and recreational facilities

The EIP Invasive Species Program recognizes that aquatic invasive species pose one of the most serious threats to 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 Tahoe Keys locations were the two top-ranked locations “due to the magnitude of the plant and fish infestations as well as the high recreational use of these areas by Tahoe boaters” (UNR 2015). Such species can be extremely detrimental to native species and threaten water quality. Goals of the Invasive Species Program pertinent to the Methods Test include the following:

- Preventing new introductions of aquatic invasive species into Lake Tahoe
- Limiting the spread of existing invasive species, such as the Asian clam, while minimizing impacts to native species
- Abating harmful ecological, economic, social and public health impacts resulting from aquatic invasive species.

The EIP update notes that top science priorities for managing invasive species include the following:

- Using carefully designed pilot projects, complete science-based evaluations of the effectiveness of alternative strategies to control and manage invasive and noxious species that are now established in the Tahoe Basin.
- Develop and maintain a Basin-wide monitoring program of both aquatic and terrestrial habitats to assess the distribution and abundance of invasive species now established in the Tahoe Basin. This monitoring program should also serve as one component of an early warning system to detect new invasions.
- Examine factors affecting nearshore water quality and ecology.
- Conduct focused studies to develop invasive species threshold carrying capacities for terrestrial and aquatic habitats.

1.8 PERMITS REQUIRED

TKPOA has applied for and received Nationwide Permit (NWP) 27 from the United States Army Corps of Engineers in accordance with Section 404 of the Clean Water Act. NWP 27 coverage applies to projects relating to Aquatic Habitat Restoration, Establishment and Enhancement Activities.

The proposed discharge of aquatic herbicides into the Tahoe Keys main lagoon will require an NPDES permit issued by the Lahontan Water Board. Based on discussions with Lahontan Water Board staff, it is expected that the Methods Test would not be covered under the Statewide General NPDES Permit for Residual Aquatic Pesticide Discharges to Waters of the U.S. from Algae and Aquatic Weed Control Applications (State Water Board 2013), and an individual NPDES permit will be required. Section 401 of the Clean Water Act requires that any person applying for a federal permit or license, which may result in a discharge of pollutants into waters of the United States, must obtain a state water quality certification (State Water Board 2017). The proposed discharge of aquatic herbicides, the proposed use of the west channel barrier and the Antidegradation Policy require that TKPOA apply for a Section 401 Water Quality Certification through the Lahontan Water Board.

A Lake and Streambed Alteration Agreement (LSAA) from the California Department of Fish and Wildlife (CDFW) is required any time a proposed activity may:

- Substantially divert or obstruct the natural flow of any river, stream or lake;
- Substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or
- Deposit debris, waste or other materials that could pass into any river, stream or lake.

Both the 401 Water Quality Certification and the LSAA require the CEQA process to be complete prior to issuance.

As noted previously, CEQA requirements dictate the completion of an Initial Study and as lead agency under CEQA, TRPA requires an Initial Environmental Checklist. This document addresses both CEQA and TRPA environmental documentation requirements.

The need for a permit from the United States Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act will be evaluated once further habitat and species surveys are performed.

The proposed project must comply with the TRPA Regional Plan and the Code of Ordinances (see Section 1.7.2 above) and the TKPOA is required to obtain a TRPA permit to implement the Methods Test. The IEC is the first level of TRPA environmental documentation that will evaluate the potential adverse environmental effects of the proposed project. An Environmental Assessment or Environmental Impact Statement will be required if the IEC identifies areas where existing data is insufficient to make an impact determination or if the IEC identifies unmitigated potentially significant effects.

2. PROJECT DESCRIPTION

2.1 INTRODUCTION

The TKPOA proposes to test the efficacy of three herbicides (each will be applied in a one-time application) followed by two years of non-herbicide control methods within limited areas of the West Lagoon of the Tahoe Keys to evaluate the effectiveness of an integrated methods strategy for bringing aquatic invasive plants under control. TKPOA manages a majority of the waterways within the Tahoe Keys, primarily for recreation. Lake Tahoe's largest public marina, over 1,500 private residences, public lands, and a small commercial business center are also located at Tahoe Keys but are not owned or managed by TKPOA.

2.2 BACKGROUND

In the 1980s and 1990s, the aquatic invasive species Eurasian watermilfoil (*Myriophyllum spicatum*) became established in the Tahoe Keys and other areas around Lake Tahoe. As of 2012, 18 infestation sites were known with the possibility of more that were not surveyed (UNR 2015). Then, in 2003, curlyleaf pondweed (*Potamogeton crispus*) was first discovered in Lake Tahoe. This second non-native, invasive plant is capable of growing in deeper, colder waters, which may potentially be more detrimental to Lake Tahoe if allowed to spread unchecked. Currently, curlyleaf pondweed is limited to the south and southeastern shores of Lake Tahoe with infestations being observed from Taylor Creek to Lakeside Marina (UNR 2015, LTSLT 2016), with newer infestations recently found as far north as Elk Point Marina (Anderson 2016) 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 Tahoe Keys lagoons. Coontail has heavily infested the deeper channels of all of the lagoons, most abundantly in the Marina Lagoon and Lake Tallac, where the compositional percentage is nearly 100 percent (TKPOA 2016).

The invasive aquatic plant populations in the Tahoe Keys have been growing rapidly. Recent aquatic plant surveys (2014, 2015, and 2016) show the extent and density of excessive plant growth in the Tahoe Keys lagoons (TKPOA 2012). In recent years, 85 to 90 percent of the available wetted surface in the lagoons has been infested with invasive aquatic plants with a large majority being the non-native invasive species, and extremely high densities of the native coontail are found in the deeper channels of the lagoons (TKPOA 2014). Of particular concern, is the recent rapid growth and spread of curlyleaf pondweed, which has the potential to infest significantly more of Lake Tahoe's aquatic habitat than Eurasian watermilfoil, and can be more difficult to control due to the large number and dispersal capacity of its turions, which are produced in mid to late summer (Woolf and Madsen 2003, UNR 2015, Xie and Yu 2011). Turions are wintering buds that become detached and spread throughout the waterway and have the potential to remain dormant at the bottom of the water for long periods of time.

Seasonal harvesting has been the main weed control practice in the Tahoe Keys since the mid-1980s. Continued reliance on harvesting operations will neither improve aquatic plant management nor reduce the spread of viable plant fragments to near shore areas outside the Keys lagoons. Harvesting may actually aid in invasive plant population growth (Crowell 1994, TKPOA 2015).

In response to the growing AIS problem in the Tahoe Keys and the goal to limit non-point sources of pollution, the Lahontan Water Board issued Waste Discharge Requirements (WDRs) to the TKPOA on July 14, 2014. As part of these requirements, the TKPOA was tasked with developing a Non-Point Source Water Quality Management Plan (NPS) to address the land based sources of possible pollution, and an Integrated Management Plan (IMP) to address the growth of aquatic invasive plants. The purpose of the IMP is to optimize management effects by incorporating a suite of feasible and proven control methods that can be tailored to fit site constraints, infestation size, and urgency of control. Currently the only control methods that can be used in the TKPOA IMP are non-chemical methods. At this time, these methods consist, primarily of harvesting and bottom barriers. However, due to the size, density, and dominance of the infestation, these control methods have been shown to produce limited beneficial results. In addition, the current primary control method, harvesting, results in the production of large quantities of plant fragments (TKPOA 2015). Without proper controls, these fragments are easily transported by wind, water currents, and boat traffic within the Keys Lagoons and into Lake Tahoe, thus contributing viable plant fragments and turions that can become established in near shore habitats and marinas.

The continued presence of excessive aquatic plant growth in the Tahoe Keys lagoons is due to several environmental conditions including available nutrients, protected waters with reduced wave action, and shallow water that provides sufficient light and warms quickly in spring. The unique setting of the Tahoe Keys creates ideal habitat for prolific growth of aquatic plants. At the same time, this setting makes the Tahoe Keys a suitable setting for the potential use of herbicides as the waters of the coves do not readily transport dissolved matter and the narrow channels connecting the lagoons to the lake can, with some effort, be blocked off.

2.3 APPROACH

The Methods Test is proposed to determine the utility of and potential for integrating the limited use of aquatic herbicides into the IMP along with non-herbicide treatment methods to better control the aquatic invasive plants in the Tahoe Keys lagoons. The expected result is a demonstration of the ability to improve initial control of the plants using a one-time application of herbicides in the first year, followed in two subsequent years by non-herbicide control methods consisting of the placement of bottom barriers and diver-assisted hand pulling for control.

This section addresses the proposed schedule, duration, specific herbicides to be used, application method, application rates, spatial extent of application, water body description, and best management practices to be used to contain the aquatic herbicides in the treatment areas.

For a complete description of the proposed monitoring and contingency measures, please see Chapter 5: Mitigation Measures.

As a follow up to the one-time herbicide application and assessment, TKPOA proposes to use non-chemical methods and approaches for two subsequent years to test the ability to sustain control of aquatic plants in the herbicide-treated areas for the duration of the Methods Test. These coordinated non-chemical follow-up actions include use of selective hand-removal of aquatic plants, and the placement of bottom barriers.

The nine (9) locations proposed for the demonstration reflect the range of conditions and aquatic plants of the Tahoe Keys lagoons overall. All three aquatic herbicides proposed for use, endothall, triclopyr, and penoxsulam, have been approved by the U.S. EPA, and California EPA/ Department of Pesticide Regulation for the target plants. There is precedent for permitting the use of these three herbicides in other areas of California under the California Statewide NPDES General Permit for Aquatic Pesticide Applications No. CAG990005; however, based on discussions with Lahontan Water Board staff, it is expected that an individual NPDES permit will be required for the Methods Test. No adjuvants¹ are proposed for use with the aquatic herbicides and the proposed rate of use of each of the aquatic herbicides will be 50 percent, or less, of the maximum allowable concentration specified on the CDPR approved aquatic herbicide labeling. Table 1 provides a summary of proposed concentrations per herbicide. The efficacy of these application rates, developed by the TKPOA team based in part on a mesocosm-scale experiment using target plant species, has not been independently evaluated as part of this IEC/IS.

Table 1. Potential Concentrations of Aquatic Herbicides after Dilution in Treatment Area

Herbicide	Initial Concentration (PPM)	Total water volume, AF (3 replicate sites)	Dispersed Concentration, PPM, 1,000 AF available	Dispersed Concentration, PPM, 1,500 AF available
Endothall	2.0	45	0.09	0.06
Triclopyr	1.0	40	0.04	0.027
Penoxsulam	0.02	41	0.00082	0.00055

2.3.1 Best Practices and Additional Precautions

To help ensure the safe and efficient use of the herbicides, TKPOA has developed extensive and multi-layered plans, as discussed herein, to prevent accidental spills, to contain the herbicides within the treatment area, to precisely monitor the concentrations and movement of the aquatic herbicide after application, and to alert the public and water purveyors in the unlikely event that aquatic herbicides move beyond the treatment areas and enter the unaffected areas of the Tahoe Keys lagoons or Lake Tahoe. In addition, a

¹ An adjuvant is an ingredient that is added to an aquatic pesticide during a treatment event to increase its effectiveness on target organisms.

Monitoring and Reporting Program has been prepared and reviewed by an independent peer review committee with the purpose of ensuring that the study design and monitoring protocols meet scientific and regulatory standards.

The three proposed herbicides are currently used throughout the United States, including in California, to control the invasive aquatic plant species found in the Tahoe Keys lagoons. The uses, approved sites, methods of application, limitations, and restrictions of use, and the targeted aquatic weeds of aquatic herbicides are specified by each product's labeling. Licensed applicators only may use these herbicides and must comply with the approved label. This includes appropriate rate (concentration) of use, proper methods of application, proper equipment, protective clothing, and proper disposal of product containers after use. Labeling also provides specific limitations and compliance actions regarding uses in or near potable water sources and waters used for irrigation, swimming, or fishing.

In addition, in accordance with California state law, aquatic herbicide applications will be made only by or under the direction of a Qualified Applicator Certificate Holder (Applicator) from the CDPR. Field staff directed by the Applicator will have knowledge of the proper selection, use, and calibration of the equipment used during the application of aquatic herbicides.

TKPOA will be responsible for implementing the proposed herbicide Integrated Methods Test and will hire an Applicator with current certification for application of aquatic herbicides. The Applicator will follow all Best Management Practices, monitoring, reporting, and contingency measures set forth in the Mitigation Monitoring and Reporting Program and the corresponding Aquatic Pesticide Application Plan (APAP), which is included as Appendix B. As a condition of the contract with the Applicator, TKPOA shall receive written documentation and verification of the Applicator's training, including any staff used for the project.

The Methods Test proposes additional precautions to ensure that herbicide residues and chemical transformation products do not reach Lake Tahoe and drinking water supplies, principally a water-filled barrier to be placed across the West Channel to isolate the main lagoon from the lake. The water barrier is a bladder that is placed across the channel and filled with water before aquatic herbicides are applied to treatment areas, then removed after 5 to 7 weeks. As a contingency measure, TKPOA proposes to use activated charcoal filtration treatment systems to remove any chemical residues before drinking water enters distribution systems.

The Methods Test includes using bottom barriers and diver-assisted hand pulling in treatment areas during the two years following the herbicide application.. Turbidity is minimized from hand pulling by having divers carefully dislodge plants from the sediment and guide them into a suction device that pumps them to a barge where they are bagged for offsite disposal. Mitigation includes temporarily suspending operations if turbidity exceeds permit thresholds. No specific mitigation measures were identified for bottom barriers.

3. SUMMARY OF ENVIRONMENTAL IMPACTS

3.1 CEQA INITIAL STUDY

The proposed project could potentially affect the environmental factor(s) checked below. The following pages present a more detailed checklist and discussion of each environmental factor.

- | | | |
|--|---|--|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture and Forest Resources | <input type="checkbox"/> Air Quality |
| <input checked="" type="checkbox"/> Biological Resources | <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Geology/Soils |
| <input type="checkbox"/> Greenhouse Gas Emissions | <input checked="" type="checkbox"/> Hazards/Hazardous Materials | <input checked="" type="checkbox"/> Hydrology/Water Quality |
| <input type="checkbox"/> Land Use/Planning | <input type="checkbox"/> Mineral/Energy Resources | <input type="checkbox"/> Noise |
| <input type="checkbox"/> Population/Housing | <input type="checkbox"/> Public Services | <input checked="" type="checkbox"/> Recreation |
| <input checked="" type="checkbox"/> Transportation/Circulation | <input type="checkbox"/> Utilities/Service Systems | <input type="checkbox"/> Wind/Shadow |
| | | <input checked="" type="checkbox"/> Mandatory Findings of Significance |

3.2 CEQA ENVIRONMENTAL DETERMINATION

On the basis of the initial evaluation that follows:

 I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

 I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

 X I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

 I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

 I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, no further environmental document is required. FINDINGS consistent with this determination will be prepared.

Robert T. Tucker 4/16/18
Signature Date
Robert T Tucker
Printed Name For

3.3 TRPA ENVIRONMENTAL DETERMINATION

On the basis of this evaluation:

- a. The proposed project could not have a significant effect on the environment and a finding of no significant effect shall be prepared in accordance with TRPA's Rules of Procedure.

Yes

No

- b. The proposed project could have a significant effect on the environment, but due to the listed mitigation measures which have been added to the project, could have no significant effect on the environment and a mitigated finding of no significant effect shall be prepared in accordance with TRPA's Rules and Procedures.

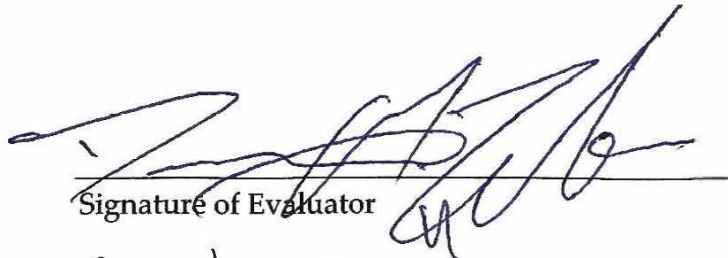
Yes

No

- c. The proposed project may have a significant effect on the environment and an environmental impact statement shall be prepared in accordance with this chapter and TRPA's Rules of Procedure

Yes

No



Signature of Evaluator

4/16/18

Date

Aquatic Resources Prog. Mgr.

Title of Evaluator

4. EVALUATION OF ENVIRONMENTAL IMPACTS

The following environmental analysis has been prepared using the CEQA Guidelines Appendix G: Environmental Checklist Form to complete an Initial Study. This document also includes analysis of environmental impacts required in the TRPA Initial Environmental Checklist found at: http://www.trpa.org/wp-content/uploads/Initial_Environmental_Checklist.pdf.

4.1 SIGNIFICANCE CRITERIA

CEQA Guidelines Section 15002(g) state, “a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.”

TRPA has nine adopted environmental threshold carrying capacities (thresholds of significance) that set environmental standards for the Lake Tahoe basin and indirectly define the capacity of the region to accommodate additional land development. The TRPA Code of Ordinance and 2015 Threshold Evaluation Report also include standards of significance.

The following discussion provides further detail regarding the use of significance criteria from Appendix G of the CEQA Guidelines and in accordance with the TRPA environmental threshold carrying capacities and the TRPA Code of Ordinances. The potential significance of project impacts in each element of the environment were evaluated in relation to the CEQA levels of significance defined in Table 2 below and the TRPA EIP thresholds of significance. Where a nexus of potential significance occurs and where EIP thresholds of significance may be triggered, the environmental analysis discusses how thresholds may be affected, which impacts were considered, and why.

4.1.1 CEQA

CEQA requires a brief explanation for answers to the Appendix G Environmental Checklist except “No Impact” responses that are adequately supported by noted information sources. Answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project level, indirect as well as direct, and construction as well as operational impacts.

Table 2. CEQA Defined Levels of Impact Significance

Impact Severity	Definition
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Impact Severity	Definition
No Impact	A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
Less than Significant Impact	"Less-than-Significant Impact" applies where the project's impact creates no significant impacts based on the criterion or criteria that sets the level of impact to a resource and require no mitigation to avoid or reduce impacts.
Less-than-Significant Impact after Mitigation Incorporated	"Less-than-Significant Impact after Mitigation" applies where the incorporation of mitigation measures has reduced an effect from potentially "Significant Impact" to a "Less-Than-Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level.
Significant Impact	"Significant Impact" is appropriate if there is substantial evidence that an effect is potentially significant, as based on the criterion or criteria that sets the level of impact to a resource. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

Source: CEQA Appendix G Environmental Checklist Form 2010

4.1.2 TRPA

Article VI of the TRPA Rules of Procedure includes the rules governing the preparation and processing of environmental documents pursuant to Article VII of the Compact and Chapter 3 of the TRPA Code of Ordinances.

TRPA uses the IEC, in conjunction with other available information, to determine whether an Environmental Assessment (EA) or EIS will be prepared for a project or other matter. An EA or EIS is required when TRPA determines that an IEC does not provide sufficient information to make the necessary findings for a project.

The IEC includes a series of questions categorized by and pertaining to TRPA regulations. Each checklist item requires a checked response of "Yes," "No," "No, with Mitigation," or "Data Insufficient." "Yes" means "the impact occurs and is considered potentially significant" and "No" means either "the impact does not occur" or "the impact may occur but is not significant (requires no mitigation)." A checked response of "Data Insufficient" or a determination that a project may have a significant effect on the environment (Section 3.3.2 of the TRPA Code) indicates that additional environmental review in the form of an EA or EIS would be required. The IEC form indicates that all "Yes" and "No, with Mitigation" responses require written explanations. This IEC provides supporting narrative for all such responses. Where a checked response may not be intuitive or easily understood by the reader, that response has been marked with an asterisk (*) and a brief clarifying statement supporting the rationale for the checked response is included. Based on an initial review of the Project, TRPA staff determined

that an IEC would provide sufficient information regarding the Project to make one of the findings below. As set forth in Code Subsection 3.3.1, based on the information submitted in the IEC, and other information known to TRPA, TRPA shall make one of the following findings and take the identified action:

1. The proposed project could not have a significant effect on the environment and a finding of no significant effect shall be prepared in accordance with TRPA’s Rules of Procedure.
2. The proposed project could have a significant effect on the environment, but due to the listed mitigation measures which have been added to the project, could have no significant effect on the environment and a mitigated finding of no significant effect shall be prepared in accordance with TRPA’s Rules of Procedure.
3. The proposed project may have a significant effect on the environment and an environmental impact statement shall be prepared in accordance with this Chapter and TRPA’s Rules of Procedure.

When completed, TRPA reviews the IEC to determine the adequacy and objectivity of the responses. When appropriate, TRPA consults with federal, state, or local agencies with jurisdiction over the project or with special expertise on applicable environmental impacts.

4.2 AESTHETICS (CEQA), AND SCENIC RESOURCES/COMMUNITY DESIGN/LIGHT AND GLARE (TRPA)

This section presents the analysis for potential project-related impacts related to aesthetics, scenic resources, community design, and light and glare. The following tables identify the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

CEQA IS Checklist Item	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
1) Have a substantial adverse effect on a scenic vista? (CEQA Ia)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings, within a state scenic highway? (CEQA Ib)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3) Substantially degrade the existing visual character or quality of the site and its surroundings? (CEQA 1c)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? (CEQA 1d)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
Would the proposal:				
5) *Be visible from any state or federal highway, Pioneer Trail or from Lake Tahoe? (TRPA 18a)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Be visible from any public recreation area or TRPA designated bicycle trail? (TRPA 18b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Block or modify an existing view of Lake Tahoe or other scenic vista seen from a public road or other public area? (TRPA 18c)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) Be inconsistent with the height and design standards required by the applicable ordinance or Community Plan? (TRPA 18d)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) Be inconsistent with the TRPA Scenic Quality Improvement Program (SQIP) or Design Review Guidelines? (TRPA 18e)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10) Include new or modified sources of exterior lighting? (TRPA 7a)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11) Create new illumination which is more substantial than other lighting, if any, within the surrounding area? (TRPA 7b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12) Cause light from exterior sources to be cast off -site or onto public lands? (TRPA 7c)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13) Create new sources of glare through the siting of the improvements or through the use of reflective materials? (TRPA 7d)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The impermeable water barrier may temporarily impede views of Lake Tahoe from a portion of the main lagoon (for about 5-7 weeks), but this temporary effect is not considered significant. No scenic resources would be damaged. No light sources or reflective structures would be constructed as a result of this project and there are no related impacts for items 6-13 in the checklist above.

4.2.1 Environmental Setting

Lake Tahoe is designated as an ONRW Tier 3 waterbody by the State of California under provisions of the Federal Clean Water Act regulations for its clarity and beauty.

4.2.2 Impacts and Mitigation Measures

According to Section 15002(g) of the CEQA Guidelines, “a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.” As stated in Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. CEQA allows for significance criteria

established by the applicable air pollution control district(s) to be used to assess the impact of a project related to GHG emissions, at the discretion of the CEQA Lead Agency.

4.2.2.1 Impacts

3) Would the project substantially degrade the existing visual character or quality of the site and its surroundings? (CEQA 1c) *Less than Significant*

The changes to the visual character or quality of the site would be considered a less than significant impact with the mitigation listed in the Basin Plan incorporated. The use of aquatic herbicides may improve scenic resources by reducing the presence of undesirable species. The use of aquatic herbicide applications could temporarily change the visual quality of the project area if it resulted in areas of dead, floating vegetation. These would be temporary impacts. Rooted invasive weeds that are killed are expected to decay on the bottom. It is uncertain whether the floating native weed, coontail, would decay on the surface or sink. In addition, the plants will be treated early in their growth cycle, reducing the bio-volume, particularly as compared to existing mechanical harvesting. A temporary increase of turbidity is anticipated during the removal of bottom barriers in the second and third years of the Methods Test.

The activities outlined in the Methods Test are not expected to cause visually offensive conditions, and therefore would not be expected to cause significant effects.

5) Would the project be visible from any state or federal highway, Pioneer Trail or from Lake Tahoe? (TRPA 18a) *No, not significant*

The project would not permanently impede any viewsheds, but proposed project signage may have a temporary effect on the aesthetic enjoyment of Lake Tahoe. Impacts are assumed not to be significant.

4.2.2.2 Mitigation Measures

Project-related impacts to aesthetics, scenic resources, community design, and light and glare are seen as less than significant and therefore, require no mitigation measures.

4.3 AGRICULTURE AND FOREST RESOURCES (CEQA)

This section presents the analysis for potential project-related impacts related to agriculture and forest resources. The following table identifies the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

CEQA IS Checklist Item	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
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Would the project:

CEQA IS Checklist Item	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
14) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? (CEQA IIa)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15) Conflict with existing zoning for agricultural use, or a Williamson Act contract? (CEQA IIb)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
16) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)) or timberland (as defined by Public Resources Code Section 4526)? (CEQA IIc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17) Result in the loss of forest land or conversion of forest land to non-forest use? (CEQA IId)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
18) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or forest land to non-forest use? (CEQA IIe)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

The implementation of the Methods Test would not result in the loss of farmland or forest land or the conversion of farmland to non-agricultural use or forest land to non-forest use. Therefore, the project would have no impact related to agriculture and forest resources, and these topics are not discussed further.

4.4 AIR QUALITY (CEQA/TRPA)

This section presents the analysis for potential project-related impacts related to air quality. The following tables identify the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

CEQA IS Checklist Item	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
19) Conflict with or obstruct implementation of the applicable air quality plan? (CEQA IIIa)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
20) Violate any air quality standard or contribute substantially to an existing or projected air quality violation? (CEQA IIIb)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CEQA IS Checklist Item	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
21) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal, state, or regional ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? (CEQA IIIc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
22) Expose sensitive receptors to substantial pollutant concentrations? (CEQA III d)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
23) Create objectionable odors affecting a substantial number of people? (CEQA III e)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
Would the proposal result in:				
24) Substantial air pollutant emissions? (TRPA 2a)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25) Deterioration of ambient (existing) air quality? (TRPA 2b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26) The creation of objectionable odors? (TRPA 2c)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27) Alteration of air movement, moisture, or temperature, or any change in climate, either locally or regionally? (TRPA 2d)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28) Increased use of diesel fuel? (TRPA 2e)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Use of aquatic herbicides will not conflict with or obstruct implementation of any air quality plan, or violate any air quality standard, as the use of aquatic herbicides will not result in an increase of aerial emissions.

4.4.1 Environmental Setting

The proposed project is located in the city of South Lake Tahoe, within the El Dorado County Air Quality Management District (EDCAQMD). The EDCAQMD is responsible for ensuring that national and state air quality standards are not exceeded. The Lake Tahoe Air Basin is in attainment or designated unclassified for all NAAQS, and is designated a nonattainment area for the ozone and PM10 for California ambient air quality standards (CAAQS). The Methods Test will take place in areas within the main lagoon of Tahoe Keys. Offensive odors have been observed in areas of Lake Tallac away from where the Methods Test treatments are proposed. These odors in Lake Tallac were not described as having the rotten egg smell associated with hydrogen sulfide production in anoxic sediments (Hoover 2017).

Implementation of the proposed project has the potential to produce air pollutant emissions during project implementation, as discussed below.

4.4.2 Impacts and Mitigation Measures

Significance criteria in the Lake Tahoe Region are summarized in Chapter 3 of the 2015 TRPA Threshold Evaluation Report. Criteria include:

- Maintain carbon monoxide concentrations at or below 6 parts per million.
- Maintain ozone concentrations at or below 0.08 parts per million, averaged over 1 hour.
- Maintain oxides of nitrogen (NO_x) emissions at or below the 1981 level.
- Maintain PM₁₀ at or below 50 µg/m³ measured over a 24-hour period.
- Maintain PM₁₀ at or below annual arithmetic average of 20 µg/m³.
- Maintain PM_{2.5} at or below 35 µg/m³ measured over a 24-hour period.
- Maintain PM_{2.5} at or below annual arithmetic average of 12 µg/m³.

4.4.2.1 Impacts

22) Would the project expose sensitive receptors to substantial pollutant concentrations? (CEQA IIIId) *Less than significant.*

The nearest sensitive receptors are the residences located adjacent to the proposed project area. No schools, hospitals, or nursing homes are located within 0.5 mile of the project. There is the possibility that herbicides applied to water could volatilize if exposed to air. However, the herbicides proposed to be used during the Methods Test (Triclopyr, endothall, and penoxsulam) have low vapor pressures and are quite water soluble, so they will not volatilize from treated water and drift through air following the application (EPA 2007; 2014; WDOE 2001). Additionally, the herbicides used during the Methods Test will be applied below the surface of the water, which will eliminate the opportunity for drift of herbicides onto bystanders or nearby residents during the application process (WDOE Undated).

A boat will be used to apply herbicides during the Methods Test, and additional equipment will be used to construct and remove the water barrier in the West Channel. Any potential increase in emissions due to these activities however are expected to be more than offset by the reduction in emissions from recreational watercraft as each test area will be closed to all other in-water uses during the Methods Test and for several weeks on either end of the Methods Test. The implementation of the Methods Test will result in vehicle travel for workers performing the test. The vehicle travel, and the emissions that result from it, will occur for a limited duration and are expected to result in an insignificant change in the overall pollutant emissions resulting from transportation activities in the region.

Based on the methods used to apply herbicides during the project, and the limited amount of vehicle traffic associated with the project, impacts are expected to be less than significant.

**23) Would the project create objectionable odors affecting a substantial number of people?
(CEQA IIIe) *Less than Significant***

Decaying aquatic plants have the potential to create objectionable odors, if they are exposed to the air. However, if dead invasive weeds decay on the bottom of the lagoon, they would not be exposed to air. The proposed project will occur during the spring when target plants will be in their early stages of growth. The volume of decaying plant material following Methods Test treatments will be less than if the targeted plants were allowed to grow through the summer to full maturity, and the volume of plant material that is mechanically harvested and exposed to the air would also be reduced.

4.4.2.2 Mitigation Measures

There are no significant project-related impacts related to air quality, and no mitigation requirements.

4.5 BIOLOGICAL RESOURCES (CEQA) AND VEGETATION/WILDLIFE (TRPA)

This section presents the analysis for potential project-related impacts related to biological resources and vegetation/wildlife. The following tables identify the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

CEQA IS Checklist Item	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
29) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? (CEQA IVa)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? (CEQA IVb)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
31)* Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? (CEQA IVc)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CEQA IS Checklist Item	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
32)* Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? (CEQA IVd)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (CEQA IVe)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
34) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? (CEQA IVf)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
Would the proposal result in:				
35) Removal of native vegetation in excess of the area utilized for the actual development permitted by the land capability/IPES system? (TRPA 4a)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36) Removal of riparian vegetation or other vegetation associated with critical wildlife habitat, either through direct removal or indirect lowering of the groundwater table? (TRPA 4b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37) Introduction of new vegetation that will require excessive fertilizer or water, or will provide a barrier to the normal replenishment of existing species? (TRPA 4c)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38) Change in the diversity or distribution of species, or number of any species of plants (including trees, shrubs, grass, crops, micro flora, and aquatic plants)? (TRPA 4d))	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
39) Reduction of the numbers of any unique, rare, or endangered species of plants? (TRPA 4e)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
40) Removal of stream bank and/or backshore vegetation, including woody vegetation such as willows? (TRPA 4f)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41) Removal of any native live, dead or dying trees 30 inches or greater in diameter at breast height (dbh) within TRPA's Conservation or Recreation land use classifications? (TRPA 4g)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42) A change in the natural functioning of an old growth ecosystem (TRPA 4h)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43) Change in the diversity or distribution of species, or numbers of any species of animals (birds, land	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
animals including reptiles, fish and shellfish, benthic organisms, insects, mammals, amphibians or microfauna) (TRPA 5a)				
44) Reduction of the number of any unique, rare, or endangered species of animals? (TRPA 5b)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
45) Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals? (TRPA 5c)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46) Deterioration of existing fish or wildlife habitat quantity or quality? (TRPA 5d)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

The proposed scope of work is anticipated to impact invasive herbaceous vegetation in an aquatic ecosystem of low habitat quality. Two invasive weed species (Eurasian watermilfoil and curlyleaf pondweed) currently create a polyculture covering over 80 percent of the surface area of the water. Coontail, a native nuisance submersed macrophyte is the third species targeted in this methods test. The removal of these species is not anticipated to conflict with any existing plans or policies. Therefore, Impacts 33 - 34, 35 - 37, 40-42, and 45 are not applicable to the project or would have no related impact, and are not discussed further.

4.5.1 Environmental Setting

The Tahoe Keys is a privately held marina association that represents a freshwater ecosystem connected hydrologically to Lake Tahoe, at approximately 6,184 feet in elevation. The area has experienced heavy anthropogenic alteration, and species that persist in the system are generally tolerant of human activity. The Tahoe Keys lagoons are a manmade development that was dredged from a pre-existing marsh. If invasive weeds were removed, some aquatic species present in Lake Tahoe might colonize the lagoons to the extent that habitat conditions there are suitable. Wildlife species that may be able to utilize the improved foraging and breeding grounds include: common merganser, mallard, Canada goose, California gull, ring-billed gull, osprey, and bald eagle. The TRPA Regional Plan Update EIS (TRPA 2012a) describes the biological resources of the Lake (see Section 3.10 Biological Resources in that report).

The following description of the lagoons is taken from the *Benthic Macroinvertebrate 2016 Sampling Report for the Tahoe Keys Lagoons* (TKPOA 2017c). The Tahoe Keys was built primarily in the 1960's in the center of the original Truckee River marsh, once the largest wetland in the Sierra-Nevada mountain range. Construction of the Keys included dredging marshland, installation of bulkheads and capping with fine sand to create a suitable building substrate. The composition of the lagoon banks is a combination of vertical bulkheads, rock armored beaches, or shallow angled sand and cobbles. The rock armored banks may provide habitat in the interstitial spaces, and the native surface shoreline habitat may be impacted by homeowner recreation.

The Tahoe Keys lagoons are composed of three water features including Lake Tallac Lagoon and the Main and Marina lagoons. The Lake Tallac Lagoon is a narrow pond located on the southern edge of the Tahoe Keys and is separated from the Tahoe Keys Main Lagoon fingers by a diversion structure. Additionally, Lake Tallac Lagoon is connected to Lake Tahoe indirectly through the Pope Marsh during times of significant surface water inflow and level increase. The Main Lagoon is located in the western part of the Tahoe Keys and is directly connected to Lake Tahoe through the West Channel. It is a combination of connected lagoon fingers and coves that provides recreational access to Tahoe Keys residents and renters. The Main Lagoon provides no commercial access to the lake and limited public access. Lastly, the Marina Lagoon is located on the eastern side of the Tahoe Keys and is directly connected to Lake Tahoe through the East Channel. It is relatively open, with heavy boat traffic from commercial, governmental, and private boat usage. The Marina Lagoon is also heavily infested with aquatic invasive species.

The lagoon beds are comprised of very fine sediments that support a thick canopy of aquatic vegetation. The Keys lagoons have a very small catchment area for surface runoff, and circulation between the lagoons and Lake Tahoe for most of the year is mainly driven by low-density warmer water flowing out of the lagoons near the surface and higher density cool water flowing into the lagoons from Lake Tahoe near the bottom of the channels (La Plante 2001). Other factors influencing water circulation in Tahoe Keys include seasonal lake level changes moving water predominantly from Lake Tahoe into the lagoons during spring snowmelt with water moving from the lagoons back into the lake when water levels recede in the summer, wind-driven currents, and groundwater inflows. Lake Tahoe is regulated and controlled by a dam at Tahoe City, and its surface elevation may vary by 6 or more feet in a year, filling in spring and being released in the summer and fall. Circulation in the Tahoe Keys lagoons decreases with distance from the channels, to the point where the most removed coves experience very low rates of circulation (Anderson 2012).

The current abundant growth of native and non-native aquatic weeds degrades the environment in several ways including providing habitat for non-native warm water fish and driving excessive variations in pH, dissolved oxygen, and temperature. TKPOA monitoring from early May to mid-October in 2016 reported pH ranging from 7.7 to 8.4 at Lake Tahoe sites compared to more alkaline measurements up to 10.3 in mid-August (TKPOA 2017d). Dissolved oxygen measurements at Lake Tahoe sites ranged from 7.4 to 18.8 mg/L, compared to a range of 0.02 mg/L measured in Lake Tallac to 23.0 mg/L in the main lagoon. Minimum dissolved oxygen was 6.73 mg/L in the main lagoon and 7.57 in the marina lagoon. Water temperature measured at Lake Tahoe sites ranged from 10.9 to 20.5 °C, compared to a range of 10.2 to 23.8 °C in the lagoons. The excessive plant growth also contributes carbon and sediment loading and provides sources of continuing AIS infestations in the Lake Tahoe near shore areas.

According to TRPA's Aquatic Invasive Management Plan (TRPA 2014), nearly 30 non-native species are established in the Lake Tahoe Region, including aquatic plants, fishes, invertebrates, and an amphibian. In addition to the aquatic weeds targeted by the Methods Test, these include

beds of Asian clams (*Corbicula fluminea*), which have become larger and more common than previously known, and populations of warm water fishes such as largemouth bass (*Micropterus salmoides*) and bluegill (*Lepomis macrochirus*), which are expanding. The shallow water depth has resulted in warmer water temperatures in the Tahoe Keys, likely facilitating the establishment of non-native plants in the nearshore environment and providing increased spawning areas for warm water fishes that compete with desirable species.

In 2016, the TKPOA undertook a program to collect baseline data on the health of the Tahoe Keys lagoons in order to better inform the Integrated Management Plan. This data included detailed macrophyte surveys, bimonthly water quality sampling, sediment sampling, and benthic macroinvertebrate sampling.

Macrophyte Surveys

As required by the WDRs issued by the Lahontan Water Board, the TKPOA conducts an annual aquatic macrophyte survey of the Tahoe Keys lagoons (TKPOA 2017e). Results of the most recent (July 2017) survey found species presence to be similar to that of previous years: *Myriophyllum spicatum* (Eurasian watermilfoil), *Potamogeton crispus* (curlyleaf pondweed), *Ceratophyllum demersum* (coontail), *Potamogeton richardsonii* (Richardson's pondweed), *Potamogeton foliosus* (leafy pondweed), *Elodea canadensis* (elodea), *Brasenia schreberi* (water-shield), and various species of *Nitella*, *Chara*, *Spirogyra*, and other filamentous algae. However, the prevalence and relative abundance of curlyleaf pondweed has increased in the Tahoe Keys lagoons for the past two years, and the species is now found in some areas up to 20 feet deep, which is much deeper than previously detected. While native coontail is the most prevalent species, the trend data indicate that invasive curlyleaf pondweed is becoming widely established throughout the lagoons and could potentially become the dominant macrophyte within the next year or two. The plant's swift and multiple modes of establishment (e.g., fragments, turions, and seeds), coupled with its ability to stay intact and tethered to boats, strongly suggest that this invasive species could become well-established in much of the near-shore, shallow-zone (roughly 20 feet and less) ecosystems throughout Lake Tahoe within the next few years.

Benthic Macroinvertebrate (BMI) Surveys

Benthic macroinvertebrate (BMI) sampling was conducted in July 2016, which coincides with the peak growing season for many of the macrophytes in the Tahoe Keys lagoons (TKPOA 2017c). Sampling was conducted at five different locations around the lagoons that represent common habitat types, including dead end coves and channels. Overall, the BMI species found within the Tahoe Keys lagoons suggest a tolerant community that can withstand impaired water quality. However, because there is limited comparable data, it is not possible to draw any conclusions regarding any change in the health of the lagoons with respect to BMI. A total of 64 distinct taxa were identified among the five sites sampled by TKPOA in 2016, consisting of taxa typical of well-vegetated shallow littoral zones. Table 1 of TKPOA (2017c) lists the taxa and counts from the 2016 sampling.

CNDDDB Search/TRPA Resolution Discussion

Special-status biological species that could occur in or within proximity of the project area, are discussed below. Special-status species are those that are legally protected or otherwise listed by federal, or state wildlife groups. The species evaluated included those:

1. Listed as state or federally Threatened or Endangered;
2. Considered as candidates for listing as Threatened or Endangered;
3. Identified by the CDFW as a Species of Special Concern, Protected, or Fully Protected;
4. Identified by the USFWS as a Species of Special Concern;
5. Identified as a Threshold Species by TRPA;
6. Plants considered by the California Native Plant Society (CNPS) as rare, threatened, or endangered.

Of note, Lake Tahoe does provide habitat for a multitude of native and non-native species not recognized as special-status biological species. Nevertheless, the proposed habitat and species surveys would aim to catalog their presence and potential impacts as well.

The California Natural Diversity Database (CNDDDB) was queried in October 2017, for a five-mile radius of the Tahoe Keys lagoon area (CNDDDB 2017).

Due to lack of suitable habitat within the project area, the following plant species were excluded from further analysis. Austin's astragalus (*Astragalus austinae*; CNPS Rank 1B.3), Davy's sedge (*Carex davyi*; 1B.3), Galena Creek rockcress (*Arabis rigidissima*; 1B.3), Tahoe draba (*Draba asterophora* var. *asterophora*; 1B.2 "TRPA Sensitive Species"), Tulare rockcress (*Boechera tularensis*; 1B.3), and upswept moonwort (*Botrychium ascendens*; 2B.3).

As stated in TRPA Resolution 82-11 "Vegetation Preservation," the Numerical Standard should "provide for the non-degradation of the natural qualities of any plant community that is uncommon to the Basin, or of exceptional scientific, ecological, or scenic value." The project is not anticipated to impact any of the noted plant communities of concern including: the deep water plants of Lake Tahoe, Grass Lake (sphagnum bog), Osgood swamp, nor the Freel Peak cushion plant community. Additionally per the Resolution, populations of the following "TRPA Sensitive Species" must be maintained: mariposa sedge (*Carex paucifructus*; Not Rare), long-pedaled lewisia (*Lewisia pygmaea longipetala*; CNPS Rank 1B.3), Cup Lake draba (*Draba asterophora* var. *macrocarpa*; 1B.1), and Tahoe draba (*Draba asterophora* var. *asterophora*). Due to lack of suitable habitat within the project area, four of the five "TRPA Sensitive Species" were excluded from further analysis: mariposa sedge, long-pedaled lewisia, Cup Lake draba, and Tahoe draba.

Plant species with the potential to be present within proximity of the project area include: American manna grass (*Glyceria grandis*; 2B.3), broad-nerved hump moss (*Meesia uliginosa*; 2B.2), marsh skullcap (*Scutellaria galericulata*; 2B.2), Mingan moonwort (*Botrychium minganense*; 2B.2),

mud sedge (*Carex limosa*; 2B.2), scalloped moonwort (*Botrychium crenulatum*; 2B.2), slender-leaved pondweed (*Stuckenia filiformis* ssp. *alpina*; 2B.2), water bulrush (*Schoenoplectus subterminalis*; 2B.3), and watershield (*Brasenia schreberi*; 2B.3). Tahoe yellow cress (*Rorippa subumbellata*; 1B.1, CA Endangered, Nevada Endangered) is a small native plant that grows on sandy beaches and dunes, on the shoreline of Lake Tahoe. The plant is state listed as endangered in CA and NV. Individuals have been observed on shorelines near the Tahoe Keys lagoon, but not within the lagoon.

The wildlife species excluded from further evaluation include: bank swallow (*Riparia riparia*; CA Threatened), black-backed woodpecker (*Picoides arcticus*; Not Listed), gray-headed pika (*Ochotona princeps* ssp. *schisticeps*; Not Listed), long-eared owl (*Asio otus*; CDFW Species of Special Concern), North American porcupine (*Erethizon dorsatum*; Not Listed), northern goshawk (*Accipiter gentilis*; CDFW Species of Special, TRPA Special Interest Species), sharp-shinned hawk (*Accipiter striatus*; CDFW Watchlist), Sierra marten (*Martes caurina sierra*; Not Listed), Sierra Nevada mountain beaver (*Aplodontia rufa*; CDFW Species of Special Concern), and western bumble bee (*Bombus occidentalis*; Not Listed).

Wildlife species with the potential to be present within proximity of the project area include: bald eagle (*Haliaeetus leucocephalus*; CA Endangered, CDFW Fully Protected, USFWS Bird of Conservation Concern, and TRPA Special Interest Species), Great Basin rams-horn (*Helisoma newberryi*; Not Listed), Lahontan cutthroat trout (*Oncorhynchus clarkii henshawii*; Federally Threatened), Lake Tahoe amphipod (*Stygobromus lacicolus*; Not Listed), Lake Tahoe benthic stonefly (*Capnia lacustra*; Not Listed), Lake Tahoe stygobromid (*Stygobromus tahoensis*; Not Listed), northern leopard frog (*Lithobates pipiens*; CDFW Species of Special Concern), osprey (*Pandion haliaetus*; CDFW Watchlist, TRPA Special Interest Species), Sierra Nevada yellow-legged frog (*Rana sierra*; CDFW Watchlist), southern long-toed salamander (*Ambystoma macrodactylum sigillatum*; CDFW Species of Special Concern), willow flycatcher (*Empidonax traillii*; CA Endangered, USFWS Bird of Conservation Concern), and yellow-headed blackbird (*Xanthocephalus xanthocephalus*; USFWS Bird of Conservation Concern).

Per TRPA Resolution 82-11 "Wildlife; Special Interest Species," several species have a minimum number of population sites and maximum influence zones. These species all have the potential to be present within proximity of the project area and include: bald eagle, goshawk (*Accipiter gentilis*; CDFW Species of Special Concern), golden eagle (*Aquila chrysaetos*; CDFW Fully Protected and Watchlist, USFWS Bird of Conservation Concern), osprey, peregrine falcon (*Falco peregrinus*; CDFW Fully Protected, USFWS Bird of Conservation Concern), waterfowl (genus not specified), and deer (*Odocoileus hemionus*; Not Listed). This project is not known to be within any of the mapped disturbance or influence zones, however zones are subject to change dependent on the location of individuals and nests.

No habitat conservation plans or natural community conservation plans have been identified for the project area.

4.5.2 Impacts and Mitigation Measures

Background research was conducted to identify special status species and sensitive habitats, with potential to occur in the project area. The CNDDDB was queried in October 2017, for a 5-mile radius of the Tahoe Keys lagoon area. The potential that a species could occur in the study area was based on the known range of the species, whether its habitat occurred in the survey area, its known migration routes, and whether any recorded occurrences represented historical or contemporary presence.

4.5.2.1 Impacts

- 29) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? (CEQA IVa) *Potentially Significant***

Data is currently insufficient to characterize potential effects to listed species, because the presence and distribution of these species in proximity to the Methods Test site is not known with confidence. However, it is not likely that any special status terrestrial species would be affected, unless the installation of the impermeable barrier would cause the loss of habitat or direct effects on individuals. Osprey and bald eagles are unlikely to hunt in the Tahoe Keys area due to aversion to anthropogenic disturbance. The three herbicides proposed for use in the Methods Test reportedly do not bioaccumulate. If raptors feed on prey subjected to the proposed three herbicides, as noted earlier the (EPA) has determined that these three herbicides will have no significant acute or chronic impact on fish or freshwater invertebrates when recommended rates are used (EPA 2004; WDNR 2012a; WDOE Undated). The footprint for the construction of the impermeable barrier is not sufficiently delineated to conclusively exclude such effects, aerial photography suggests that terrestrial habitat in the vicinity of the West Channel Entrance is highly disturbed, consisting of residential lawns and riprap (Figure 2). Checking the Database for Protection of Endangered Species (<http://www.cdpr.ca.gov/docs/endspec/prescint.htm>), the only listed species in the Tahoe Keys are the Tahoe Yellow Cress and the Bank Swallow (both are terrestrial) and the code use limitation allows for the use of all three proposed herbicides for selective control of invasive exotic plants in the occupied habitat of these two species.



Figure 2. West Channel and Land Use Immediately Surrounding

- 31) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? (CEQA IVc) *Potentially Significant***

A temporary interruption of water flow between the lagoon and the Lake will result from the installation of the impermeable barrier at the West Channel entrance and may cause water levels in the main lagoon and Lake Tallac to be lower than normal during this period. TKPOA has applied for, and received, NWP 27 from the U.S. Army Corps of Engineers due to activity below the Ordinary High Watermark (OHW). Preliminarily, the short period (5-7 weeks) during which this barrier will be in place may mitigate any substantial impact to wetlands, however data are insufficient to delineate wetlands and fully evaluate this potential effect.

- 32) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? (CEQA IVd) *Potentially Significant***

An impermeable barrier would block the entrance of the West Lagoon into Lake Tahoe during the duration of the test for a period of approximately 5 to 7 weeks during May (and may be removed as soon as 14 days, depending on monitoring results). The short duration of this placement is not expected to interfere with the movements of fish and wildlife to the extent that would cause a significant impact. Further study would be performed to evaluate the species present in and within proximity of the project area, as data is currently insufficient to determine if the barrier will coincide with any lifecycle elements potentially affecting species.

Several species of migratory geese and duck are known to utilize the Tahoe Keys as nursery sites during the proposed period of the Methods Test. Prior to the installation of the barriers Mitigation Measure MM BIO-2 will be implemented. Exclusionary fences may aid in ensuring

active nests are established outside the project area, and active nests within proximity of the project area will be protected in accordance with agency requirements and the regulations of the Migratory Bird Treaty Act.

38) Would the project cause a change in the diversity or distribution of species, or number of any species of plants (including trees, shrubs, grass, crops, micro flora, and aquatic plants)? (TRPA 4d) *Data Insufficient*

43) Change in the diversity or distribution of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, insects, mammals, amphibians or microfauna) (TRPA 5a) *Data Insufficient*

The Methods Test will change the number and distribution of species, but this change is not considered significant. Specifically, the distribution of two target invasive plant species (Eurasian watermilfoil and curlyleaf pondweed) and one native nuisance plant species (coontail) in treatment areas. If these species are successfully controlled, restoration of natural conditions is anticipated to allow a more diverse and complex ecosystem to establish. In addition to the three targeted plant species, some mortality of non-target plants can be expected from herbicides and bottom barriers. Fish and other aquatic organisms within the benthic and littoral zones may experience temporary reductions to their distribution during the 5-7 weeks when the water barrier is in place, followed by recovery of natural conditions. The approximately 5 acres of bottom barriers proposed for the second and third years of the Methods Test will change the distribution of benthic organisms. However, benthic macroinvertebrate communities will be unaffected outside of treatment areas and are expected to quickly recolonize treatment areas so the impact on species distribution will be insignificant.

In addition to the physical impact of bottom barriers, there is a potential that aquatic life could be exposed to harmful concentrations of aluminum in lagoon water during the removal of bottom barriers. TKPOA's 2016 report on bottom barrier monitoring included an observation that silt was deposited on top of the barriers, most likely from boat traffic disturbing and redistributing fine bottom sediments (TKPOA 2017g). It was reported that barrier removal disturbed the lagoon bottom and created a high level of turbidity in the local vicinity that took several hours to clear. Alum (i.e. aluminum sulfate) was discharged throughout the Tahoe Keys for several years ending in 1998, with the purpose of controlling algae and improving water clarity (TKPOA 2017f). The 2016 sediment monitoring found aluminum concentrations ranging from less than 2,000 to 14,000 mg/kg in main lagoon sediments. Following 2015 dredging operations in the East Channel, water samples collected within turbidity curtains had aluminum concentrations ranging from 350 to 1,000 µg/L, with the higher concentrations approaching the general acute level (1,400 µg/L 1-day average total aluminum) for protection of aquatic life identified in the latest draft freshwater quality criteria (EPA 2017a). There is a potential for short-term exceedances of the aquatic life acute toxicity level for aluminum within treatment areas during removal of bottom barriers.

Because the Methods Test will only be treating approximately 8% of the Tahoe Keys lagoon areas, the overall effects on plant and animal populations, including those identified as unique, rare or endangered, may not be significant. However, data are insufficient to be conclusive. The treatment areas will be recolonized by plants, benthic invertebrates, fish, and other aquatic life soon after the Methods Test is completed. Fish distribution may also be temporarily changed during the 5 to 7 weeks when the water barrier in the West Channel impedes passage between the main lagoon and Lake Tahoe. Water quality objectives may be temporarily exceeded within the treatment area, as allowed by an exemption to the prohibition on use of aquatic herbicides, including the objective for non-degradation of aquatic communities and populations (Lahontan Water Board 2011).

In addition to the known direct effects of herbicide applications and bottom barriers on aquatic plants and invertebrates, the Methods Test may cause potential indirect effects to the ecology of the Tahoe Keys main lagoon that are not completely understood at this time. Overall, the reduction in aquatic weeds and recovery of native plant communities is likely to cause beneficial shifts in aquatic communities as water quality conditions are improved and habitat for predatory non-native fish species is reduced. However, as discussed at greater length in Section 4.8, aquatic weed control has the potential to affect environmental conditions in ways that may contribute to increased harmful algal blooms and, in some cases, the production of cyanotoxins that have been reported to cause illness and mortality in wildlife, livestock and pets. The acute effects of contact recreational exposure to cyanotoxins from activities like swimming, jet skiing, etc., can result in a wide range of symptoms in humans including skin and eye irritation, fever, headaches, muscle and joint pain, blisters, stomach cramps, diarrhea, vomiting, mouth ulcers, and allergic reactions (EPA 2015b). Some researchers have suggested that certain cyanotoxins may contribute to neurodegenerative disease (Holtcamp 2012). These potential effects are partly mitigated by the fact that only a small portion of the overall lagoon area will be treated; however, information is currently insufficient to rule out the possibility of an incremental increased risk of cyanobacteria blooms resulting from proposed aquatic weed control efforts and spread of cyanotoxins beyond treatment areas. This potential impact will need to be further evaluated in a complete antidegradation analysis.

To more completely address the potential effects of herbicide applications on non-target organisms, the following information is provided on impacts on fish and other aquatic life of the three proposed herbicide products (i.e., triclopyr, endothall, and penoxsulam) and their transformation or breakdown products. According to the Washington State Department of Ecology, if the herbicides are applied according to the label, the effect on terrestrial wildlife should be minimal (WDOE 2001a, 2001b). Additional information on the environmental fate of these herbicides is provided in Section 4.9.

At the recommended rates of application, the EPA has determined that these three herbicides will have no significant acute or chronic impact on fish or freshwater invertebrates. Consistent with these recommendations, the proposed application concentrations for use of triclopyr, endothall, and penoxsulam in the Methods Test are 1.0, 2.0, and 0.02 parts per million (ppm) active ingredient (AI), respectively. The triclopyr-containing herbicides Renovate 3™ and

Renovate OTF™ are approved for use at levels no greater than 2.5 ppm AI (maximum labeled rate) in natural waters, while the endothall-containing herbicide Aquathol® is approved for use at a maximum label rate of 5.0 ppm AI. The penoxsulam-containing herbicide Galleon SC™ has a maximum label rate of 0.1 ppm AI.

Triclopyr

The EPA classifies pesticides according to their acute toxicity responses (WDOE undated). Acute toxicity describes the adverse effects of a substance that result from a single exposure or from multiple exposures in a short period of time. Acute endpoints are typically reported as EC50 (concentrations at which 50 % of test organisms exhibit a response like immobilization) or LC50 (concentration at which 50 % of test organisms exhibit a lethal response) values. Compounds with acute values >100 ppm are classified as “Practically non-toxic” (best rating), while compounds with acute values of 10-100 ppm are classified as “Slightly toxic” (second best classification). Overall, the evidence indicates that triclopyr’s acute toxicity values are ~100 ppm or greater for most invertebrate and vertebrate species, indicating that a collective “Practically non-toxic” rating is most appropriate as a generic classification (Table 3) (WDOE undated). Even the LC50 of the most sensitive species in Table 3, the fathead minnow, is 44 times higher than the proposed application concentration of 1 ppm for triclopyr.

Table 3. Freshwater Organism Studies for Triclopyr (SePRO 2007, WDOE undated).

Study	Organism	Results	Comments
Fish 96-hour LC50	Bluegill*	891 ppm AI	Practically non-toxic
Fish 96-hour LC50	Rainbow trout*	552 ppm AI	Practically non-toxic
Fish 96-hour LC50	Fathead minnow	44 ppm AI	Slightly toxic
Invertebrate 48-h EC50	<i>Daphnia magna</i> *	248 ppm AI	Practically non-toxic

*Likely occur in Lake Tahoe and/or the Tahoe Keys.

Triclopyr and TCP do not bioaccumulate or bioconcentrate (WDNR 2012c). TMP does appear to bioaccumulate in fatty fish tissues, such as inedible and visceral tissues, but does not remain in fatty fish tissues following TMP disappearance from the water (WDNR 2012c). None of the metabolites or degradates of triclopyr have been identified as having a higher potential toxicity than the parent compound (WDOE Undated).

Endothall

On an acute basis, the dipotassium salt of endothall proposed for use in the Tahoe Keys is slightly toxic to practically non-toxic to freshwater fish and invertebrates (EPA 2005a). As was the case for triclopyr, overall evidence indicates that the acute toxicity values for the dipotassium salt of endothall are ~100 ppm or greater with invertebrate and vertebrate species, indicating that a collective “Practically non-toxic” rating is most appropriate as a generic classification (Table 4). The LC50 of the most sensitive species in Table 4, the water flea *D. magna*, is >14 times higher than the proposed application concentration of 2 ppm for endothall.

Table 4. Freshwater Organism Studies for Endothall Dipotassium Salt (EPA 2005a).

Study	Organism	Results	Comments
Fish 96-hour LC50	Bluegill*	316 ppm AI	Practically non-toxic
Fish 96-hour LC50	Rainbow trout*	107 ppm AI	Practically non-toxic
Fish 96-hour LC50	Channel catfish	>42.9 ppm AI	Slightly toxic
Invertebrate 48-h EC50	<i>D. magna</i> *	>28.6 ppm AI	Slightly toxic

*Likely occur in Lake Tahoe and/or the Tahoe Keys.

The dipotassium salt of endothall does not bioconcentrate or bioaccumulate in most aquatic fauna (WDOE 2001). Findings from field and laboratory studies with bluegills suggest that bioaccumulation of dipotassium salt formulations by fish from water treated with the herbicide is unlikely (WDNR 2012a). Tissue sampling has shown residue levels become undetectable a few days after treatment (WDNR 2012a). None of the metabolites or degradates of endothall have been identified as having a higher potential toxicity than the parent compound (WDNR 2012a).

Penoxsulam

On an acute basis, penoxsulam is slightly toxic to practically non-toxic to freshwater fish and invertebrates (WDOE 2012). As was the case for the other two herbicides, the overall evidence indicates that penoxsulam’s acute toxicity values are ~100 ppm or greater with invertebrate and vertebrate species, indicating that a collective “Practically non-toxic” rating is most appropriate as a generic classification (Table 5). The LC50 of the most sensitive species in Table 5, *D. magna*, is >4900 times higher than the proposed application concentration of 0.02 ppm for penoxsulam.

Table 5. Freshwater Organism Studies for Penoxsulam (WDOE 2012).

Study	Organism	Results	Comments
Fish 96-hour LC50	Bluegill*	>103 ppm AI	Practically non-toxic
Fish 96-hour LC50	Rainbow trout*	>102 ppm AI	Practically non-toxic
Fish 96-hour LC50	Common carp	>101 ppm AI	Practically non-toxic
Invertebrate 48-h EC50	<i>D. magna</i> *	>98.3 ppm AI	Slightly toxic

*Likely occur in Lake Tahoe and/or the Tahoe Keys.

Registrant-submitted studies on the acute toxicity of several different penoxsulam degradates to *D. magna* reported 48-hour EC50 values that ranged from >1.0 ppm to >100 ppm (WDOE 2012). As a result, EPA concluded in their risk assessment that the penoxsulam degradates were not as toxic as the parent compound (WDOE 2012).

The potential for penoxsulam to accumulate in the food chain (bioconcentrate) is low (Dow 2008). Penoxsulam does not bioaccumulate in fish or other aquatic fauna (WDNR 2012b).

39) Reduction of the numbers of any unique, rare, or endangered species of plants? (TRPA 4e) Data Insufficient

44) Reduction of the number of any unique, rare, or endangered species of animals? (TRPA 5b) Data Insufficient

Data are currently insufficient to respond definitively to this checklist item as the number of rare, unique or endangered species is unknown at this time. Further field surveys would better inform these checklist items.

45) Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals? (TRPA 5c) *No, not significant*

The water barrier designed to block flow from the Tahoe Keys main lagoon into Lake Tahoe through the West Channel will also block passage of fish and other aquatic life between these two water bodies for a period of 5 to 7 weeks. Due to a lack of spawning habitat in the Tahoe Keys, the West Channel is not a significant migratory pathway for Kokanee salmon, trout species, or the Lahontan redband. Movement of these fish species through the West Channel would be incidental. The temporary nature of the fish passage barrier is considered likely to avoid any potentially significant effect.

46) Deterioration of existing fish or wildlife habitat quantity or quality? (TRPA 5d) *Yes (beneficial impact) Data Insufficient*

The proliferation of invasive aquatic species within the Tahoe Keys and Lake Tahoe is anticipated to further disrupt habitat and decrease native species populations. The goal of the Methods Test is to reduce the infestation of invasive weeds in treatment area. Thereby, there is anticipated to be a reduction in the quantity of habitat used for cover by non-native predatory fish species (Harrison et al. 2009). As only a small area will be treated in the Methods Test, the reduction in cover for non-native predatory fish species is expected to have only an incremental benefit to native fish communities.

Short-term effects adverse effects on existing fish or wildlife habitat may result from the placement of the impermeable barriers around the Methods Tests areas and, in later years, by the use of bottom barriers in the lagoon, but these temporary effects are unlikely to be significant. However, data are currently insufficient to describe if the Methods Test itself will result in deterioration of existing fish or wildlife habitat quantity or quality.

4.5.2.2 Mitigation Measures

The following mitigation measure would be implemented to reduce project-related impacts related to biological resources and vegetation/wildlife:

MM-BIO – 1: Timing of Treatments

TKPOA will ensure that herbicide treatments conducted in the Tahoe Keys lagoons will occur in the appropriate month during the spring of 2018 (currently planned for May), when the plants are in their early stages of growth. Timing applications to occur during early growth stages (spring season) will reduce the risk of objectionable odors from plant decay because a smaller

volume of plant material will decay as compared to application when the plants have reached full size in the fall. This timing of the treatments will also reduce the volume of plants that are removed and exposed to the air by mechanical harvesting.

MM-BIO-2: Field Reconnaissance and Construction Monitoring

Prior to installation of the impermeable barrier, TKPOA will conduct a pre-construction field reconnaissance of potentially affected terrestrial, riparian, and aquatic (benthic and littoral zones), habitat and species. This will include the worksite, and buffer zones dictated by the species in question, i.e. bald eagles have a larger range than Tahoe rock cress. The occurrence of any sensitive or listed species and/or habitat will be recorded. If sensitive receptors are observed, an evaluation will be made as to the potential impacts. If direct or indirect impacts are possible, coordination will be initiated with the appropriate federal (USFWS) or state (CDFW) agency to determine further mitigation to avoid impacts. The agencies contacted will be dependent on the special-status of the species identified. Examples of mitigation measures could include: environmental tailboards prior to the start of work, the establishment of exclusionary zones (i.e. around active nests), and/or assigning biological field monitors with stop work authority if impacts to receptors are possible. Should work stop based on discovery of sensitive or listed species, and TKPOA will consult with appropriate agencies to determine next steps prior to work restarting.

MM-BIO-3: Aquatic Fish/Invertebrate Surveys

If it is concluded that direct or indirect impacts are possible to sensitive or listed species and/or their habitat during MM-BIO-2, the need for protocol-level surveys will be determined in consultation with state (CDFW) and federal (USFWS) agencies and other stakeholders. The type and intensity of surveys will be decided in consultation these agencies if the results of MM-BIO-2 show that listed species and/or habitat are or may be present within the project area. During the appropriate survey period and specific to each target species, qualified biologists would resurvey habitat areas utilizing state and or federal protocol to detect presence and determine distribution of special-status wildlife species within the biological study area. Based on survey results consultation will also be undertaken to determine whether further compensatory mitigation actions are required.

4.6 CULTURAL RESOURCES (CEQA) AND ARCHAEOLOGICAL/HISTORICAL (TRPA)

This section presents the analysis for potential project-related impacts related to cultural (including tribal, archaeological and historical) resources. The following tables identify the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

CEQA IS Checklist Item	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
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CEQA IS Checklist Item	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
47) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5? (CEQA Va)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
48) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5? (CEQA Vb)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
49) Disturb any human remains, including those interred outside of formal cemeteries? (CEQA Vc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
50) Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074? (CEQA Vd)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
51) Would the proposal result in an alteration of or adverse physical or aesthetic effect to a significant archaeological or historical site, structure, object, or building? (TRPA 20a)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
52) Is the proposed project located on a property with any known cultural, historical, and/or archaeological resources, including resources on TRPA or other regulatory official maps or records? (TRPA 20b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53) Is the property associated with any historically significant events and/or sites or persons? (TRPA 20c)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54) Does the proposal have the potential to cause a physical change which would affect unique ethnic cultural values? (TRPA 20d)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55) Would the proposal restrict historic or pre-historic religious or sacred uses within the potential impact area? (TRPA 20e)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Implementation of the Methods Test would require underwater grading but there are currently no historic structures, sites or artifacts identified in this area that would be affected. Therefore, the project would have no impacts on any known archaeological, historic, or tribal cultural resources (TCP's) and these topics are not discussed further.

4.7 GEOLOGY AND SOILS (CEQA) AND LAND (TRPA)

This section presents the analysis for potential project-related impacts related to geology, soils, and land. The following tables identify the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

CEQA IS Checklist Item	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
56) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Landslides? (CEQA VIa)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
57) Result in substantial soil erosion or the loss of topsoil? (CEQA VIb)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
58) Be located on geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse? (CEQA VIc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
59) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property? (CEQA VI d)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
60) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater? (CEQA VIe)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
Would the project result in:				
61) Compaction or covering of the soil beyond the limits allowed in the land capability or Individual Parcel Evaluation System (IPES)? (TRPA 1a)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
62) A change in the topography or ground surface relief features of site inconsistent with the natural surrounding conditions? (TRPA 1b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
63) Unstable soil conditions during or after completion of the proposal? (TRPA 1c)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
64) Changes in the undisturbed soil or native geologic substructures or grading in excess of 5 feet? (TRPA 1d)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
65) The continuation of or increase in wind or water erosion of soils, either on or off the site? (TRPA 1e)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
66)* Changes in deposition or erosion of beach sand, or changes in siltation, deposition, or erosion, including natural littoral processes, which may modify the channel of a river or stream or the bed of a lake? (TRPA 1f)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
67) Exposure of people or property to geologic hazards such as earthquakes, landslides, backshore erosion, avalanches, mud slides, ground failure, or similar hazards? (TRPA 1g)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.7.1 Environmental Setting

The Tahoe area is within Seismic Hazard Zone D, and within an area characterized by historical seismicity and the hazards inherent within such an area. As described within the Tahoe Valley Plan environmental documentation, there are five known fault zones in the vicinity of the city of South Lake Tahoe, and four of these are considered active or potentially active. The Tahoe Valley plan area is not located within an Alquist-Priolo Earthquake Fault Zone; however, several faults are located in the Lake Tahoe area that could subject the Tahoe Valley plan area to ground shaking.

Several studies have documented littoral processes and conditions in the nearshore areas of Lake Tahoe. Nearshore erosion is a direct consequence of wave energy and the potential for erosion at any particular location around Lake Tahoe is directly related to the material properties of the shoreline, wave activity, and fluctuating water levels (Adams et al. 2004). The bottom layer of the Tahoe Keys lagoons is composed of fine sediments, a remnant of the marsh that previously occupied the area, deposits from stormwater runoff, and organic material from the decomposition of aquatic plants and algae. By contrast, coarse, decomposed granite often characterizes the bottom of Lake Tahoe.

Shoreline erosion is typically caused by waves breaking at the base of easily eroded bluffs when the lake level is high. Although there are no bluffs in the area of Tahoe Keys, a storm in 2017 was reported to have created 2 ½ -foot waves that eroded the Lake Tahoe beach near the West Channel entrance and some of the landscape at the home immediately east of the channel (Hoover 2017). Information provided to TKPOA regarding water barriers estimates that wave heights up to 3 feet could occur at the West Channel mouth during wind gusts of 60 mph (Motiejunas 2017).

TRPA threshold standards are minimum standards of environmental quality for the Tahoe area. TRPA has two soil conservation threshold standard categories: one for land coverage (impervious cover) and one for stream environment zone (SEZ). Impervious surfaces contribute to sediment and nutrient inputs to Lake Tahoe and its tributaries. It also alters surface hydrology and affects groundwater recharge, resulting in negative impacts to environmental resources. SEZs provide important environmental services to the basin, such as flood attenuation, groundwater recharge, and recreational opportunities. Neither of these soil threshold standard categories will be negatively impacted by the work.

4.7.2 Impacts and Mitigation Measures

4.7.2.1 Impacts

Potential seismic effects on the impermeable barrier, potential effects of the impermeable barrier on shoreline erosion or deposition and potential effects from herbicide degradation into soil were all considered.

Because the temporary barrier and other project components would be designed and constructed in accordance with the current design requirements of the CBC, Seismic Zone D, there would be no substantial increased risk of injury or property damage from strong ground shaking or earthquake-induced liquefaction or ground failure caused by unstable soils.

Triclopyr typically breaks down into trichloropyridinol (TCP), and neither of these adsorb to soil and sediment particles, and may be transported in surface waters. However, triclopyr's multiple degradation pathways and its rapid degradation significantly decrease the potential for triclopyr to reach deeper soil or sediment horizons.

Evidence indicates that endothall does not bind strongly to most soils or sediments. However, rapid degradation rates in soils and aquatic systems means that endothall will be degraded before it has a chance to move very far through the soil or sediment.

Penoxsulam does not bind tightly to soils or sediments (EPA 2007; WDNR 2012b; WDOE 2012). It is expected to be very mobile in soil, but not very persistent, in either aqueous or terrestrial environments (EPA 2007). Rapid degradation rates in soils and aquatic systems means that penoxsulam will be degraded before it has a chance to move very far through the soil or sediment (EPA 2004; WDOE 2012).

Further discussion of environmental fate of the herbicides being used in the Methods Test can be found in section 4.9, Human Health.

66) Would the project cause changes in deposition or erosion of beach sand, or changes in siltation, deposition or erosion, including natural littoral processes, which may modify the channel of a river or stream or the bed of a lake? (TRPA 1f) No, not significant

Measureable changes in Lake Tahoe shoreline erosion and deposition are not expected to result from the short-term blockage of the West Channel planned during the time of year when Lake Tahoe is filling from snowmelt runoff and water predominantly flows into the Tahoe Keys lagoons. This area of shoreline does not have easily eroded bluffs; however, waves up to 2.5 feet high were experienced in 2017 near the West Channel entrance and beach erosion damaged the Lake Tahoe shoreline at the property immediately east of the channel. Blocking the channel with the proposed water barrier for a period of 5 to 7 weeks is not expected to measurably change the wave energy and potential for increased erosion.

The temporary blockage of the West Channel will cut off the flow of nutrients, turbidity and other materials from the main lagoon into Lake Tahoe that likely contribute to the littoral ecosystem near the channel. The engineering design for the barrier provides for a tight seal to bulkheads on both shores, and bottom grading to assure a tight fit (Motiejunas 2017). However, a small amount of leakage may occur, although the volume is not documented. Therefore, significant adverse effects are not anticipated and there may be a short-term improvement in water quality in the lagoons until the water barrier is removed.

4.7.2.2 Mitigation Measures

As there are no potential project-related impacts to geology, soils, and land, no mitigation measures are required.

4.8 GREENHOUSE GAS EMISSIONS (CEQA)

This section presents the analysis for potential project-related GHG impacts. The following tables identify the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

CEQA IS Checklist Item	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
68) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
69) Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

4.8.1 Environmental Setting

Greenhouse gas emissions cumulatively contribute to global climate change. Assembly Bill 32 (AB 32), the California Global Warming Act of 2006, declared that global warming poses a serious threat to California's economic well-being, public health, natural resources, and environment. AB 32 also mandates a reduction California's greenhouse gas emissions to 1990 levels by 2020, which represents approximately a 15% reduction below the emissions expected under a "business as usual" scenario. The standard definition of greenhouse gases includes the six substances identified in the Kyoto Protocol: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). These substances are emitted to the atmosphere from a variety of natural and man-made processes (CARB 2014).

Projects involving the use of aquatic herbicides have the potential to generate significant greenhouse gas emissions, in particular due to methane released by the decay of vegetation treated with herbicides (State Water Board 2011).

4.8.2 Impacts and Mitigation Measures

According to Section 15002(g) of the CEQA Guidelines, "a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project." As stated in Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. CEQA allows for significance criteria established by the applicable air pollution control district(s) to be used to assess the impact of a project related to GHG emissions, at the discretion of the CEQA Lead Agency.

4.8.2.1 Impacts

68) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? *Less than Significant*

The decay of aquatic vegetation as a result of herbicide application during the Methods Test is likely to result in methane emissions. However, more greenhouse gases would be emitted if the aquatic plants are removed from the water and transported to a landfill for disposal, or if the plants are allowed to grow to maturity and decay in place as part of their annual lifecycle. The Methods Test is planned to occur in the spring, early in the growth stage for the targeted aquatic plants. The decay of the aquatic plants early in their growth cycle is likely to result in less greenhouse gas emissions than if the plants are removed for offsite disposal or if the plants are allowed to grow through their full annual lifecycle (Lahontan Water Board 2011).

The implementation of the Methods Test will result in vehicle travel for workers performing the test. The vehicle travel, and the greenhouse gas emissions that result from it, will occur for a limited duration and is expected to result in an insignificant change in the greenhouse gas emissions related to regional transportation. Further, these emissions and those of equipment used to construct and remove the water barrier will be more than offset by the elimination of

most power boat traffic during the 5 to 7 weeks that the water barrier will block access to Lake Tahoe.

Therefore, due to the timing of the proposed project, the limited amount of vehicle travel associated with project activities, and the offsetting reduction in recreational boating, impacts are expected to be less than significant and mitigation measures are unnecessary.

69) Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases? *Less than Significant*

TRPA’s 2012 Regional Transportation Plan includes land use and transportation strategies that will allow the Tahoe Region to achieve greenhouse gas reduction goals established under California Senate Bill 375 (TRPA 2017b). These policies will not be affected by the proposed project, as transportation changes are not expected to result from the Methods Test. Therefore, impacts are expected to be less than significant, and mitigation measures are unnecessary.

4.8.2.2 Mitigation Measures

Project impacts relating to greenhouse gases are expected to be less than significant, and therefore mitigation measures are unnecessary.

4.9 HAZARDS AND HAZARDOUS MATERIALS (CEQA) AND RISK OF UPSET/HUMAN HEALTH (TRPA)

This section presents the analysis for potential impacts related to hazards and hazardous materials, risk of upset, and human health. The following tables identify the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

CEQA IS Checklist Item	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
Would the project:					
70) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? (CEQA VIIIa)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
71) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? (CEQA VIIIb)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Joint TRPA IEC/CEQA IS

CEQA IS Checklist Item	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
72) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? (CEQA VIIIc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
73) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? (CEQA VIII d)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
74) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? (CEQA VIII e)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
75) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area? (CEQA VIII f)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
76) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? (CEQA VIII g)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
77) Expose people or structures to a significant risk of loss, injury, or death involving fires? (CEQA VIII h)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
Would the project:				
78) Involve a risk of an explosion or the release of hazardous substances including, but not limited to, oil, pesticides, chemicals, or radiation in the event of an accident or upset conditions? (TRPA 10a)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
79) Involve possible interference with an emergency evacuation plan? (TRPA 10b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
80) Creation of any health hazard or potential health hazard (excluding mental health)? (TRPA 17a)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
81) Exposure of people to potential health hazards? (TRPA 17b)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.9.1 Environmental Setting

The general environmental setting is described in Chapter 1, including potential receptors for any hazardous materials and local populations for which human health effects may be of concern. Chapter 4.18 Utilities describes potable water use and intakes in the vicinity.

A cyanobacteria bloom was identified in the Tahoe Keys in August 2017 and was evident for approximately two months. Sampling detected cyanotoxins at levels that warranted a cautionary warning, the lowest of three danger levels used for cyanotoxin outbreaks in California, and warning signs were posted along the lagoon waterways. Cyanobacteria blooms were a common occurrence in California lakes in the summer of 2017.

4.9.2 Impacts and Mitigation Measures

4.9.2.1 Impacts

70) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? (CEQA VIIIa) *Less than significant with mitigation incorporated*

71) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? (CEQA VIIIb) *Less than significant with mitigation incorporated*

78) Involve a risk of an explosion or the release of hazardous substances including, but not limited to, oil, pesticides, chemicals, or radiation in the event of an accident or upset conditions? (TRPA 10a) *No, with mitigation incorporated*

81) Would the project result in exposure of people to potential health hazards? (TRPA 17b) *Data Insufficient*

This section addresses both the potential exposure of people directly to herbicide products that are proposed for use in the Methods Test, and the indirect potential increased exposure of people to cyanotoxins if the control of aquatic weeds provides more favorable conditions for increased cyanobacteria blooms. Project impacts are preceded by information on the environmental fate of the three proposed herbicide products.

Methane will be generated from biomass decomposition, and at high concentrations methane can be an asphyxiant; however, methane concentrations have not created any health hazards during annual dieback of aquatic weeds at Tahoe Keys and the amount of biomass decomposition will be reduced by the Methods Test as aquatic macrophytes in treatment areas will be killed early in their growth stage and not allowed to grow to maturity. Therefore,

methane is not considered a significant potential health hazard resulting from the proposed Methods Test.

Environmental Fate

Triclopyr

In natural lakes and rivers, sunlight and microorganisms rapidly degrade triclopyr (WDNR 2012c; WDOE undated). Triclopyr's eventual, final metabolite is carbon dioxide (CO₂) (WDOE undated). Triclopyr typically breaks down into TCP, a compound that itself is far less persistent than triclopyr in aquatic systems, as seen in aquatic field studies (WDOE undated). TCP itself has a level of toxicity comparable to triclopyr and is frequently found at low concentrations in early sampling points in field studies (WDOE undated). The methoxypyridine (TMP) metabolite is rarely observed, but also has a level of toxicity comparable to triclopyr and TCP (WDOE undated). Half-lives (the time it takes for half of the active ingredient to degrade) for triclopyr and its breakdown products average six days or less in water and 8.4 days or less in sediment (WDNR 2012c; WDOE undated). Residues should be more than 95% degraded and dissipated from treated water in 1-2 weeks following treatment with triclopyr (WDOE Undated).

Triclopyr and TCP do not adsorb to soil and sediment particles (EPA 2014; WDNR 2012c), and may be transported in surface waters (EPA 2014). However, triclopyr's multiple degradation pathways and its rapid degradation significantly decrease the potential for triclopyr to reach deeper soil or sediment horizons (EPA 1998).

Endothall

Endothall disperses with water movement and is broken down by microorganisms into carbon, hydrogen, and oxygen (WDNR 2012a; WDOE 2001). The initial breakdown product of endothall is an amino acid, glutamic acid, which is rapidly consumed by bacteria (WDNR 2012a). Field studies show that low concentrations of endothall persist in water for several days to several weeks depending on environmental conditions, primarily microbial activity (WDNR 2012a). The half-life averages five to ten days (EPA 2005b). Complete degradation by microbial action is 30-60 days (WDNR 2012a). When endothall is applied to areas of dense aquatic vegetation, it rapidly kills the treated plants, and the decay of the dead vegetation results in oxygen depletion, which, in turn, results in a loss of microbial activity and longer half-lives (USDA 2009).

Evidence indicates that endothall does not bind strongly to most soils or sediments (EPA 2005a; WDOE 2001). However, rapid degradation rates in soils and aquatic systems means that endothall will be degraded before it has a chance to move very far through the soil or sediment (WDOE 2001).

Penoxsulam

Penoxsulam is broken down in the water by both light and microbes (EPA 2004; WDNR 2012b; WDOE 2012), but the key degradation pathway in water is decomposition by the action of light

also known as photolysis (WDOE 2012). It has a half-life ranging from about 12 to 38 days (WDNR 2012b). Water half-life for penoxsulam is typically shorter in the summer months when the days are longer and higher water temperatures are present (WDOE 2012). Although penoxsulam is not expected to be persistent, its rate of degradation in aquatic environments is highly dependent on the ability of sunlight to penetrate water at treatment sites (WDNR 2012b; WDOE 2012). In clear, shallow waters, photolysis is the principle degradation pathway (WDNR 2012b; WDOE 2012). In weed-choked, shaded, or turbid waters, the slower process of aerobic degradation determines penoxsulam dissipation (WDOE 2012).

There are 13 known degradation products identified for penoxsulam, with six considered as being of toxicological concern (WDOE 2012). However, none of the metabolites or degradates have been identified as having a higher potential toxicity than the parent compound penoxsulam (WDOE 2012).

Penoxsulam does not bind tightly to soils or sediments (EPA 2007; WDNR 2012b; WDOE 2012). It is expected to be very mobile in soil, but not very persistent, in either aqueous or terrestrial environments (EPA 2007). Rapid degradation rates in soils and aquatic systems means that penoxsulam will be degraded before it has a chance to move very far through the soil or sediment (EPA 2004; WDOE 2012)

Approach and Risks

The risk of acute exposure to triclopyr, endothall, and penoxsulam would be primarily to chemical applicators (WDNR 2012a; 2012b; 2012c). Concentrated herbicide products are corrosive and can cause skin irritation and irreversible eye damage if splashed in the eye (WDOE Undated). Persons who mix or apply the herbicides need to protect their skin and eyes from contact (WDNR 2012a; 2012b; 2012c). However, only dilute amounts of the herbicides are needed to kill the invasive aquatic macrophytes (WDOE Undated). These dilute concentrations have not been shown to cause skin irritation or other health effects on swimmers or other recreational water users if water use restrictions are followed (WDNR 2012a; 2012b; 2012c).

There is little chance of exposure to bystanders during the herbicide application process (WDOE Undated). This is because liquid herbicides are injected directly into the water column and granular herbicides are applied to the water surface with a spreader (WDOE Undated). These application methods eliminate the opportunity for drift of herbicides onto bystanders or nearby residents during the application process (WDOE Undated). Triclopyr, endothall, and penoxsulam have low vapor pressures and are quite water soluble, so they will not volatilize from treated water and drift through air following the application (EPA 2007; 2014; WDOE 2001).

As a best management practice and to ensure the safe and efficient use of the herbicides, TKPOA has developed extensive and multi-layered plans to prevent accidental spills, to contain the herbicides within the treatment area, to monitor the concentrations and movement of the aquatic herbicide after application, and to alert the public and water purveyors in the unlikely event that aquatic herbicides move beyond the treatment areas and enter the unaffected areas of the Tahoe Keys lagoons or Lake Tahoe (TKPOA 2017b). In addition, in accordance with California state law, aquatic herbicide applications will be made only by a Qualified Applicator Certificate Holder from the CDPR (TKPOA 2017a).

Triclopyr, endothall, and penoxsulam do not adsorb to soil and sediment particles, and they may be transported in surface waters (EPA 2005; 2007; 2014; WDNR 2012b; 2012c; WDOE 2001; 2012). This would normally raise concerns of potential groundwater contamination (WDOE 2001). However, rapid degradation rates in soils and aquatic systems means that the herbicides will be degraded before they have a chance to move very far through the soil or sediment (EPA 1998; 2004; WDOE 2001; 2012). None of the metabolites or degradates of the three herbicides have been identified as having a higher potential toxicity than the parent compounds (WDNR 2012a; WDOE 2012; Undated).

Regarding the potential for people to be affected by herbicides through drinking water, there are no direct raw, potable water intakes located adjacent to the Tahoe Keys lagoons (TKPOA 2017b). The nearest raw water/potable intake is in Lake Tahoe near Lakeside Marina, approximately 4 miles from the Tahoe Keys West Channel (TKPOA 2017b). There are three wells located within the Tahoe Keys subdivision, but they draw water from 150 to 430 feet below the ground surface (TKPOA 2017b). Water treated with triclopyr should not be used for drinking water until concentrations of triclopyr are less than 0.4 ppm (WDNR 2012c). The drinking water standard for endothall is 0.1 ppm (WDNR 2012a), while there are no restrictions for using water treated with penoxsulam for drinking water (WDNR 2012b). Given that the herbicides will be subject to both dilution and degradation before they can migrate miles to the nearest potable water intake or hundreds of feet into the drinking water table, their use at the proposed application concentrations is highly unlikely to violate their post-treatment water use restrictions or pose a risk to drinking water quality in Lake Tahoe or the Tahoe Keys.

To confirm that there will be no effect on groundwater quality, sampling will be conducted at the three TKPOA well water intakes after herbicide application (TKPOA 2017a). Samples will be taken 24 hours prior to the application and at 48-hour intervals thereafter for 14 days for a total of 8 sampling events (TKPOA 2017). Samples will be analyzed for active herbicidal ingredients in the products applied and contingency plans are in place if herbicides are detected (TKPOA 2017). Results of this monitoring will be included in the required reporting for the project (TKPOA 2017b).

Cyanobacteria

Under certain environmental conditions in freshwater systems, single celled photosynthetic bacteria, called “cyanobacteria”, can increase rapidly in biomass resulting in a “harmful algal bloom” (HAB), which in some cases can produce toxins (Anderson-Abbs et al. 2016; EPA 2015a). HABs can have negative impacts on the environment and raise serious concerns for drinking water sources, recreational use, pets, wildlife, and livestock (Anderson-Abbs et al. 2016; EPA 2015a). The acute effects of contact recreational exposure to HABs from activities like swimming, jet skiing, etc., can result in a wide range of symptoms in humans including skin and eye irritation, fever, headaches, muscle and joint pain, blisters, stomach cramps, diarrhea, vomiting, mouth ulcers, and allergic reactions (EPA 2015b). Some researchers have suggested that certain cyanotoxins may contribute to neurodegenerative disease (Holtcamp 2012). The toxicity of a particular bloom is complex, determined by the mixture of cyanobacteria species present and the variation in strains with toxic and nontoxic genotypes involved (WHO 1999). In recent years, HABs and associated cyanotoxins have gained national attention due to increases in the frequency and severity of blooms, and their impacts on drinking water sources (Anderson-Abbs et al. 2016). HABs occurred in the Lake Tahoe Keys this past summer (first sampled on August 21 following a homeowner complaint and persisting until mid-October) and the Lahontan Water Board encouraged signs be posted alerting people to the danger (Reed 2017).

The conditions that cause cyanobacteria to produce cyanotoxins are not well understood (EPA 2015a). For example, even when cyanobacteria capable of producing toxins are present, they may not actually produce toxins under all environmental conditions (EPA 2014). Also, cyanotoxins can occur in the absence of a visible bloom as not all blooms are visible (EPA 2015a). It is also not possible to determine solely upon visual observation if a bloom is producing toxins (EPA 2015a). When blooms occur, the risk of cyanotoxin contamination of the surface water increases, thus increasing potential risk to drinking water sources (EPA 2014).

Factors that influence the occurrence of cyanobacterial blooms can include excess nutrient (nitrogen and phosphorus) loadings and concentrations, slow-moving surface water, high water temperature, high intensity and duration of sunlight, water column stratification, changes in water pH, and occurrence of trace metals (EPA 2015a). Some of the factors that influence the occurrence of blooms could be affected by the application of aquatic herbicides to control invasive macrophytes in the Tahoe Keys (e.g., temperature and sunlight intensity). For example,

although the plant biomass would be relatively small in the early growth stages, decay of aquatic vegetation treated in the spring could increase biochemical oxygen demand and nutrient release in the summer, particularly if sediments become anoxic. An offsetting factor could be reduced nutrient release to the water column from aquatic plants that would otherwise be growing in the treatment areas through the summer and into the fall. Some increase of solar radiation into the water column is expected in treatment areas where shading from aquatic plants will be reduced and more light will be available for phytoplankton and potentially cyanobacteria growth. It is uncertain whether water temperatures would increase significantly. Under existing conditions some thermal stratification can be expected in Tahoe Keys during the day; but a well-mixed layer is expected to develop from surface water cooling at night (La Plante 2008, Anderson 2012). Although sustained stratification leading to anoxic conditions is not expected in the shallow Tahoe Keys lagoons at high elevation, detections of nitrite in past water quality monitoring indicate that anoxia may sometimes be present at some locations.

Although it is difficult to know if the Methods Test will affect the occurrence and intensity of HABs, the potential is there. These potential effects may be mitigated by the fact that only a small portion of the overall lagoon area will be treated; however, information is currently insufficient to rule out the possibility of an incremental increased risk of HABs resulting from proposed aquatic weed control efforts. Literature research needs to be performed to examine what the potential effects of more frequent and more intense HABs are, if subsequent concerns about human health (e.g. links to Parkinson's disease) and ecological receptors in the Tahoe Keys are warranted, and if there is sufficient information available to know. Literature research also needs to be completed to see how the threats from cyanotoxins are commonly managed in California and other regions, including waterbodies where aquatic herbicides are used, to determine mitigation strategies for the potential effects of more frequent and more intense HABs.

Potential for Accident or Vandalism

The setting for the impermeable barrier is on private property (see Figure 1 aerial photo in Motiejunas 2017). It is bordered by private lots with no public land access. It will be lighted to ward off accidental damage that might be caused by boats. These measures reduce the likelihood of accidental damage or vandalism to less than significant.

4.9.2.2 Mitigation Measures

Mitigation measures will be implemented to protect human health and minimize the risk of an upset in the application of aquatic herbicides.

MM-HH – 1: Approved Herbicides

The proposed project will utilize only herbicide products that have been reviewed and approved by the U.S. EPA and California EPA/DPR (EPA 1998, EPA 2005b, EPA 2014, SWRCB 2017). Specific products proposed for use are Aquathol K (endothall product applied in liquid form using drop hoses), Renovate (liquid triclopyr applied using drop hoses) or OTF (granular

triclopyr applied with a spreader), and Galleon SC (liquid penoxsulam applied using drop hoses). The use of any other herbicide products is prohibited. TKPOA will be responsible for ensuring implementation of this mitigation measure by the certified Qualified Applicator during each day of herbicide application.

MM-HH – 2: Applicator Qualifications

Herbicide applications will be performed only by Qualified Applicator (QA) certificate holders. QA's will follow NPDES permit requirements and product label specifications. Because risks of exposure are primarily to chemical applicators, and QAs will be required to complete extensive annual training to minimize these risks, including the use of proper personal protective equipment. These mitigation measures are described in detail in the project Aquatic Pesticide Application Plan (APAP, TKPOA 2017a). TKPOA will be responsible for verifying that personnel applying herbicides each day have the required certification.

MM-HH – 3: Spill Response Plan

A Spill Response Plan will be developed by a QA to minimize and contain any spills during herbicide mixing and application. This Plan is an expected condition of the project NPDES permit and will require approval by the Lahontan Water Board. TKPOA will be responsible for overseeing the preparation of the Spill Response Plan and its implementation by the certified QA each day of herbicide applications.

MM-HH – 4: Label Use Restrictions

All QAs will follow all label use restrictions to ensure the appropriate herbicide use rate. (See also MM-WQ – 2 and MM-WQ – 3). Certified QAs will be responsible for following the herbicide product label use restrictions throughout each herbicide treatment period.

MM-HH – 5: Dye Tracing

Rhodamine WT dye will be applied by TKPOA during the herbicide applications and tracked to determine the movement and dissipation of dissolved herbicide products and chemical transformation products. It is expected that TKPOA will need to develop protocols for this monitoring activity as part of water quality monitoring plans required as NPDES permit conditions. If herbicides are detected in the wells, contingency plans include shutting off the wells and distributing water to all customers until residues are no longer detected in the samples. TKPOA will be responsible for dye tracing during and after each herbicide application, and reporting the results as part of the project monitoring program.

MM-HH – 6: Well Monitoring

A monitoring plan for area wells will be developed to test for contamination by herbicides and verify the effectiveness of carbon filtration to remove filter and herbicide residues (see MM-HH - 7). It is expected that TKPOA will need to develop protocols for this monitoring activity as part of water quality monitoring plans required as NPDES permit conditions. If herbicides are detected in the wells, contingency plans include shutting off the wells and distributing water to all customers until residues are no longer detected in the samples. TKPOA will be responsible for developing and implementing the well monitoring plan during and after herbicide applications.

MM-HH – 7: Public Outreach

TKPOA will design and carry out an information campaign targeting homeowners, renters, and rental agencies, to provide advance notice regarding the Methods Test before and during aquatic herbicide applications. TKPOA will also hold a workshop and informational meeting with Tahoe Water Suppliers Association (TWSA) at least 45 days before herbicide applications are conducted. At the workshop, TKPOA will present the proposed project schedule and answer questions to inform customers of the Methods Test and dates of herbicide application. The TKPOA will also consult with the TWSA and specific water suppliers in establishing water sampling locations for monitoring of intake water. (See also MM-TR – 1)

MM-HH – 8: Carbon Filtration

If monitoring detects herbicide residues, carbon filtration systems already installed at water supply wells will remove any herbicide residues before water enters the distribution systems at Tahoe Keys. A mobile filtration system will also be available to pump and treat water at wells where exceedances are detected (i.e., where herbicide residues exceed allowable product label concentrations). Local water purveyors (Tahoe Keys Water Company and Lukins Brothers Water Company) will be responsible for operating existing filtration systems at the wells. TKPOA will be responsible for operating mobile filtrations systems, as needed.

MM-HH – 9: West Channel Herbicide Monitoring

Herbicides will be applied at least 1,000 feet from the West Channel. If herbicide residues are detected in monitoring in the West Channel, then additional monitoring will be performed in Lake Tahoe according to pre-approved monitoring plans that meet permit requirements. It is expected that TKPOA will need to develop protocols for this monitoring activity as part of water quality monitoring plans required as NPDES permit conditions.

MM-HH-10: West Channel Water Barrier

TKPOA has proposed a water-filled temporary barrier to impede water exchange between the main lagoon and Lake Tahoe. TKPOA will be responsible for overseeing the construction of an effective water barrier in the West Channel that will prevent main lagoon water from entering Lake Tahoe for a period of 5 to 7 weeks during and after herbicide applications. The West Channel water barrier would be in addition to the impermeable barriers described in MM-WQ-

4 that are necessary to contain detectable concentrations of herbicide residues within each treatment area.

4.10 HYDROLOGY AND WATER QUALITY (CEQA AND TRPA)

This section presents the analysis for potential project-related impacts on hydrology and water quality. The following tables identify the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

CEQA IS Checklist Item	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
82) Violate any water quality standards or waste discharge requirements? (CEQA IXa)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
83) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? (CEQA IXb)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
84) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site? (CEQA IXc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
85) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site? (CEQA IXd)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
86) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? (CEQA IXe)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
87) Otherwise substantially degrade water quality? (CEQA IXf)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
88) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map? (CEQA IXg)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Joint TRPA IEC/CEQA IS

CEQA IS Checklist Item	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
89) Place within a 100-year flood hazard area structures that would impede or redirect flood flows? (CEQA IXh)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
90) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? (CEQA IXi)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
91) Expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow? (CEQA IXj)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
Would the project result in:				
92) Changes in currents, or the course or direction of water movements? (TRPA 3a)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
93) Changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff so that a 20 yr. 1 hr. storm runoff (approximately 1 inch per hour) cannot be contained on the site? (TRPA 3b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
94) Alterations to the course or flow of 100-year flood waters? (TRPA 3c)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
95) Change in the amount of surface water in any water body? (TRPA 3d)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
96) Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity? (TRPA 3e)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
97) Alteration of the direction or rate of flow of ground water? (TRPA 3f)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
98) Change in the quantity of groundwater, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations? (TRPA 3g)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99)* Substantial reduction in the amount of water otherwise available for public water supplies? (TRPA 3h)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
100) Exposure of people or property to water related hazards such as flooding and/or wave action from 100-year storm occurrence or seiches? (TRPA 3i)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
101) The potential discharge of contaminants to the groundwater or any alteration of groundwater quality? (TRPA 3j)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
102) Is the project located within 600 feet of a drinking water source? (TRPA 3k)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

4.10.1 Environmental Setting

Three primary man-made water features exist in the Tahoe Keys: 1) the Main Lagoon (also known as the West Lagoon), 2) the Marina Lagoon (also known as the East Lagoon), and 3) the Lake Tallac Lagoon. The Tahoe Keys 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. The Tahoe Keys lagoons have much shallower water than Lake Tahoe with an average depth of 12 feet and 1,000 feet, respectively. Water temperatures also differ, with Tahoe Keys lagoons tending to be much warmer during spring and summer and much cooler at times during the fall and winter months. The waters of the Tahoe Keys lagoons are typically more turbid than the clear waters for which Lake Tahoe is famous.

Water exchange between Lake Tahoe and the Tahoe Keys main lagoon is driven by several processes. During the spring when the Methods Test herbicide application is proposed, the lake is filling from snowmelt runoff and water generally flows from the lake into the lagoons. During major storms wind-driven waves result in higher water levels at the downwind side of the lake, and this phenomenon can also influence the predominant flow direction through the West Channel. Studies have also shown that there are density-driven currents with warmer water exiting the lagoon near the surface and a deeper flow of cooler water from the lake flowing into the lagoon (La Plante 2008). When flows are moving from the main lagoon into Lake Tahoe, they can carry higher concentrations of nutrients, suspended solids, algae, weed fragments, and other materials into the lake.

The Tahoe Keys lagoons are part of the Lake Tahoe Hydrologic Unit within the Lahontan Region of California, where the Lahontan Water Board manages water quality compliance under a regional Water Quality Control Plan (i.e., Basin Plan). The lagoons are part of the Lake Tahoe littoral (i.e., nearshore) waters for which the TRPA has also established water quality thresholds as part of their program to assess and improve the health of the region's aquatic systems.

The Basin Plan for the Lahontan Region is the basis for the Lahontan Water Board's regulatory program. It sets forth water quality standards for the surface and ground waters of the region, which include both designated beneficial uses of water and the narrative and numerical objectives which must be maintained or attained to protect those uses. The Basin Plan defines water quality standards and antidegradation policies both for the region and specifically for the Lake Tahoe Hydrologic Unit (HU), and also describes waste discharge prohibitions for the Lake Tahoe HU. In addition, the EPA has approved the Water Board designation of Lake Tahoe as an ONRW that is provided the highest level of protection (i.e., Tier III) under the federal Antidegradation Policy, stipulating that states may allow some limited activities that result in temporary and short-term (weeks to months) changes to water quality, but that such changes should not result in a long-term lowering of water quality, adversely affect existing uses or alter the essential character or special uses for which the water was designated an ONRW. The

duration of allowable short-term lowering of water quality, anticipated to be in the range of weeks to months as stated in the federal Antidegradation Policy, is expected to be specifically defined in the Lahontan Water Board permit for the Methods Test. Any detectable concentration of an herbicide residue or chemical transformation product is not allowed in the receiving waters, which include any areas within the Tahoe Keys that are not part of the herbicide treatment areas. The treatment areas are defined in the Basin Plan as the areas being targeted to receive lethal doses of aquatic herbicides to control target species. Detectable concentrations are allowed within treatment areas only during the period defined as short term.

Aquatic herbicides are a prohibited waste discharge; however, a Basin Plan amendment approved in 2015 provides a mechanism for the Lahontan Water Board to issue an exemption to the prohibition and regulate aquatic herbicide applications and other aquatic pesticides, where appropriate. The Lahontan Water Board only allows a prohibition exemption if aquatic herbicide use is proposed for purposes of protecting public health or safety or ecological preservation and only if such projects satisfy specific exemption criteria. Exemption criteria and permit requirements are designed to ensure that aquatic herbicide applications do not adversely affect beneficial uses of water by requiring that all applicable water quality objectives are achieved in the long term. The project proponent works with Water Board staff to develop limits for each aquatic herbicide project, which are then incorporated as exemption conditions. Permit conditions may include these conditions and other discharge limits for application rates, receiving water limitations for herbicide residue levels, limits on the temporal and spatial extent of the treatment areas, and recovery time requirements and biotic metrics to assess restoration of affected non-target species.

4.10.2 Impacts and Mitigation Measures

As described above, the Basin Plan defines specific water quality objectives for Lake Tahoe that also apply to the Tahoe Keys lagoons. Some of these objectives that are particularly pertinent to the Methods Test are addressed below under Impacts.

TRPA's Regional Plan also identifies threshold standards for water quality that are periodically assessed to document status and trends in Lake Tahoe. TRPA water quality thresholds for littoral Lake Tahoe apply to nearshore areas including the Tahoe Keys lagoons, and include numerical standards and management standards. Numerical standards for dissolved inorganic nitrogen, dissolved phosphorus, iron, and other algal nutrients are expressed as concentrations (mg/L) and total annual loads (kg/year). The numerical standards for turbidity require that sediment loads be decreased to attain turbidity values not exceeding three nephelometric turbidity units (NTU), and turbidity shall not exceed 1 NTU in shallow waters of the lake not influenced by stream discharges. Management standards are also established for reducing nitrogen loading, reducing the biomass of periphyton (i.e., attached benthic algae), and controlling aquatic invasive species.

Subsection 60.1.3 of the TRPA Code of Ordinances specifies discharge limits and includes a prohibition of toxic or hazardous waste discharge to Lake Tahoe and other waters and lands of

the Tahoe region (TRPA 2017). The Methods Test proposes the discharge of chemical formulations that are designed to be toxic to target species of invasive and nuisance aquatic weeds, but does not propose the discharge of toxic or hazardous wastes. Subsection 60.1.7 states that the use of herbicides shall be consistent with the Handbook of Best Management Practices, and specifies the following criteria for use: (1) only chemicals registered with the EPA and the state agency of appropriate jurisdiction shall be used and only for their registered application; (2) alternatives to chemical application shall be employed where practical; and (3) no detectable concentrations of any herbicide shall be allowed to enter any stream environment zone, surface water, or ground water unless TRPA finds that application of the herbicide is necessary to attain or maintain the environmental threshold standards.

4.10.2.1 Impacts

82) Would the project violate any water quality standards or waste discharge requirements? (CEQA IXa) *Potentially Significant Impact*

87) Otherwise substantially degrade water quality? (CEQA IXf) *Potentially Significant Impact*

Water quality degradation associated with aquatic herbicide discharges is intended to be only temporary and will not cause water quality to permanently fall below that necessary to maintain and protect existing uses, provided that projects incorporate control measures to limit the area and duration of impacts caused by the discharge of aquatic herbicides (Lahontan Water Board 2011). The following are examples of exemption criteria designed to ensure that water quality following herbicide treatments is sufficient to maintain existing beneficial uses.

- Aquatic herbicide applications must incorporate best management practices to control impacts to beneficial uses and limit these impacts to the shortest time possible for project success.
- The treatment area shall be limited to the smallest areal and depth extent that can reasonably achieve effective treatment.
- The lowest effective rates of herbicide application shall be used.
- The herbicide use must be consistent with FIFRA herbicide label instructions and any Use Permits issued by the County Agricultural Commissioner.
- A satisfactory monitoring program must be implemented to establish impacts are not significant and verify restoration of water quality.
- Compliance with all applicable receiving water limits (RWLs) and effluent limitations in the NPDES permit must be maintained in the receiving water during treatment, and must be achieved within the treatment area upon completion of, the treatment event.

While the Methods Test was designed to meet these criteria, compliance with water quality objectives in treatment areas during and after herbicide treatments is an area of uncertainty and

remains a potentially significant impact of the Methods Test. The uncertainty centers primarily on two issues: (1) compliance with numerical and narrative water quality objectives that may be indirectly affected by weed control treatments, and (2) compliance with the antidegradation policy. Compliance with the following Basin Plan water quality objectives may be influenced by the Methods Test:

- Changes in normal ambient pH levels shall not exceed 0.5 pH units. The pH shall not be depressed below 7.0 nor raised above 8.4. Reducing aquatic weeds will change the amount of plant photosynthesis, respiration, and decomposition that could influence pH in and around the treatment areas, and these changes will last beyond the end of the treatment period and could exceed 0.5 pH units. TKPOA (2017d) reported average pH measurements of 8.7 to 9.4 in the main lagoon of Tahoe Keys historically and during 2016 monitoring.
- For waters designated in the Basin Plan as cold freshwater habitat (i.e., COLD), including Lake Tahoe, the temperature shall not be altered. Reducing dense beds of aquatic macrophytes is expected to increase light penetration and change the absorption of solar radiation. These are changes that would last beyond the treatment period.
- Turbidity shall not exceed 1 NTU in shallow waters not directly influenced by stream discharges. Turbidity monitoring data were not included in TKPOA's 2016 report on bottom barrier monitoring, but the report included an observation that silt was deposited on top of the barriers, most likely from boat traffic disturbing and redistributing fine bottom sediments (TKPOA 2017g). Sediments deposited on the barriers were enough to allow new aquatic weeds to root and grow, and the added weight made barrier removal more difficult. It was reported that barrier removal disturbed the lagoon bottom and created a high level of turbidity in the local vicinity that took several hours to clear. Although increased turbidity from Methods Test treatments is expected to be temporary, turbidity is expected to exceed 1 NTU outside of the treatment areas during removal of bottom barriers.
- Associated with increased turbidity during bottom barrier removal, there is a potential that elevated aluminum concentrations in lagoon sediments will become entrained and temporarily reach water column concentrations known to cause toxicity to aquatic life.
- Annual average value/90th percentile value of 0.008 mg/L for total phosphorus (TP) and 0.15 mg/L for total nitrogen (TN). TKPOA (2017d) reported that TP and TN concentrations in the Tahoe Keys main lagoon were above the water quality objectives historically and during 2016 monitoring. Reducing Eurasian watermilfoil and other aquatic plants through the Methods Test may provide some reduction in TP released into the water column both during growth and senescence. Conversely, the target species coontail uptakes nutrients from the water column so control of coontail may increase nutrient concentrations.

However, further study is needed to understand the contribution of nutrients from groundwater, aquatic plants, and other sources to the Tahoe Keys lagoons.

- A minimum instantaneous dissolved oxygen (DO) concentration of 4.0 mg/L to be achieved at all times, a 7-day mean minimum of 5.0 mg/L, and a 30-day mean concentration of 6.5 mg/L. TKPOA reported a minimum DO concentration of 6.7 mg/L and an average DO of 11.9 mg/L in the main lagoon during 2016 monitoring, with a maximum of 23 mg/L. The high daytime DO concentrations are indicative of supersaturation during photosynthesis and a diel cycle that likely includes very low DO concentrations at night and in the early morning hours that are below the 4.0 mg/L objective. Low DO may also be prevalent in deeper waters during the summer months if thermal density stratification occurs in the dead-end lagoons where water circulation is limited. It is uncertain whether the DO criteria will be met in treatment areas after the treatment period when decomposition of plant material will be occurring during the warm summer months.

The question of compliance with the Basin Plan antidegradation policy and the federal antidegradation policy is particularly challenging for the Methods Test because Tahoe Keys is considered part of Lake Tahoe, an ONRW designated for the highest level of protection under Tier III of the federal Clean Water Act. Different from the definition of pollution, degradation is considered any detectable level of an aquatic herbicide product or its transformation chemicals. Only short-term degradation is allowable under the federal ONW policy, meaning that detectable concentrations of the chemicals are allowable for only weeks or a few months within treatment areas following treatment. Other affects to beneficial uses would also require consideration and include impacts to non-target organisms, such as other aquatic plants and benthic macroinvertebrates in bottom sediments. Lowering water quality in the receiving waters, defined as all waters outside of the treatment areas, is not allowed at any time, including the presence of any detectable concentration of an herbicide residue or chemical transformation product. A complete antidegradation analysis is in development, as required by the Lahontan Water Board as part of the NPDES permit issuance to fully address compliance with the policies. In addition to Basin Plan objectives, the TRPA has adopted threshold standards for water quality that apply to six major components of the Tahoe Region's aquatic system. The Littoral Lake Tahoe component includes the Tahoe Keys lagoons. By reducing the amount of invasive and nuisance aquatic plants, the Methods Test is expected to reduce nitrogen and phosphorus loading to the water column from aquatic weeds and contribute toward meeting threshold standards for reducing nutrient loading. As discussed above for Basin Plan objectives, short-term increased turbidity is expected during removal of bottom barriers and would likely exceed similar TRPA threshold standards for turbidity. By targeting Eurasian watermilfoil and curlyleaf pondweed, the Methods Test would contribute toward achieving the threshold standard of reducing the abundance and distribution of known aquatic invasive species.

92) Changes in currents, or the course or direction of water movements? (TRPA 3) *Yes, significant*

95) Change in the amount of surface water in any water body? (TRPA 3d) *Yes, significant*

Before any herbicide applications are started in the main lagoon of Tahoe Keys, a water-filled barrier (i.e., portable dam) will be installed in the West Channel to block water movement between the lagoon and Lake Tahoe. The water barrier is expected to be in place for 5 to 7 weeks. The timing of removal will be based on monitoring to confirm that herbicide residues are not detected outside of the treatment areas. The Methods Test is planned for May, when Lake Tahoe is filling from snowmelt runoff and water is predominantly moving from the lake into Tahoe Keys. The Methods Test will block the flow of water from Lake Tahoe into the main lagoon and may result in less surface water in the main lagoon during the period when the water barrier is in place, with the water level as much as 2 feet lower than without the water barrier (Motiejunas 2017).

96) Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity? (TRPA 3e) *Yes, significant*

By design the project will discharge three aquatic herbicides into treatment areas within the main lagoon of Tahoe Keys. Indirect alteration of surface water quality may also result from the Methods Test weed control methods, including toxicity from HABs, increased turbidity and aluminum concentrations during removal of bottom barriers and hand-removal of weeds, and potential changes in pH, water temperature, dissolved oxygen, and nutrient concentrations following herbicide treatments. These potential water quality alterations are discussed above in the text describing impacts under checklist questions 82 and 87.

99) Substantial reduction in the amount of water otherwise available for public water supplies? (TRPA 3h) *No, not significant*

TKPOA Water Department operates and maintains all wells, wells, pipe delivery systems and monitoring equipment in order to consistently provide safe drinking water throughout the Tahoe Keys. The w Water Department services all Tahoe Keys owners and renters as well as the Tahoe Keys Marina and Tahoe Keys Office Center.

The primary concern that has been identified with regard to utilities has been the potential to affect water delivered for potable use that could be reached by the herbicides or their breakdown products, such that water would be rendered contaminated or unsuitable for human use.

No direct surface water intakes are located adjacent to the Tahoe Keys lagoons. The nearest surface water intake for potable use is in Lake Tahoe near Lakeside Marina, approximately four miles east of the Tahoe Keys West Channel. As discussed above, the proposed application of aquatic herbicides would not pose a potential risk to surface water intake drinking water supplies. If somehow the herbicides or their chemical degradation products leaked past the

West Channel barrier and entered Lake Tahoe, they would be so diluted and degraded before they reach the nearest potable surface water intake as to render any significant effect highly unlikely.

In addition to the surface water intakes, there are two groundwater purveyors near Tahoe Keys (URS 2016). Tahoe Keys Water Company (TKWC) operates three wells located within the Tahoe Keys subdivision that draw water from 150 to 430 feet below the ground. Two of the TKWC wells are within six hundred feet horizontally from proposed herbicide treatment sites. Rhodamine WT dye was not detected in samples taken at the three TKWC groundwater wells during a 2011 dye study, indicating herbicides would not reach these water supplies. Lukins Brothers Water Company operates four wells that are generally south and upgradient from the Tahoe Keys lagoons. Lukins wells #2 and #5 are their closest wells to the Tahoe Keys main lagoon, located more than 1,000 feet upgradient from the nearest proposed treatment area.

According to the Exemption Application there will be no interruption of groundwater supplies. If monitoring detects herbicide residues at the Tahoe Keys or Lukins Brothers water supply or treatment facility then the contingency is to use activated charcoal filters, designed to remove herbicides and other chemicals (EPA 2017b), to treat the potable water before distribution. Additional water demand will be met under an agreement with the South Tahoe PUD.

102) Is the project located within 600 feet of a drinking water source? (TRPA 3k) *No, with Mitigation*

Herbicide applications are planned to occur within 600 feet of several drinking water supply wells within the Tahoe Keys subdivision and the likely zone of influence for those wells. However, as discussed above for checklist question #81, proposed application concentrations of aquatic herbicides do not pose a potential risk to drinking water supplies. The herbicides and their chemical transformation products will be subject to non-detectable dilution and degradation before they can migrate miles to the nearest potable water intake or hundreds of feet into the drinking water table to reach wells that are adjacent to the Tahoe Keys and within 600 feet of treatment sites. However, sampling will be conducted at the three TKPOA well water intakes at 48-hour intervals for 14 days to confirm that there are no effects on groundwater quality, and contingency plans are in place if herbicides are detected. If monitoring detects herbicide residues at the Tahoe Keys water treatment facility then the contingency plan is to use only the well equipped with charcoal filters that will remove herbicides and other chemicals to treat the potable water before distribution. Additional water demand will be met under an agreement with the South Tahoe PUD.

4.10.3 Mitigation Measures

The Methods Test was designed to incorporate criteria that are necessary for the Lahontan Water Board to provide an exemption to the prohibition on the use of aquatic herbicides. These criteria include the following mitigation measures that will be implemented to control impacts

to beneficial uses and applicable water quality standards and limit these impacts to the shortest possible time necessary for project success:

MM-WQ – 1: Treatment Area

Proposed treatment areas shall not be expanded beyond those defined in the Integrated Methods Test project description. The prescribed treatment areas have been delineated to ensure herbicide use is limited to the smallest areal and depth extent that can reasonably achieve effective treatment. Treatment areas range from 1.25 to 2.2 acres and are located at dead-end coves where herbicide dilution is minimal. These project design measures will limit (1) the quantities needed for effective treatment and (2) migration of the chemicals. TKPOA will be responsible for assuring that herbicide applications do not occur outside of the prescribed treatment areas (defined as those areas where aquatic herbicides are delivered at doses lethal to target plant species).

MM-WQ – 2: Effective Rates

Herbicides will be applied at the approved application rates, which are 2.0 mg/L for endothall, 1.0 mg/L for triclopyr, and 0.02 mg/L for penoxsulam. These application rates shall not be increased (see also MM-HH – 4: Label Use Restrictions). TKPOA will be responsible for ensuring implementation of this mitigation measure by the certified QA during each day of herbicide application.

MM WQ – 3: Label Compliance

Chemical products applications shall be consistent with FIFRA herbicide label instructions and any Use Permits issued by the County Agricultural Commissioner. Monitoring after herbicide applications will be performed to confirm project efficacy, identify post-project impacts and verify restoration of native aquatic plant communities. (see also MM-HH – 4: Label Use Restrictions). Certified Qualified Applicators will be responsible for following the herbicide product label use restrictions throughout each herbicide treatment period.

MM WQ – 4: Impermeable Barriers at Treatment Areas

Impermeable barriers will be installed at each treatment area to confine the herbicide applications and ensure that herbicide residues or chemical transformation products do not migrate beyond the treatment areas such that they are detectable in receiving waters, including receiving waters within the main lagoon. TKPOA will be responsible for designing, installing, and testing barrier systems at the perimeter of the treatment areas that prevent detectable concentrations of chemicals outside the barriers.

4.11 LAND USE AND LAND USE PLANNING (CEQA AND TRPA)

This section presents the analysis for potential project-related impacts on land use and land use planning. The following tables identify the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

CEQA IS Checklist Item:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
103) Physically divide an established community? (CEQA Xa)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
104)* Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect? (CEQA Xb)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
105) Conflict with any applicable habitat conservation plan or natural community conservation plan? (CEQA Xc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
Would the project:				
106)* Include uses which are not listed as permissible uses in the applicable Plan Area Statement, adopted Community Plan, or Master Plan? (TRPA 8a)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
107) Expand or intensify an existing non-conforming use? (TRPA 8b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Implementation of the Methods Test would not include any features that could have the potential to divide an established community nor would it expand or intensify an existing non-conforming use. No habitat conservation plans or natural community conservation plans exist for the project area (CDFW 2017c and USFWS 2017). Therefore, Impacts 103, 105, and 107 are not applicable to the project or would have no related impacts, and are not discussed further.

4.11.1 Environmental Setting

The Tahoe Keys lagoons are located in the City of South Lake Tahoe, an area which is subject to the land use policies in TRPA’s Code of Ordinances (TRPA 2012b). A full description of the

environmental setting and the project's relationship to land use plans, policies, and regulations can be found in Sections 1.3 and 1.7, respectively.

4.11.2 Impacts and Mitigation Measures

4.11.2.1 Impacts

104) Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect? (CEQA Xb) *No, not significant*

The Methods Test is a scientific study project. Chapter 81.2, Applicability, of the TRPA Code of Ordinances outlines permissible and special uses within the shorezone and lakezone of Lake Tahoe. Scientific study projects are listed as a permissible special use. To allow a special use, TRPA is required to conduct a public hearing in accordance with the procedures found in the Rules of Procedure (TRPA 2011), and is subject to TRPA review to ensure that it meets the requirements of Code of Ordinances Chapter 81.2.2, Special Uses.

106) Would the project include uses which are not listed as permissible uses in the applicable Plan Area Statement, adopted Community Plan, or Master Plan? (TRPA 8a) *No, not significant*

The Methods Test is a scientific study project. Chapter 81.2, Applicability, of the TRPA Code of Ordinances outlines permissible and special uses within the shorezone and lakezone of Lake Tahoe. Scientific study projects are listed as a permissible special use. To allow a special use, TRPA is required to conduct a public hearing in accordance with the procedures found in the Rules of Procedure (TRPA 2011), and is subject to TRPA review to ensure that it meets the requirements of Code of Ordinances Chapter 81.2.2, Special Uses. However, as noted in Section 1.7.2, above, the Environmental Improvement Plan does note that one of the top science priorities for managing invasive species includes "using carefully designed pilot projects, complete science-based evaluations of the effectiveness of alternative strategies to control and manage invasive and noxious species that are now established in the Tahoe Basin".

4.11.2.2 Mitigation Measures

There are no project impacts relating to land use, and therefore, no mitigation measures recommended at this time.

4.12 MINERAL RESOURCES (CEQA) AND NATURAL RESOURCES (TRPA)

This section presents the analysis for potential project-related impacts mineral and natural resources. The following tables identify the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

CEQA IS Checklist Item:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
108) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? (CEQA XIa)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
109) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan? (CEQA XIb)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
Would the project result in:				
110) A substantial increase in the rate of use of any natural resources? (TRPA 9a)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
111) Substantial depletion of any non-renewable natural resource? (TRPA 9b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The Regional Plan Update EIS (TRPA 2012) states that “a commitment of resources is irreversible and irretrievable when the use or consumption of such resources is neither renewable nor recoverable for use in the future. The commitment of resources refers to the use of non-renewable resources such as fossil fuels, water, and electricity.” The proposed project would involve an Integrated Methods Test to demonstrate the safety, efficacy, compatibility, and utility of three aquatic herbicide products to control the most prolific aquatic weeds in the Tahoe Keys lagoons, and would have no substantial effect related to the consumption of natural resources. Implementation of the project would have no impacts on mineral or natural resources in the area. Therefore, these topics are not discussed further.

4.13 NOISE (CEQA AND TRPA)

CEQA IS Checklist Item:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
112) Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? (CEQA XIIa)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
113) Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels? (CEQA XIIb)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CEQA IS Checklist Item:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
114) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? (CEQA XIIc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
115) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? (CEQA XII d)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
116) For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within 2 miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels? (CEQA XIIe)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
117) For a project located in the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? (CEQA XII f)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
Would the project result in:				
118) Increases in existing Community Noise Equivalency Levels (CNEL) beyond those permitted in the applicable Plan Area Statement, Community Plan or Master Plan? (TRPA 6a)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
119) Exposure of people to severe noise levels? (TRPA 6b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
120) Single event noise levels greater than those set forth in the TRPA Noise Environmental Threshold? (TRPA 6c)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Activities associated with the Methods Test are not noise- or vibration-intensive. Herbicides and installation of the barrier in the West Channel will require the use of boats that emit noise at levels typical of other boat noise in the Lagoons. Therefore, the Method Test is not expected to exceed any noise standards, cause a substantial increase in ambient noise levels, expose people to excessive or severe noise levels, increase noise associated with air traffic, or result in excessive ground vibration. The Methods Test is temporary, and will cause no permanent increase in noise levels. Therefore, these topics are not discussed further.

4.14 POPULATION AND HOUSING (CEQA/TRPA)

This section presents the analysis for potential project-related impacts on population and housing. The following tables identify the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

CEQA IS Checklist Item:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
121) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? (CEQA XIIIa)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
122) Displace substantial numbers of existing housing units or create demand for additional housing, necessitating the construction of replacement housing? (CEQA XIIIb)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
123) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? (CEQA XIIIc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
Would the project:				
124) Alter the location, distribution, density, or growth rate of the human population planned for the region? (TRPA 11a)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
125) Include or result in the temporary or permanent displacement of residents? (TRPA 11b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
126) Affect existing housing, or create a demand for additional housing?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To determine if the proposal will affect existing housing or create a demand for additional housing, please answer the following questions: (1) Will the proposal decrease the amount of housing in the Tahoe Region? (2) Will the proposal decrease the amount of housing in the Tahoe Region historically or currently being rented at rates affordable by lower and very low-income households? (TRPA 12a)				
127) Result in the loss of housing for lower income and very-low-income households? (TRPA 12b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Implementation of the project would not involve any impacts on the population and housing in the area. Therefore, these topics are not discussed further.

4.15 PUBLIC SERVICES (CEQA/TRPA)

This section presents the analysis for potential project-related impacts on public services in the project area. The following tables identify the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

CEQA IS Checklist Item:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
128) Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any public services such as fire protection, police protection, schools, parks, or other services? (CEQA XIVA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
Would the project:				
129) Have an unplanned effect on, or result in a need for new or altered governmental services in areas including fire protection (TRPA 14a); police protection (TRPA 14b); schools (TRPA 14c); parks or other recreational facilities (TRPA 14d); maintenance of public facilities, including roads (TRPA 14e), or other governmental services (TRPA 14f)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Implementation of the project would have no impacts on public services in the area, and would not require new or expanded public services. Therefore, these topics are not discussed further.

4.16 RECREATION

This section presents the analysis for potential project-related impacts on recreation. The following tables identify the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

CEQA IS Checklist Item:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				

CEQA IS Checklist Item:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
130) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated? (CEQA XVa)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
131) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment? (CEQA XVa)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
Does the project:				
132) Create additional demand for recreation facilities? (TRPA 19a)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
133) Create additional recreation capacity? (TRPA 19b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
134) Have the potential to create conflicts between recreation uses, either existing or proposed? (TRPA 19c)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
135) Result in a decrease or loss of public access to any lake, waterway, or public lands? (TRPA 19d)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

4.16.1 Environmental Setting

The Tahoe Keys lagoon setting is described above in Section 1.3. As noted 1,529 homes and townhouses have been developed, together with a marina and dock facilities to serve property owners boating recreation. Many property owners rent their homes to vacationers, who use their facilities to engage in recreational boating. As noted in the Exemption Application (p. 6), “Because the Tahoe Keys is primarily a boating community and has a high density of vacation rentals, the number of boat trips in and out of the Keys is much greater than most other locations around Lake Tahoe.” Approximately 25 percent of all recreational boating on Lake Tahoe originates from the combined West and Marina lagoons. (pers. comm. TKPOA)

4.16.2 Impacts and Mitigation Measures

The primary impact identified as of potential significance is the obstruction of recreational boating during the time that the impermeable barrier is in place on the West Channel entrance.

4.16.2.1 Impacts

135) Result in a decrease or loss of public access to any lake, waterway, or public lands? (TRPA 19d) *No, with mitigation*

During the Methods Test, a temporary impermeable barrier would be erected blocking access from the West Lagoon to the Lake for a period estimated to extend for five to seven weeks. The barrier will remain in place for at least 14 days after the last application of herbicides, and would not be removed until specific criteria are met (see Exemption Application Section 5.1.1). This barrier would preclude recreational boating for those property owners and vacationers using the West Lagoon to access the Lake and could appreciably reduce recreational boating while it is in place. However the intent is to complete the Methods Test within a window that will allow the barrier to be placed and removed before the start of the recreational boating season (see mitigation below).

The project would implement MM-TR-1, which includes a homeowner, renter, and rental agency information campaign to give advance notice of the restrictions during the test period, including the display of adequate signage in the area. MM-RE-1 would also be implemented, which requires the Methods Test to be conducted before the beginning of the recreational boating season, generally considered to begin with Memorial Day weekend (see Section 4.15, Recreation). Implementation of MM-TR-1 and MM-RE-1 are expected to maintain project-related impacts on loss of public access for recreational boating to a less-than-significant level.

Swimming is not expected to be substantially affected, especially as neither penoxsulam, nor trichlopr acetic acid nor endothall require restriction on consumption of treated water for recreational purposes, including swimming (see Exemption Application, Table 9).

4.16.2.2 Mitigation Measures

The following mitigation measures would be implemented to reduce project-related impacts related to waterborne traffic:

MM-TR-1: Public Noticing

TKPOA will design and carry out an information campaign targeting homeowners, renters, and rental agencies, to provide advance notice on any public access or recreational restrictions during the test period. The campaign will employ e-mails, flyers, letters, TKPOA's periodical (*The Breeze*), and social media. Announcements and project summaries will be prepared and distributed 3 to 6 months in advance of the proposed treatment, as well as 2 weeks prior to the start of the Methods Test. In addition, adequate signage shall be displayed by TKPOA 30-days prior to project implementation, throughout project implementation and 14-days after project completion. Notices will be posted in publicly visible locations immediately adjacent to all nine test sites and at the intersection of Tahoe Keys Blvd. and Venice Drive. The notices will inform property owners and visitors about the project and current status of waterways.

MM-RE-1: Seasonal Restriction

The Methods Test will be timed to occur prior to the beginning of the recreational boating season (defined as Memorial Day). The West Lagoon temporary impermeable barrier will be removed prior to the Memorial Day weekend.

MM-RE-2: Swimming Restriction

TKPOA will design and carry out a homeowner, renter, and rental agency information campaign to notifying them of the Methods Test and warning against direct water contact throughout the Methods Test until monitoring determines warning can be lifted. The campaign will employ e-mails, flyers, letters, TKPOA’s periodical (The Breeze), and social media. In addition, adequate signage shall be displayed by TKPOA 30-days prior to project implementation, during project implementation and 14-days after project completion in a publicly visible location immediately adjacent to all nine test locations and at the intersection of Tahoe Keys Blvd. and Venice Drive to inform property owners and visitors about the need to avoid direct water contact.

MM-RE-3: Use of Tahoe Keys Marina for Recreational Boat Launch

TKPOA has signed a stipulated agreement with the Marina that allows members to launch from the Marina with no fees. This existing agreement provides an alternative means to access the lake for recreational boating during the period that the impermeable barrier is in place on the West Channel entrance.

4.17 TRANSPORTATION AND TRAFFIC (CEQA) AND TRAFFIC AND CIRCULATION (TRPA)

This section presents the analysis for potential project-related impacts on transportation, traffic, and circulation. The following tables identify the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

CEQA IS Checklist Item:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
136) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? (CEQA XVIa)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
137) Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways? (CEQA XVIIb)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CEQA IS Checklist Item:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
138) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location, that results in substantial safety risks? (CEQA XVIc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
139) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses? (CEQA XVIIId)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
140) Result in inadequate emergency access? (CEQA XVIIId)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
141) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? (CEQA XVIe)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
Would the project result in:				
142) Generation of 100 or more new Daily Vehicle Trip Ends (DVTE)? (TRPA 13a)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
143) Changes to existing parking facilities, or demand for new parking? (TRPA 13b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
144) Substantial impact upon existing transportation systems, including highway, transit, bicycle or pedestrian facilities? (TRPA 13c)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
145) Alterations to present patterns of circulation or movement of people and/or goods? (TRPA 13d)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
146)* Alterations to waterborne, rail or air traffic? (TRPA 13e)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
147) Increase in traffic hazards to motor vehicles, bicyclists, or pedestrians? (TRPA 13f)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Implementation of the Methods Test would require limited access to the nine testing locations by vehicles, which would not constitute a substantial increase in vehicular traffic in the area. It would not result in a burden on transportation infrastructure, impede emergency access, or conflict with any transportation plans or policies that support alternative transportation. No new parking would be required to support the project, and the project would not generate 100 or more DTVEs. Implementation of the Methods Test would not alter present patterns of circulation in the area or contribute to an increase in traffic hazards. Aquatic herbicides do not require aerial pesticide dispersant, so no impacts related to air travel would occur. Traffic lanes would remain open to all vehicles, including emergency vehicles, during the test. Therefore, Impacts 136–145, and 147 are either not applicable to the project or would have no impact, and thus, are not discussed further in this section.

4.17.1 Environmental Setting

Tahoe Keys is primarily a boating community and has a high density of vacation rentals. As such, the number of boat trips in and out of the Keys is high compared to other locations around Lake Tahoe.

4.17.2 Impacts and Mitigation Measures

4.17.2.1 Impacts

146) Would the project cause alterations to waterborne, rail, or air traffic? (TRPA 13e) *No, with mitigation as a recreational impact (Section 4.16)*

The project has no nexus to rail or air traffic. The project would include the installation of a temporary impermeable barrier that would block boating access to and from the West Lagoon to Lake Tahoe for a period of approximately 5 to 7 weeks. The installation and use of the impermeable barrier is temporary, and is expected to restrict only a portion of private/non-commercial waterborne traffic in the area. TKPOA has signed a stipulated agreement with the Marina that allows members to launch from the Marina with no fees. This will provide an alternative means to access the lake for to enjoy recreational boating during the period that the impermeable barrier is in place on the West Channel entrance. As this impact is addressed in Section 4.16 Recreation it is not considered further here to avoid duplication.

4.18 UTILITIES AND SERVICE SYSTEMS (CEQA) AND ENERGY AND UTILITIES (TRPA)

This section presents the analysis for potential project-related impacts on utilities, service systems, and energy. The following tables identify the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

CEQA IS Checklist Item:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
148) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? (CEQA XVIIa)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
149) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? (CEQA XVIIb)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CEQA IS Checklist Item:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
150) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? (CEQA XVIIc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
151) Have sufficient water supply available to serve the project from existing entitlements and resources, or require new or expanded water supply resources or entitlements? (CEQA XVIIId)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
152) Result in a determination by the wastewater treatment provider that would serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments? (CEQA XVIIe)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
153) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? (CEQA XVIIIf)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
154) Comply with federal, state, and local statutes and regulations related to solid waste? (CEQA XVIIg)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
Would the project result in:				
155) Use of substantial amounts of fuel or energy? (TRPA 15a)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
156) Substantial increase in demand upon existing sources of energy, or require the development of new sources of energy? (TRPA 15b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Except for planned improvements, will the proposal result in a need for new systems, or substantial alterations to the following utilities:				
157) Power or natural gas? (TRPA 16a)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
158) Communication systems? (TRPA 16b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
159) Utilize additional water which amount will exceed the maximum permitted capacity of the service provider? (TRPA 16c)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
160) Utilize additional sewage treatment capacity which amount will exceed the maximum permitted capacity of the sewage treatment provider? (TRPA 16d)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
161) Storm water drainage? (TRPA 16e)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
162) Solid waste and disposal? (TRPA 16f)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The implementation of the Methods Test would not affect energy, utilities and service systems. Therefore, these topics are not discussed further.

4.19 MANDATORY FINDINGS OF SIGNIFICANCE

This section presents the analysis for mandatory findings of significance. The following table identifies the applicable impacts, anticipated level of impact, and whether mitigation measures are required to reduce impacts to a less-than-significant level.

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
163) Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? (CEQA XVIIIa)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
164) Have impacts that would be individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.) (CEQA XVIIIb)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
165) Have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly? (CEQA XVIIIc)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
166) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California or Nevada history or prehistory? (TRPA 21a)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
167) Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time, while long-term impacts will endure well into the future.) (TRPA 21b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

TRPA IEC Checklist Item	Yes	No	No, with Mitigation	Data Insufficient
168) Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant?) (TRPA 21c)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
169) Does the project have environmental impacts which will cause substantial adverse effects on human being, either directly or indirectly? (TRPA 21d)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

163) Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? (CEQA XVIIIa)
Potentially significant

166) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California or Nevada history or prehistory? (TRPA 21a) *Data insufficient*

Data is currently insufficient to characterize potential effects to listed species, changes in the diversity or distribution of species, or number of any species of plants. The overall effects on plant and animal populations, including those identified as unique, rare or endangered, may not be significant, however data are insufficient to be decisive. Species presence and distribution in proximity to the Methods Test site is not known with confidence. The footprint for the construction of the impermeable barrier is not sufficiently delineated to conclusively exclude effects. Data are insufficient to delineate wetlands and fully evaluate effects on them. Further study would be performed to evaluate the species present in and within proximity of the project area, as data is currently insufficient to determine if the barrier will coincide with any lifecycle elements potentially affecting species.

Aquatic weed control has the potential to affect environmental conditions in ways that may contribute to increased harmful algal blooms and, in some cases, the production of cyanotoxins that have been reported to cause illness and mortality in wildlife, livestock and pets. However, information is currently insufficient to rule out the possibility of an incremental increased risk of cyanobacteria blooms resulting from proposed aquatic weed control efforts and spread of cyanotoxins beyond treatment areas. This potential impact will need to be further evaluated in a complete antidegradation analysis.

It is anticipated that if target aquatic invasive plant species are successfully controlled, restoration of natural conditions would allow a more diverse and complex ecosystem to establish. However, data is currently insufficient to determine if the project has the potential to significantly degrade the quality of the environment, thus making impacts potentially significant.

The purpose of the Methods Test is to substantially reduce the plant communities of Eurasian watermilfoil, curlyleaf pondweed, and coontail and there is potential for some mortality of non-target plants from herbicides and bottom barriers. The distribution of fish and other aquatic organisms (including rare or endangered) within the benthic and littoral zones may change during the 5-7 weeks when the water barrier is in place. The approximately 5 acres of bottom barriers proposed for the second and third years of the Methods Test will change the distribution of benthic organisms. However, data are insufficient to fully characterize whether these potential effects will substantially reduce habitat or cause populations of aquatic species to drop below self-sustaining levels.

Implementation of the Methods Test would have no impacts on any known archaeological, historic, or TCP's.

168) Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environmental is significant?) (TRPA 21c) *Data insufficient*

A formal cumulative effects analysis has not been conducted for the Methods Test, and no applicable analysis of cumulative effects that could be extended to the Methods Test is known.

169) Does the project have environmental impacts which will cause substantial adverse effects on human being, either directly or indirectly? (TRPA 21d) *No, with mitigation*

As discussed in section 4.9, Human Health, the proposed project does have potential impacts to humans, but all are less than significant with mitigation.

The risk of acute exposure to triclopyr, endothall, and penoxsulam would be primarily to the QA. Concentrated herbicide products are corrosive and can cause skin irritation and irreversible eye damage if splashed in the eye (WDOE Undated). Persons who mix or apply the herbicides need to protect their skin and eyes from contact during mixing and application.

As the liquid herbicides are injected directly into the water column and granular herbicides are applied to the water surface with a spreader, there is little chance of exposure to bystanders during the herbicide application process. These application methods eliminate the opportunity for drift of herbicides onto bystanders or nearby residents during the application process (WDOE Undated). Triclopyr, endothall, and penoxsulam have low vapor pressures and are

quite water soluble, so they will not volatilize from treated water and drift through air following the application (EPA 2007; 2014; WDOE 2001).

The mitigation measures recommended to protect human health can be found in section 4.9.2.2 as well as below, in Section 5.

5. MITIGATION MEASURES

MM-BIO – 1: Timing of Treatments

TKPOA will ensure that herbicide treatments conducted in the Tahoe Keys lagoons will occur in the appropriate month during the spring of 2018 (currently planned for May), when the plants are in their early stages of growth. Timing applications to occur during early growth stages (spring season) will reduce the risk of objectionable odors from plant decay because a smaller volume of plant material will decay as compared to application when the plants have reached full size in the fall. This timing of the treatments will also reduce the volume of plants that are removed and exposed to the air by mechanical harvesting.

MM-BIO – 2: Field Reconnaissance and Construction Monitoring

Prior to installation of the impermeable barrier, TKPOA will conduct a pre-construction field reconnaissance of potentially affected terrestrial, riparian, and aquatic (benthic and littoral zones), habitat and species. This will include the worksite, and buffer zones dictated by the species in question, i.e. bald eagles have a larger range than Tahoe rock cress. The occurrence of any sensitive or listed species and/or habitat will be recorded. If sensitive receptors are observed, an evaluation will be made as to the potential impacts. If direct or indirect impacts are possible, coordination will be initiated with the appropriate federal (USFWS) or state (CDFW) agency to determine further mitigation to avoid impacts. The agencies contacted will be dependent on the special-status of the species identified. Examples of mitigation measures could include: environmental tailboards prior to the start of work, the establishment of exclusionary zones (i.e. around active nests), and/or assigning biological field monitors with stop work authority if impacts to receptors are possible. Should work stop based on discovery of sensitive or listed species, and TKPOA will consult with appropriate agencies to determine next steps prior to work restarting.

MM-BIO – 3: Aquatic Fish/Invertebrate Surveys

If it is concluded that direct or indirect impacts are possible to sensitive or listed species and/or their habitat during MM-BIO-2, the need for protocol-level surveys will be determined in consultation with state (CDFW) and federal (USFWS) agencies and other stakeholders. The type and intensity of surveys will be decided in consultation these agencies if the results of MM-BIO-2 show that listed species and/or habitat are or may be present within the project area. During the appropriate survey period and specific to each target species, qualified biologists would resurvey habitat areas utilizing state and or federal protocol to detect presence and determine distribution of special-status wildlife species within the biological study area. Based on survey results consultation will also be undertaken to determine whether further compensatory mitigation actions are required.

MM-HH – 1: Approved Herbicides

The proposed project will utilize only herbicide products that have been reviewed and approved by the U.S. EPA and California EPA/DPR (EPA 1998, EPA 2005b, EPA 2014, SWRCB 2017). Specific products proposed for use are Aquathol K (endothall product applied in liquid form using drop hoses), Renovate (liquid triclopyr applied using drop hoses) or OTF (granular triclopyr applied with a spreader), and Galleon SC (liquid penoxsulam applied using drop hoses). The use of any other herbicide products is prohibited. TKPOA will be responsible for ensuring implementation of this mitigation measure by the certified Qualified Applicator during each day of herbicide application.

MM-HH – 2: Applicator Qualifications

Herbicide applications will be performed only by Qualified Applicator (QA) certificate holders. QA's will follow NPDES permit requirements and product label specifications. Because risks of exposure are primarily to chemical applicators, and QAs will be required to complete extensive annual training to minimize these risks, including the use of proper personal protective equipment. These mitigation measures are described in detail in the project Aquatic Pesticide Application Plan (APAP, TKPOA 2017a). TKPOA will be responsible for verifying that personnel applying herbicides each day have the required certification.

MM-HH – 3: Spill Response Plan

A Spill Response Plan will be developed by a QA to minimize and contain any spills during herbicide mixing and application. This Plan is an expected condition of the project NPDES permit and will require approval by the Lahontan Water Board. TKPOA will be responsible for overseeing the preparation of the Spill Response Plan and its implementation by the certified QA each day of herbicide applications.

MM-HH – 4: Label Use Restrictions

All QAs will follow all label use restrictions to ensure the appropriate herbicide use rate. (See also MM-WQ – 2 and MM-WQ – 3). Certified QAs will be responsible for following the herbicide product label use restrictions throughout each herbicide treatment period.

MM-HH – 5: Dye Tracing

Rhodamine WT dye will be applied by TKPOA during the herbicide applications and tracked to determine the movement and dissipation of dissolved herbicide products and chemical transformation products. It is expected that TKPOA will need to develop protocols for this monitoring activity as part of water quality monitoring plans required as NPDES permit conditions. If herbicides are detected in the wells, contingency plans include shutting off the wells and distributing water to all customers until residues are no longer detected in the samples. TKPOA will be responsible for dye tracing during and after each herbicide application, and reporting the results as part of the project monitoring program.

MM-HH – 6: Well Monitoring

A monitoring plan for area wells will be developed to test for contamination by herbicides and verify the effectiveness of carbon filtration to remove filter and herbicide residues (see MM-HH - 7). It is expected that TKPOA will need to develop protocols for this monitoring activity as part of water quality monitoring plans required as NPDES permit conditions. If herbicides are detected in the wells, contingency plans include shutting off the wells and distributing water to all customers until residues are no longer detected in the samples. TKPOA will be responsible for developing and implementing the well monitoring plan during and after herbicide applications.

MM-HH – 7: Public Outreach

TKPOA will design and carry out an information campaign targeting homeowners, renters, and rental agencies, to provide advance notice regarding the Methods Test before and during aquatic herbicide applications. TKPOA will also hold a workshop and informational meeting with Tahoe Water Suppliers Association (TWSA) at least 45 days before herbicide applications are conducted. At the workshop, TKPOA will present the proposed project schedule and answer questions to inform customers of the Methods Test and dates of herbicide application. The TKPOA will also consult with the TWSA and specific water suppliers in establishing water sampling locations for monitoring of intake water. (See also MM-TR – 1)

MM-HH – 8: Carbon Filtration

If monitoring detects herbicide residues, carbon filtration systems already installed at water supply wells will remove any herbicide residues before water enters the distribution systems at Tahoe Keys. A mobile filtration system will also be available to pump and treat water at wells where exceedances are detected (i.e., where herbicide residues exceed allowable product label concentrations). Local water purveyors (Tahoe Keys Water Company and Lukins Brothers Water Company) will be responsible for operating existing filtration systems at the wells. TKPOA will be responsible for operating mobile filtrations systems, as needed.

MM-HH – 9: West Channel Monitoring and Water Barrier

Herbicides will be applied at least 1,000 feet from the West Channel. If herbicide residues are detected in monitoring in the West Channel, then additional monitoring will be performed in Lake Tahoe according to pre-approved monitoring plans that meet permit requirements. It is expected that TKPOA will need to develop protocols for this monitoring activity as part of water quality monitoring plans required as NPDES permit conditions.

MM-HH-10: West Channel Water Barrier

TKPOA has proposed a water-filled temporary barrier to impede water exchange between the main lagoon and Lake Tahoe. TKPOA will be responsible for overseeing the construction of an effective water barrier in the West Channel that will prevent main lagoon water from entering Lake Tahoe for a period of 5 to 7 weeks during and after herbicide applications. The West Channel water barrier would be in addition to the impermeable barriers described in MM-WQ-4 that are necessary to contain detectable concentrations of herbicide residues within each treatment area.

MM-TR – 1: Public Noticing

TKPOA will design and carry out an information campaign targeting homeowners, renters, and rental agencies, to provide advance notice on any public access or recreational restrictions during the test period. The campaign will employ e-mails, flyers, letters, TKPOA's periodical (*The Breeze*), and social media. Announcements and project summaries will be prepared and distributed 3 to 6 months in advance of the proposed treatment, as well as 2 weeks prior to the start of the Methods Test. In addition, adequate signage shall be displayed by TKPOA 30-days prior to project implementation, throughout project implementation and 14-days after project completion. Notices will be posted in publicly visible locations immediately adjacent to all nine test sites and at the intersection of Tahoe Keys Blvd. and Venice Drive. The notices will inform property owners and visitors about the project and current status of waterways.

MM-RE – 1: Seasonal Restriction

The Methods Test will be timed to occur prior to the beginning of the recreational boating season (defined as Memorial Day). The West Lagoon temporary impermeable barrier will be removed prior to the Memorial Day weekend.

MM-RE-2: Swimming Restriction

TKPOA will design and carry out a homeowner, renter, and rental agency information campaign to notifying them of the Methods Test and warning against direct water contact throughout the Methods Test until monitoring determines warning can be lifted. The campaign will employ e-mails, flyers, letters, TKPOA's periodical (*The Breeze*), and social media. In addition, adequate signage shall be displayed by TKPOA 30-days prior to project implementation, during project implementation and 14-days after project completion in a publicly visible location immediately adjacent to all nine test locations and at the intersection of Tahoe Keys Blvd. and Venice Drive to inform property owners and visitors about the need to avoid direct water contact.

MM-RE-3: Use of Tahoe Keys Marina for Recreational Boat Launch

TKPOA has signed a stipulated agreement with the Marina that allows members to launch from the Marina with no fees. This existing agreement provides an alternative means to access the

lake for recreational boating during the period that the impermeable barrier is in place on the West Channel entrance.

MM-WQ – 1: Treatment Area

Proposed treatment areas shall not be expanded beyond those defined in the Integrated Methods Test project description. The prescribed treatment areas have been delineated to ensure herbicide use is limited to the smallest areal and depth extent that can reasonably achieve effective treatment. Treatment areas range from 1.25 to 2.2 acres and are located at dead-end coves where herbicide dilution is minimal. These project design measures will limit (1) the quantities needed for effective treatment and (2) migration of the chemicals. TKPOA will be responsible for assuring that herbicide applications do not occur outside of the prescribed treatment areas (defined as those areas where aquatic herbicides are delivered at doses lethal to target plant species).

MM-WQ – 2: Effective Rates

Herbicides will be applied at the approved application rates, which are 2.0 mg/L for endothall, 1.0 mg/L for triclopyr, and 0.02 mg/L for penoxsulam. These application rates shall not be increased (see also MM-HH – 4: Label Use Restrictions). TKPOA will be responsible for ensuring implementation of this mitigation measure by the certified QA during each day of herbicide application.

MM-WQ – 3: Label Compliance

Chemical products applications shall be consistent with FIFRA herbicide label instructions and any Use Permits issued by the County Agricultural Commissioner. Monitoring after herbicide applications will be performed to confirm project efficacy, identify post-project impacts and verify restoration of native aquatic plant communities. (see also MM-HH – 4: Label Use Restrictions). Certified Qualified Applicators will be responsible for following the herbicide product label use restrictions throughout each herbicide treatment period.

MM WQ – 4: Impermeable Barriers at Treatment Areas

Impermeable barriers will be installed at each treatment area to confine the herbicide applications and ensure that herbicide residues or chemical transformation products do not migrate beyond the treatment areas such that they are detectable in receiving waters, including receiving waters within the main lagoon. TKPOA will be responsible for designing, installing, and testing barrier systems at the perimeter of the treatment areas that prevent detectable concentrations of chemicals outside the barriers.

6. INITIAL STUDY PREPARERS

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