TAHOE REGIONAL PLANNING AGENCY

TRPA
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STAFF REPORT

Date: January 19, 2026

To: Threshold Update Initiative Stakeholders Working Group

From: TRPA Staff

Subject: Vegetation Preservation Environmental Threshold Carrying Capacities for Forest Health

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Summary and Staff Recommendation:
On November 10, 2025, the Threshold Update Initiative Stakeholders Working Group requested that staff review protections for subalpine forest and aspen. Based on that review, staff recommend that an additional standard for the protection of subalpine conifer species be considered.

Required Motions:
To recommend the proposal to the Governing Board, the Threshold Update Initiative Stakeholders Working Group must make the following motion based on the staff report:

1) A motion to recommend adoption of the vegetation preservation environmental threshold carrying capacities as presented in Attachment A.

For the motion to pass, an affirmative vote of a majority of the quorum is required.

Background:
At the November 10 meeting of the Threshold Update Initiative Stakeholder Working Group, the group requested additional information on existing or potential protections for deciduous hardwood tree species, specifically quaking aspen (*Populus tremuloides*), and subalpine conifer communities, specifically whitebark pine (*Pinus albicaulis).*

Staff reviewed the current environmental threshold carrying capacities (threshold standards) in the Vegetation Preservation and Soil Conservation categories (Attachment B). Staff identified standards that protect quaking aspen and recommend no modification to the existing threshold standards. Protection was found to be more limited for subalpine conifer species, and an additional standard for their protection is proposed for consideration.

Contact Information:
For questions regarding this agenda item, please contact Mason Bindl, Data Analyst, at mbindl@trpa.gov, (775) 589-5209.

To submit a written public comment, email publiccomment@trpa.gov with the appropriate agenda item in the subject line. Written comments received by 4 p.m. the day before a scheduled public meeting will be distributed and posted to the TRPA website before the meeting begins. TRPA does not guarantee written comments received after 4 p.m. the day before a meeting will be distributed and posted in time for the meeting.

Attachments:

A. Proposed edits to the vegetation preservation environmental threshold carrying capacities (Redline)
B. Review of Environmental Threshold Carrying Capacities related to Deciduous Hardwood and Subalpine Conifer

THRESHOLD STANDARDS

Threshold standards establish the Environmental Improvement Program partners' shared goals for restoration and maintenance of the qualities of the Tahoe Region.

The adopted current threshold standards are stated below. The agency will maintain and update online inventories of the administrative status and disposition of each threshold standard.

VEGETATION PRESERVATION

COMMON VEGETATION

MANAGEMENT STANDARDS

VP1) A non-degradation standard shall apply to native deciduous trees, wetlands, and meadows to preserve plant communities and significant wildlife habitat, while providing for opportunities to increase the acreage of such riparian associations to be consistent with the SEZ threshold.

VP2) Increase plant and structural diversity of forest communities through appropriate management practices as measured by diversity indices of species richness, relative abundance, and pattern.

VP3) Maintain the existing species richness of the Basin by providing for the perpetuation of the following plant associations:
Yellow Pine Forest: Jeffrey pine, White fir, Incense cedar, Sugar pine.
Red Fir Forest: Red fir, Jeffrey pine, Lodgepole pine, Western white pine, Mountain hemlock, Western juniper.
Subalpine Forest: Whitebark pine, Mountain hemlock, Mountain mahogany.
Shrub Association: Greenleaf and Pinemat manzanita, Tobacco brush, Sierra chinquapin, Huckleberry oak, Mountain whitethorn.
Sagebrush Scrub Vegetation: Basin sagebrush, Bitterbrush, Douglas chaenactis.
Deciduous Riparian: Quaking aspen, Mountain alder, Black cotton-wood, Willow.
Meadow Associations (Wet and Dry Meadow): Mountain squirrel tail, Alpine gentian, Whorled penstemon, Asters, Fescues, Mountain brome, Corn lilies, Mountain bentgrass, Hairgrass, Marsh marigold, Elephant heads, Tinker's penney, Mountain Timothy, Sedges, Rushes, Buttercups.
Wetland Associations (Marsh Vegetation): Pond lilies, Buckbean, Mare's tail, Pondweed, Common bladderwort, Bottle sedge, Common spikerush.
Cushion Plant Association (Alpine Scrub): Alpine phlox, Dwarf ragwort, Draba.

VP4) Relative Abundance - Of the total amount of undisturbed vegetation in the Tahoe Basin: Maintain at least four percent meadow and wetland vegetation.

VP5) Relative Abundance - Of the total amount of undisturbed vegetation in the Tahoe Basin: Maintain at least four percent deciduous riparian vegetation.

~~VP6) Relative Abundance - Of the total amount of undisturbed vegetation in the Tahoe Basin: Maintain no more than 25 percent dominant shrub association vegetation.~~

~~VP7) Relative Abundance - Of the total amount of undisturbed vegetation in the Tahoe Basin: Maintain 15-25 percent of the Yellow Pine Forest in seral stages other than mature.~~

~~VP8) Relative Abundance - Of the total amount of undisturbed vegetation in the Tahoe Basin: Maintain 15-25 percent of the Red Fir Forest in seral stages other than mature.~~

VP~~9~~6) Pattern - Provide for the proper juxtaposition of vegetation communities and age classes by;
1. Limiting acreage size of new forest openings to no more than eight acres

~~VP10) Pattern – Provide for the proper juxtaposition of vegetation communities and age classes by;~~
~~2. Adjacent openings shall not be of the same relative age class or successional stage to avoid uniformity in stand composition and age.~~

VP~~11~~7) Native vegetation shall be maintained at a maximum level to be consistent with the limits defined in the Land-Capability Classification of the Lake Tahoe Basin, California-Nevada, A Guide For Planning, Bailey, 1974[1], for allowable impervious cover and permanent site disturbance.

VP8) Subalpine conifer communities shall be protected from degradation to maintain their ecological integrity, species composition, natural forest structure, and long-term resilience. Projects and activities within these communities may include restoration or management practices that support the continued health and persistence of these communities.

FOREST STRUCTURE

VP9) At least 75% of the forested area in the Basin will fall within the ranges for dominant seral stage and canopy cover (open vs closed) described in the table below:

Forest Type	Seral Stage	Canopy Cover	Desired Range
Jeffrey pine	early	N/A	5 – 15%
Jeffrey pine	mid	Open	25 – 30%
Jeffrey pine	mid	Closed	5 – 10%
Jeffrey pine	late	Open	40 – 50%
Jeffrey pine	late	Closed	5 – 10%
Sierra mixed conifer	early	N/A	10–20%
Sierra mixed conifer	mid	open	15–20%
Sierra mixed conifer	mid	closed	5–15%
Sierra mixed conifer	late	open	25–35%
Sierra mixed conifer	late	closed	15–25%
Red fir	early	N/A	10–20%
Red fir	mid	open	15–25%
Red fir	mid	closed	15–25%
Red fir	late	open	30–40%
Red fir	late	closed	20–30%

VP10) A minimum of fifty percent of the forested area in the Basin falls within the ranges described in the table below:

Forest Type	Early Seral Trees Per	Early Seral Basal Area	Mid Seral Trees Per Acre	Mid Seral Basal Area (sqft/acre)	Late Seral Trees Per Acre	Late Seral Basal Area (sqft/acre)
Jeffrey Pine	200	30	70	80	55	100
Sierra mixed conifer	300	40	90	130	75	180
Red fir	300	50	100	175	80	250

FIRE DYNAMICS

VP11) Surface fire is the predicted fire behavior in a minimum of 90% of the wildland-urban interface defense zone. [2]

VP12) Limit the area of modeled high-severity fire patches of 200 acres or greater to less than 5 percent of the forested landscape, under 90th percentile fire weather conditions.

~~LATE SERAL AND OLD GROWTH FOREST ECOSYSTEMS[3]~~

~~NUMERICAL STANDARDS~~

~~VP12) Attain and maintain a minimum percentage of 55 percent by area of forested lands within the Tahoe Region in a late seral or old growth condition, and distributed across elevation zones. Standards VP 13, VP14, and VP15 must be attained to achieve this threshold.~~

~~VP13) 61 percent of the Subalpine zone (greater than 8,500 feet elevation) must be in a late seral or old growth condition. The Subalpine zone will contribute 5 percent (7,600 acres) of forested lands towards VP13.~~

~~VP14) 60 percent of the Upper Montane zone (between 7,000 and 8,500 feet elevation) must be in a late seral or old growth condition. The Upper Montane zone will contribute 30 percent (45,900 acres) of forested lands towards VP13.~~

~~VP15) 48 percent of the Montane zone (lower than 7,000 feet elevation) must be in a late seral or old growth condition; the Montane zone will contribute 20 percent (30,600 acres) of forested lands towards VP13.~~

[1] Consistent with the Multi-Jurisdictional Fuels Strategy , fire behavior is modeled under 90th percentile fire weather conditions, and surface fire is defined as predicted flame lengths of 4ft or less.

~~[3] For standards VP13 – VP16: Forested lands within TRPA designated urban areas are excluded in the calculation for threshold attainment. Areas of the montane zone within 1,250 feet of urban areas may be included in the calculation for threshold attainment if the area is actively being managed for late seral and old growth conditions and has been mapped by TRPA. A maximum value of 40 percent of the lands within 1,250 feet of urban areas may be included in the calculation.~~

UNCOMMON PLANT COMMUNITIES

NUMERICAL STANDARDS

VP13~~6~~-VP14~~7~~) 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. This threshold shall apply but not be limited to:

VP13~~6~~) The deep-water plants of Lake Tahoe.

VP14~~7~~) The Freel Peak Cushion Plant community.

SENSITIVE PLANTS

NUMERICAL STANDARDS

Maintain a minimum number of population sites for each of five sensitive plant species.

VP15~~8~~) Maintain a minimum of 2 Lewisia pygmaea longipetala population sites.

VP16~~9~~) Maintain a minimum of 2 Draba asterophora v. macrocarpa population sites.

VP17~~20~~) Maintain a minimum of 5 Draba asterophora v. asterophora macrocarpa population sites.

VP18~~21~~) Maintain a minimum of 26 Rorippa subumbellata population sites.

VP19~~22~~) Maintain a minimum of 7 Arabis rigidissima v. demote population sites.

Review of Environmental Threshold Carrying Capacities related to Deciduous Hardwood and Subalpine Conifer

Date: January 18, 2026

Purpose

At the November 10 meeting of the Threshold Update Initiative Stakeholder Working Group, the group requested additional information on existing or potential protections for deciduous hardwood tree species, specifically Quaking aspen (*Populus tremuloides*), and subalpine conifer communities, specifically Whitebark pine (*Pinus albicaulis*). This memo provides a review of existing protections for each and a recommended path forward. The current standards in the Vegetation Preservation and Soil Conservation threshold categories provide protection for Quaking aspen, and no additional standards are recommended. Protection is more limited for subalpine conifer species, and an additional standard should be considered for the protection of subalpine conifer species.

Deciduous Riparian Hardwood

Current Threshold Coverage of Aspen (Deciduous Hardwoods)

Quaking aspen (*Populus tremuloides*) stands are currently protected through a combination of Soil Conservation and Vegetation Preservation standards. Five standards relate directly to Aspen protection:

> ***SC10*** *Preserve existing naturally functioning SEZ lands in their natural hydrologic condition.*
>
> ***SC11*** *Enhance the quality and function of meadows and wetlands from 79% to a minimum of 88% of the regional possible SEZ condition index score.*
>
> ***VP1*** *A non-degradation standard shall apply to native deciduous trees, wetlands, and meadows to preserve plant communities and significant wildlife habitat while providing for opportunities to increase the acreage of such riparian associations to be consistent with the SEZ threshold.*
>
> ***VP3*** *Maintain the existing species richness of the Basin by providing for the perpetuation of plant associations. Deciduous Riparian vegetation includes Quaking aspen, Mountain alder, Black cottonwood, and Willow.*

VP4 *Relative Abundance. Maintain at least four percent meadow and wetland vegetation of the total amount of undisturbed vegetation in the Tahoe Basin.*

VP5 *Relative Abundance. Maintain at least four percent deciduous riparian vegetation of the total amount of undisturbed vegetation in the Tahoe Basin.*

The primary protection for Quaking aspen is conferred through VP1. Quaking aspen is a native deciduous tree, and threshold standard VP1 provides non-degradation protection for "native deciduous trees." Thus, VP1 applies directly to Aspen stands within the Region.

Additional protection is provided through SEZ-related standards. TRPA defines Stream Environment Zone (SEZ) within the Code of Ordinances as "Generally, an area that owes its biological and physical characteristics to the presence of surface or ground water. The criteria for identifying an SEZ is set forth in Section 53.9." SC10 and SC11 work together to protect Aspen by preserving and improving the ecological function of Stream Environment Zones, meadows, and wetlands where many Aspen stands occur. SC10 maintains natural hydrologic conditions that support Aspen regeneration by safeguarding soil moisture, groundwater, and floodplain processes. SC11 strengthens this protection by enhancing SEZ condition and meadow hydrology, which helps reduce conifer encroachment and sustain the ecological processes essential for healthy Aspen communities.

VP3 protects Aspen by maintaining species richness within the Deciduous Riparian plant association. Because Quaking Aspen is explicitly included within this association, VP3 supports the perpetuation of Aspen as a key component of riparian vegetation and ensures that its presence is maintained across the Basin.

VP4 and VP5 provide complementary protections for Aspen by maintaining minimum relative abundances of key vegetation types that support Aspen ecology. VP4 ensures that meadow and wetland vegetation remain at or above four percent of undisturbed vegetation, preserving the hydrologic settings that often overlap with Aspen stands. VP5 reinforces this protection by requiring that deciduous riparian vegetation, including Aspen, also remain at or above four percent, helping maintain Basin wide Aspen distribution and preventing long term declines in riparian hardwood extent.

Together, these standards provide comprehensive protection for Aspen by preserving the hydrologic conditions that support Aspen stands, preventing degradation of deciduous hardwood communities, maintaining plant community diversity, and ensuring that the relative abundance of deciduous riparian vegetation remains stable across the Basin. This combination of non-degradation requirements, species perpetuation goals, and SEZ protection creates a broad, multi-layered framework that safeguards Aspen extent, ecological function, and long-term resilience within the Tahoe Basin.

Subalpine Conifer Communities

Current Threshold Coverage of Subalpine Conifer Communities

Subalpine conifer communities are currently protected under the following standards:

> ***VP3*** *Maintain the existing species richness of the Basin by providing for the perpetuation of plant associations. Subalpine forest species: Whitebark pine (Pinus albicaulis), Mountain hemlock (Tsuga mertensiana), Mountain mahogany (Cercocarpus ledifolius)*
>
> ***VP13*** *61 percent of the Subalpine zone (greater than 8,500 feet elevation) must be in a late seral or old growth condition. The Subalpine zone will contribute 5 percent (7,600 acres) of forested lands towards VP13.*

Threshold standards VP12 through VP15 relate to the protection of late seral and old growth forests. The standards establish goals for the proportion of the landscape to be covered by late seral forest within defined elevation zones. Standard VP13 established a target for old growth within the subalpine zone. All four standards are proposed for removal because the targets they establish will be superseded by the proposed Seral Stage & Canopy Cover standard. The one exception is the subalpine zone, where little to no management activity occurs, and there is not enough information to develop numeric forest structure targets.

There is a potential gap in protection for subalpine conifer communities created by removing VP13. Although subalpine species appear within VP3, there is currently no threshold that protects the overall integrity of the subalpine zone vegetation or prevents incremental loss or degradation of these sensitive forests.

The subalpine zone is limited in extent, slow to regenerate, and critical for biodiversity, soil conservation, and habitat connectivity at higher elevations. It supports species such as Whitebark pine that now face elevated conservation concern. These forests are also among the most climate sensitive in the Basin and are increasingly affected by warming temperatures, drought stress, white pine blister rust, shifting fire behavior, and encroachment by lower elevation conifers. Without a non-degradation standard, small but cumulative impacts to these communities could go unrecognized and unmanaged within the threshold system. Establishing a non-degradation standard creates a necessary backstop that maintains the stability and ecological function of subalpine conifers while better monitoring and science continue to develop.

Proposed Standard for Subalpine Conifer Communities

> ***VP X*** *Subalpine conifer communities shall be protected from degradation to maintain their ecological integrity, species composition, natural forest structure, and long-term resilience. Projects and activities within these communities may include restoration or management practices that support the continued health and persistence of these communities.*

How the Endangered Species Act Protection for Whitebark Pine Supports TRPA Threshold Goals

Whitebark pine (*Pinus albicaulis*) is now listed as Threatened under the Endangered Species Act (ESA). The ESA listing acknowledges that Whitebark pine faces serious threats across its range, including white pine blister rust, mountain pine beetles, climate-related stressors, and shifts in fire patterns. The ESA listing provides an additional regulatory framework that aligns with and supports TRPA's conservation objectives.

For TRPA, ESA protection strengthens basin-wide conservation in several ways:

- ESA prohibitions on federal lands help prevent removal, damage, or commercial use of Whitebark pine across its range.
- ESA consultation requirements ensure that federal actions in the Tahoe Basin evaluate potential effects on Whitebark pine and include measures that support its long-term persistence.
- The ESA 4(d) rule allows activities on federal lands that contribute to conservation of a threatened species, including restoration work, research, and the collection of seeds for Tribal cultural and ceremonial uses.
- Because Whitebark pine contributes to snow retention, hydrologic stability, and wildlife habitat, ESA protection supports several TRPA threshold focus areas including Vegetation Preservation, Wildlife, and Soil Conservation.

By recognizing Whitebark pine's protected status and adopting a threshold standard for non-degradation of subalpine conifer communities, TRPA can integrate ESA requirements into project review and threshold evaluation. This helps ensure that management actions in the Tahoe Basin continue to conserve important high-elevation species.

References

United States Department of Agriculture, Forest Service. *Land Management Plan – Forest Plan: Lake Tahoe Basin Management Unit*. USDA Forest Service, Pacific Southwest Region, July 2016, https://www.fs.usda.gov/sites/nfs/files/legacy-media/laketahoebasin/Final%20LMP%20-%20July%202016.pdf.

U.S. Fish & Wildlife Service. "Whitebark Pine Receives ESA Protection as a Threatened Species." *U.S. Fish & Wildlife Service*, 14 Dec. 2022, www.fws.gov/press-release/2022-12/whitebark-pine-receives-esa-protection-threatened-species.

Stewart, Joseph A. E., and Jonathan W. Long. *Distribution and Apparent Decline of Aspen (Populus tremuloides) in the Broader Lake Tahoe Area: A Four-Decade Assessment*. Department of Plant Sciences, UC Davis, and Pacific Southwest Region, US Forest Service.

Tahoe Regional Planning Agency. *Threshold Dashboard*. Tahoe Regional Planning Agency / Lake Tahoe Info, 2025, https://thresholds.laketahoeinfo.org/.

Appendix I – Relevant Threshold Standards

THRESHOLD STANDARDS

Threshold standards establish the Environmental Improvement Program partners' shared goals for restoration and maintenance of the qualities of the Tahoe Region. The adopted current threshold standards are stated below. The agency will maintain and update online inventories of the administrative status and disposition of each threshold standard.

VEGETATION PRESERVATION

COMMON VEGETATION MANAGEMENT STANDARDS

VP1) A non-degradation standard shall apply to native deciduous trees, wetlands, and meadows to preserve plant communities and significant wildlife habitat, while providing for opportunities to increase the acreage of such riparian associations to be consistent with the SEZ threshold.

VP2) Increase plant and structural diversity of forest communities through appropriate management practices as measured by diversity indices of species richness, relative abundance, and pattern.

VP3) Maintain the existing species richness of the Basin by providing for the perpetuation of the following plant associations: Yellow Pine Forest: Jeffrey pine, White fir, Incense cedar, Sugar pine. Red Fir Forest: Red fir, Jeffrey pine, Lodgepole pine, Western white pine, Mountain hemlock, Western juniper. Subalpine Forest: Whitebark pine, Mountain hemlock, Mountain mahogany. Shrub Association: Greenleaf and Pinemat manzanita, Tobacco brush, Sierra chinquapin, Huckleberry oak, Mountain whitethorn. Sagebrush Scrub Vegetation: Basin sagebrush, Bitterbrush, Douglas chaenactis. Deciduous Riparian: Quaking aspen, Mountain alder, Black cotton-wood, Willow. Meadow Associations (Wet and Dry Meadow): Mountain squirrel tail, Alpine gentian, Whorled penstemon, Asters, Fescues, Mountain brome, Corn lilies, Mountain bentgrass, Hairgrass, Marsh marigold, Elephant heads, Tinker's penney, Mountain Timothy, Sedges, Rushes, Buttercups. Wetland Associations (Marsh Vegetation): Pond lilies, Buckbean, Mare's tail, Pondweed, Common bladderwort, Bottle sedge, Common spikerush. Cushion Plant Association (Alpine Scrub): Alpine phlox, Dwarf ragwort, Draba.

VP4) Relative Abundance - Of the total amount of undisturbed vegetation in the Tahoe Basin: Maintain at least four percent meadow and wetland vegetation.

VP5) Relative Abundance - Of the total amount of undisturbed vegetation in the Tahoe Basin: Maintain at least four percent deciduous riparian vegetation.

VP11) Native vegetation shall be maintained at a maximum level to be consistent with the limits defined in the Land-Capability Classification of the Lake Tahoe Basin, California-Nevada, A Guide For Planning, Bailey, for allowable impervious cover and permanent site disturbance.

SOIL CONSERVATION

SC10) Preserve existing naturally functioning SEZ lands in their natural hydrologic condition.

SC11) Enhance the quality and function of meadows and wetlands from 79% to a minimum of 88% of the regional possible SEZ condition index score.