

Chapter 4

FISHERIES

4.1 INTRODUCTION

This chapter presents a description of the existing conditions in the Shorezone area with respect to fisheries and identifies the potential environmental impacts on fisheries habitat that could result from implementation of Alternative 6. The existing fishery resources of the project area are described in Section 4.1 of the original DEIS and are not repeated here. Please refer to the DEIS.

REGULATORY CONSIDERATIONS

This analysis of Alternative 6 uses the same established regulatory considerations and impact criteria for fisheries that were employed in the five originally proposed alternatives. They are listed in Section 4.1 of the DEIS. Please refer to the DEIS.

4.2 EXISTING FISHERIES CONDITIONS AND TRENDS

Existing fisheries conditions and trends for Lake Tahoe are the same for Alternative 6 as those presented in Section 4.2 of the DEIS for the other alternatives. Refer to Section 4.2 of the DEIS.

4.3 SUMMARY OF PROJECT ALTERNATIVES – ALTERNATIVE 6

As discussed in Chapter 2 of the DEIS, the different alternatives would have varied effects on Shorezone development at Lake Tahoe. Section 4.3 of the DEIS and Section 2.2 of this Supplemental DEIS contain a summary of the five originally proposed alternatives. Alternative 6 is summarized below as it relates to fisheries resources.

ALTERNATIVE 6 – DENSITY-BASED, 230-PIER ALTERNATIVE

Alternative 6 implements a new approach to the authorization of pier construction, based on planned density of piers within specified shoreline types and a slow annual approval rate leading to no more than 220 private and 10 public (230 total) piers within the timeframe of the Pathway 2007 Regional Plan update (2027). Up to 10 new private piers may be approved each year. Under this alternative, all private parcels that do not have an existing pier or deed restrictions related to access to a multi-use pier would be potentially eligible for a pier. Eligibility criteria also require that existing shoreland structures achieve a scenic contrast rating score of 25 or better and that current scenic Best Management Practices (BMPs) are in place, among other provisions. Also, only multi-use piers could be approved in shoreline travel units that have not attained scenic thresholds. Owners of eligible parcels

may apply for a new single or multi-use pier, the approval of which would be determined by the length of shoreline retired by the approval (i.e., approval of a pier would retire the parcel or parcels with access to the pier from future eligibility and first priority would be assigned to applications with the greatest length of retired shoreline). All piers must comply with design standards adopted by TRPA to ensure that scenic code requirements and thresholds are met.

Up to two buoys would be allowed on every private littoral parcel, as long as they could meet adjacent property setback, shoreline distance, and separation standards. All buoys must be set back at least 25 feet from the adjacent property line, as measured from the line extended into the water. They must be located no more than 350 feet from the high water shoreline, or within the shorezone area defined by the 6,219-foot contour line on the lakebed where shallow water makes achievement of the 350-foot distance from the high water shoreline impossible. The minimum separation distance between buoys must be 50 feet.

At public marinas, in common areas controlled by homeowners associations (or similar entities), or on public properties where piers are allowed, the buoys must be located within the area defined by the side property setback and shoreline distance standards. The maximum number of buoys would be determined by these dimensions and the minimum separation distance of 50 feet. Also, buoy fields controlled by homeowners associations may not contain more buoys than the number of participating homes in the association.

Alternative 6 would allow for only additional public boat launching ramps. Therefore, they would only be added where public street access to the shoreline is present with shoreland area that is suitable for the launch ramp use and other mitigation (e.g., sewer and water connection).

FISHERY-RELATED PROJECT CHARACTERISTICS

Table 4-1 summarizes the main project features of the five originally proposed alternatives along with Alternative 6 and provides an overview of their differences.

Table 4-1. Summary of Project Alternatives, Including Alternative 6						
Project Features	Alternative 6 Density-based, 230-Pier	Alternative 1 No Project	Alternative 2 Proposed Project	Alternative 3 No Fish Habitat Restrictions	Alternative 4 Public Structures Only	Alternative 5 Reduced Development
Streamlined Review	Yes	No	Yes	No	No	Yes
New Structures	Yes	Yes	Yes	Yes	Yes	No
Private Structures	Yes	Yes	Yes	Yes	Public Use Only	Multi Use Only
Quasi-Public Structures	No	Yes	Yes	Yes	No	Yes
Public Structures	Yes	Yes	Yes	Yes	Yes	Yes
Repairs/ Modifications	Yes	Yes	Yes	Yes	Public Use Only	Yes
Reduction in Structures	No	No	No	No	No	Yes

4.4 STANDARDS OF SIGNIFICANCE

The scientific and analytical basis for the evaluation of the fisheries impacts of Alternative 6 is the same as that used for other alternatives and is not repeated here. Refer to Section 4.4 of the DEIS.

SUMMARY OF POTENTIAL FISHERIES IMPACTS

Table 4-2 provides a summary of quantified significant impacts for each alternative, including Alternative 6.

Direct and Indirect Effects

Direct and indirect effects are the same for Alternative 6 as presented in Section 4.4 of the DEIS for the other alternatives and include loss of prime fish habitat, disturbance during spawning, substrate siltation, substrate removal, obstructions to migration, native riparian vegetation removal, introduction of invasive aquatic weeds, and disruption of littoral drift processes. Refer to Section 4.4 of the DEIS for a detailed explanation of each effect.

4.5 POTENTIAL FISHERIES IMPACTS AND REQUIRED MITIGATION MEASURES

ALTERNATIVE 6 – DENSITY-BASED, 230-PIER ALTERNATIVE

Alternative 6 implements a new approach to the approval and placement of a limited number of new piers in association with the timeframe of the PATHWAY 2007 Regional Plan. The approval of new piers, buoys, and boat ramps would be directed by parcel eligibility and density criteria and would be implemented using a slow annual approval rate of up to 10 new private piers per year. Up to six new public boat ramps and 1,862 new buoys would be constructed. All new facilities would be required to comply with TRPA-adopted design standards to help ensure compliance with fisheries code, policies, and threshold requirements.

The impact analysis for Alternative 6 is based on the assumption that this alternative includes, as Code amendments or required fisheries resource protection measures, many of the mitigation measures described in the DEIS for other alternatives. These measures, which would be required to meet the fishery threshold non-degradation standard, include the following:

- 1) Restoration best management practices (BMPs) required on all Shorezone parcels for fish habitat and native riparian vegetation (including identification of plant species)
- 2) Restoration and/or reclamation of spawning habitat at a 1.5:1 ratio
- 3) Mitigation fee program to offset Regional impacts on fisheries resources through use to implement the Environmental Improvement Program (EIP) fisheries improvement projects

Table 4-2. Quantified Significant Impacts on Fisheries by Alternative, including Alternative 6

Impact	Alternative 6	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
1. Loss of prime fish habitat ^a	not quantified ^h	158 m ²	2,900 m ²	40,883 m ²	1383 m ²	-410 m ² -289 m ^{2h}
2. Disturbance of spawning ^b	296,813 boat trips/year 236 piers and ramps	322,080 boat trips/year 162 piers and ramps	358,501 boat trips/year 463 piers and ramps	549,099 boat trips/year 1,300 piers and ramps	317,390 boat trips/year 33 piers and ramps	227,718 boat trips/year -35 piers and ramps
3. Substrate siltation ^c	43 ramps	128 ramps	72 ramps	706 ramps	50 ramps	37 ramps
4. Substrate removal ^d	1,430 m ²	7007 m ²	4415 m ²	50,194 m ²	1699 m ²	-112 m ²
5. Obstructions to migration	variable setbacks located outside natural stream mouth meander	200 foot setback from steam mouths	variable setbacks located outside natural stream mouth meander	no setbacks from stream mouths	200 foot setback from stream mouths	variable setbacks located outside natural stream mouth meander
6. Native riparian vegetation removal ^e	not quantified ^h	1.84 acres	1.54 acres	8.25 acres	0.22 acres	not quantified ^h
7. Introduction and spread of invasive aquatic weeds ^f	70,796 launches/year 296,813 boat trips/year	99,493 launches/year 322,080 boat trips/year	81,752 launches/year 358,501 boat trips/year	193,316 launches/year 549,099 boat trips/year	86,833 launches/year 317,390 boat trips/year	54,809 launches/year 227,718 boat trips/year
8. Disruption to Littoral Drift Process ^g	decreased level of risk compared to the current level	current level of risk continued	decreased level of risk compared to the current level	current level of risk continued	current level of risk continued	decreased level of risk compared to the current level

^a Only structures built in prime fish habitat (spawning, feed, and cover) were analyzed. Piers assumed to have 20 pilings each and that each piling displaced 0.07m² (or 1.4m²/pier) of lakebed substrate. Buoy and platform anchors were assumed to interface with 0.37m² lakebed substrate and that all buoys and platforms occur in the Shorezone. Ramps were assumed to displace 69.7 m² (10 feet wide by 75 feet long) of lakebed substrate.

^b Assumes that the total boat trips / year and construction of piers and ramps correlate with the amount of spawning disturbance.

^c Assumes that the total number of ramps correlate with the increased risk of substrate siltation.

^d Assumes all structures built in the Shorezone are in fish habitat. Piers were assumed to have 20 pilings each and that each piling displaced 0.07m² (or 1.4m²/pier) of lakebed substrate. Buoy and platform anchors were assumed to interface with 0.37m² lakebed substrate and that all buoys and platforms occur in the Shorezone. Ramps were assumed to displace 69.7 m² (10 feet wide by 75 feet long) of lakebed substrate.

^e Assumes that native riparian vegetation is removed, trampled, or converted to non-native plants to allow shoreline access for each new pier and boat ramp. Area of riparian habitat disturbance was calculated for each tolerance district with the assumption that trail width would be 4 feet wide for pier access and 10 feet wide for boat ramp access. Riparian vegetation width was defined as the SEZ width for each tolerance district. The assumed SEZ width for each tolerance district (TD) are as follows: TD1 = 133', TD2 = 5.1', TD3 = 1.5', TD4 = 21.2', TD5 = 2.6', TD6 = 15.1', TD7 = 48.9', and TD8 = 3.9'.

^f Assumes that a specific relationship exists between the number of boat launches and the probability that exotic species are introduced into regional lakes (top value). Also assumes that a specific relationship exists between the number of boat trips / year and the probability of spreading aquatic weeds (bottom value)(refer to Section 5 for numbers).

^g The number of existing and proposed static shoreline revetment structures are not known, so the amount of impacts for each alternative cannot be quantified. However, under Alternatives 1, 3, and 4, the existing code allows for static revetment structures, which continues the current risk of disruption of littoral drift processes. Alternatives 2 and 5 differ from the other alternatives as they limit the use of static revetment structures by requiring more stringent findings.

^h The loss of native riparian vegetation and loss of prime fish habitat under Alternatives 5 and 6 cannot be spatially analyzed, because pier reduction locations cannot be predicted.

- 4) Prohibition on construction in spawning habitat from May 1 to October 1
- 5) Restriction on boat beaching in spawning habitat from May 1 to October 1
- 6) Prohibition on expansion of existing boat ramps in spawning habitat
- 7) Coordination of property owners with TRPA and Lahontan Regional Water Quality Control Board (LRWQCB) staff regarding dredging and water quality requirements, including substrate analysis before dredging, approval of dredging methods and equipment, and design/construction of turbidity barriers
- 8) Prohibition on construction of floating piers that float along their full length (i.e., connecting the backshore and lakeward)
- 9) Preference for dynamic over static shoreline protection methods
- 10) Exotic weed management plan for boat launching facilities and marinas

Direct and Indirect Impacts

Alternative 6 is not expected to result in direct or indirect, significant adverse impacts on fisheries resources because fisheries resource-protective requirements have been built into the facility review and approval process. A maximum of 230 new piers (220 private and 10 public), 1,862 new buoys, 6 new ramps, 2 new public floating docks, and 235 new slips could be constructed over the life of the PATHWAY 2007 Regional Plan update (by 2027) for this alternative. Because development is related to permanent loss of habitat, reduced habitat quality, and increased probability of human use disturbing aquatic life, at the end of the Regional Plan update period, Alternative 6 could have potentially adverse impacts on fisheries (Table 4-2). However, this alternative includes gradual annual allowances, monitoring, and adaptive refinement of density criteria and design standards that are intended to ensure significant effects do not occur. Additionally, this alternative also includes fisheries resources protection measures, as noted above and described in more detail below, that would assist in additional reduction of potential impacts. Implementation of the gradual/adaptive approach along with protection measures would reduce all potentially significant or significant impacts to less-than-significant levels.

Loss of Prime Fish Habitat

Impact 4.6.1: Prior to approval of projects in areas identified as prime fish habitat, development of proven restoration BMPs and identification of areas that could be successfully reclaimed as spawning habitat at a 1.5:1 ratio would be required, thereby avoiding significant adverse impacts to fisheries resources.

To avoid reliance on unproven habitat restoration techniques, projects that require offsetting restoration would not be permitted until BMPs for these techniques are developed. Development of habitat restoration BMPs could occur as a series of test projects as part of the allocation system, accompanied by monitoring and assessment. The limited annual allowances combined with monitoring would allow for evaluation of currently unproven habitat restoration techniques. In no case would a project be approved without the necessary fisheries and limnological technical reports that provide information on site and restoration potential and identify appropriate restoration projects for the specific site. Furthermore, this alternative would allow for adaptive refinement of density and design criteria to ensure that significant effects do not occur and to assist in making certain that thresholds are met.

This alternative would allow new projects and repairs and modifications to existing structures, provided they would rely only on proven habitat restoration techniques to meet the non-degradation standard for approval.

No mitigation measures would be required for Impact 4.6.1.

Disturbance during Spawning

Impact 4.6.2: Because code amendments and other regulations would establish construction prohibitions and other restrictions, disturbance during spawning would be reduced. This would result in less-than-significant effects to fisheries resources.

The removal or covering of fish habitat, or otherwise making fish habitat unavailable, due to the construction of new structures and the modification/expansion or relocation of a pier, buoy, ramp, or floating dock would be in direct conflict with the fishery threshold non-degradation standard and would not be allowed under this alternative without restoration. With the increase of Shorezone structures, recreational pressures associated with those structures (boating) would increase the amount of boats beaching in prime fish habitat. Beached boats can physically destroy eggs. The existing evidence indicates this is a concern in areas of extremely high beach use, such as at public facilities. This would also be in direct conflict with the fishery threshold non-degradation standard and would not be allowed.

The construction of new structures and modification/expansion of existing structures would have construction prohibitions and restrictions indicated in new Code amendments and other regulations (as described above). To avoid adversely affecting incubating eggs, the Code shall be amended to prohibit Shorezone construction in spawning habitat during May 1 through October 15 annually. Boat beaching in spawning habitat would also be restricted during this period.

To avoid habitat degradation and to ensure threshold attainment, all pier, buoy, and floating dock repair/modification projects that would displace fish habitat would be required to restore habitat loss at a 1.5:1 ratio with proven BMP techniques under this alternative. The restoration must be of in-kind habitat. Additionally, the expansion of existing boat ramps in spawning habitat would be prohibited.

No mitigation measures would be required for Impact 4.6.2.

Substrate Siltation

Impact 4.6.3: Alternative 6 relies on current requirements that would require planning, analysis, and approval conditions before construction of ramps and associated dredging; therefore, significant adverse impacts to fisheries resources would be avoided.

Under this alternative, before submitting the dredging application, the project proponent would be required to complete a substrate analysis based on criteria established by TRPA and LRWQCB, and to coordinate with these agencies regarding appropriate spoils dewatering and disposal requirements. Dewatering would not be allowed to occur on low capability land unless turbidity barriers are installed down gradient and, if feasible, water affected by dredging shall be pumped to the sanitary sewer or be required to meet discharge standards prior to discharge.

Additionally, this alternative would require LRWQCB and/or TRPA to approve the type of dredging equipment used and how it may be modified to address specific site conditions and project proposals. Project applicants would also be required to demonstrate that equipment operators are knowledgeable in dredging techniques needed to protect water quality. Turbidity barrier design and construction would be required to represent the best available technology.

Dredging operations would be required to be suspended at the onset of severe weather and would also be encouraged to take place outside of summer months when afternoon winds are unpredictable, to avoid the type of conditions which can lead to turbidity barrier failure. Flocculants would only be allowed to be used to settle particulates within settling basins located outside of the Shorezone; none would be allowed to be used in the lakes of the Region. During dredging activity, a full-time, on-site monitor chosen by the permitting regulator would be required. Monitoring results could dictate mitigation measures. All new dredging would continue to meet existing findings requirements to avoid water quality impacts.

No mitigation measures would be required for Impact 4.6.3.

Substrate Removal

Impact 4.6.4: Because code amendments would establish fisheries BMPs on all Shorezone parcels and a mitigation fee program specific to Shorezone development would provide a funding source for fisheries improvement projects, construction of structures and creating sandy beaches in the Shorezone would result in less-than-significant effects to fisheries resources.

Substrate removal occurs as a result of increased construction of Shorezone structures and through human manipulations such as removing substrate to create a flat sandy beach during low water periods. Removal of spawning gravels, in particular, reduces the area available for reproduction and directly limits fish populations. Under Alternative 6, implementation of fisheries BMPs would be required on all Shorezone parcels as part of any Shorezone project. Fisheries BMPs would include, but are not limited to, the restoration of appropriate habitat/substrate within the project area boundaries. Additionally, under this alternative, TRPA would draft and implement a mitigation fee program specific to Shorezone development. The mitigation fee program would offset Regional impacts on fisheries resources attributable to additional Shorezone development and would help ensure attainment of fisheries thresholds in the Region. This mitigation fund would be used to implement EIP fisheries improvement projects with a Shorezone and/or lakezone emphasis. The current total estimated EIP project cost for all fisheries improvement projects with a Shorezone and/or lakezone emphasis is \$10,362,200 for 13 projects. The private portion (1/3) of this cost is approximately \$3,473,523. The mitigation fee program would apply to Shorezone permits and be structured to provide all or a portion of the private responsibility.

No mitigation measures would be required for Impact 4.6.4.

Disruption to Littoral Drift Process

Impact 4.6.5: Because code amendments would establish prohibitions on floating piers and require utilization of dynamic shoreline protection methods over static methods, existing and new construction impacts associated with floating piers and backshore revetments would be less than significant.

Existing and new structures such as floating piers and static backshore revetments have potential to affect the littoral drift processes in the Shorezone. Under this alternative, the Code would be amended to prohibit floating piers that float along their full length (i.e., connecting the backshore and lakeward). Floating piers that extend from a static open pile section that connects to the backshore would be considered based on a site-by-site evaluation if there would be no disturbance to littoral transport. Additionally, the *Code of Ordinances* would reflect the requirement of utilizing dynamic shoreline protection methods over static methods except in very select case-by-case situations. This would include the preference for beach nourishment and by-pass dredging.

No mitigation measures would be required for Impact 4.6.5.

Other Non-Significant Fisheries Impacts

Obstructions to Migration

Alternative 6 would not result in obstructions to fish migration. Under this alternative, stream mouth setbacks for new Shorezone structures would be individually determined based on historic/natural meander patterns, therefore avoiding any significant impacts to fish migration.

Native Riparian Vegetation Removal

Alternative 6 would not result in increased potential for native riparian vegetation removal. Under this alternative, an unknown area of Shorezone riparian habitat may be removed for the construction of Shorezone structures. However, the proposed Ordinance amendments would ensure that in-kind restoration takes place in the Shorezone at a restoration-to-disturbance ratio of 1.5:1 and thus results in less-than-significant impacts. To aid in proper restoration, the proposed Ordinance amendments would identify eligible Shorezone riparian plant species for disturbed areas.

Introduction of Invasive Aquatic Weeds

Alternative 6 would not result in the introduction of non-native aquatic weeds. The introduction of aquatic weeds under this alternative would be less than significant because Code amendments would require boat launching facilities and marinas to prepare an exotic weed management plan. Management plans shall be designed to prohibit the launching of unwashed boats and trailers and, in marinas that currently harbor weeds, to reduce the potential spread of aquatic weed through regular implementation of proven, TRPA-approved weed removal techniques.

Beneficial Fisheries Impacts

There would be no beneficial fisheries impacts with Alternative 6.