

SUMMARY

JOINT STAKEHOLDER SCIENCE COMMITTEE AND STAKEHOLDER COMMUNITY COMMITTEE MEETING

LAKE TAHOE WEST RESTORATION PARTNERSHIP

Tuesday, April 2, 9:00 am to 3:00 pm

Lake Tahoe Basin Management Unit, 35 College Drive, South Lake Tahoe, CA 96150

All meeting materials are publicly available on the Lake Tahoe West website <http://nationalforests.org/laketahoewest>. For questions please contact the program manager/facilitator Sarah Di Vittorio at sdvittorio@nationalforests.org or (530) 902-8281.

Meeting Synopsis

The Lake Tahoe West Restoration Partnership (LTW) Stakeholder Science Committee (SSC) and Stakeholder Community Committee (SCC) met jointly on April 2, 2017, from 9am to 3pm at the Lake Tahoe Basin Management Unit in South Lake Tahoe. Stakeholders provided feedback on a draft outline for the Landscape Restoration Strategy, including that the strategy should focus on actions and should identify which components are transferable beyond the Lake Tahoe basin. Stakeholders suggested wording changes to Intended Landscape Outcomes and suggested the inclusion of a column of strategies. Members of the Interagency Design Team provided an update on the modeling effort and fielded questions about model scenarios and assumptions. The Stakeholder Science Committee will meet next on May 1, location TBD.

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Welcome, Agenda Review, and Introductions

Teresa McClung, Deputy Forest Supervisor for the Lake Tahoe Basin Management Unit, welcomed the group and provided opening comments. Ms. McClung remarked on the significant parallels between the Forest Service’s priorities and the Lake Tahoe West Restoration Partnership (LTW) project, highlighting the potential for the LTW Project to serve as a model that may be replicated across other National Forests.

Sarah Di Vittorio provided time for introductions, reviewed the agenda, and presented meeting objectives.

A new member of the LTW Project, Christina Restaino, introduced herself to the Stakeholder Science Committee (SSC) and Stakeholder Community Committee (SCC). Ms. Restaino serves on the Core Team and Design Teams and is the Forest Ecosystem Health Program Manager for the Tahoe Regional Planning Agency (TRPA).

There were no interested party comments.

1. Landscape Restoration Strategy: Purpose, Approach, and Outline

Ms. Di Vittorio overviewed the general timeline and process of the LTW project to provide context for the role of the Landscape Restoration Strategy (LRS). The LRS will be a high-level document that provides an overall vision and approach for restoration of the west shore and that lays a scientific foundation for project planning in Phase 3. The LRS will be informed by stakeholder input and a suite of models and tools.

Ms. Di Vittorio requested feedback on the draft LRS outline, including how it may support Phase 3 and planning efforts. Discussion followed:

General comments, suggestions and questions:

- Q: What is an example of a sub-strategy, or strategy element (section 1e of LRS outline)? Will these be actions?
 - Yes, the LRS will identify general actions/approaches, but not specific projects.
- Suggestion: Define and agree to specific terminology that clarifies that the strategies are actions.
- Suggestion: A proposed strategy should find harmony and optimize multiple objectives; sub-strategies/elements should not conflict with one another.
- Modeling may develop more robust conclusions at a macro level than a micro level.
- Suggestion: The LRS should track to the State's priorities.
- Suggestion: Consider transferability and how this approach may be adapted to other forests/regions that may not have the time or resources available to LTW. It may be more transferable/generalizable at the macro level than micro.
 - What general rules/results can serve as transferable lessons?
 - Ex. Where are economic efficiencies in treatment? What areas respond most to treatment?
- Suggestion: The LRS should reflect realistic approaches to treatment.
- Suggestion: Be mindful of potential biases when writing the LRS.
- Suggestion: Consider how operations are being developed for efficiencies – how are we reducing the existence of constraints?
 - Ex. Improving public acceptance of prescribed fire, shared burn crews, etc.
- Suggestion: The LRS should select from a broad array of options, but narrow the scope - think of a strategy as a roadmap.
- Q: Are Section 2 bullets in the order they would be written?
 - No, the LRS Outline does not list bullets in a particular order.

- **ACTION ITEM:** Sue Britting will send Sarah suggestions on ordering of the LRS Outline.
- Q: At what point will roads/access be analyzed?
 - The current focus of the Design Team and Science Team has been to parameterize the LANDIS model.
 - Preliminary analysis of accessibility has demonstrated that no new roads are needed for modeling Scenarios 1-4. Additional roads may be added to Scenarios 5 and 6.
 - Barriers related to slope were more of a restriction to access than roads.
 - Ghost roads are being analyzed as part of Water Quality modeling.
 - Analyses will answer questions about accessibility on a coarse scale (% of additional biomass available, % of additional landscape accessible, etc.), but other questions will be answered on a project-by-project basis.
 - Suggestion: The LRS should address the tradeoffs of roads (costs vs. benefits).

With respect to Phase 3 and planning efforts:

- Suggestion: Include a history of treatments and past approaches on the landscape.
- Q: What is the planning approach? Will there be one Environmental Impact Statement (EIS) for the entire area?
 - The planning approach is to be determined. We are currently discussing this among the agencies. The California Tahoe Conservancy hired Ascent Environmental to develop a report with different option and a recommendation for the approach.
 - Suggestion: The planning approach should somewhat inform the structure and content of the LRS.
- Q: When and how will a decision on the planning approach be made?
 - The Environmental Review, Interagency Design, Core, and Executive Teams will all be reviewing and discussing the draft Ascent report and recommendation in upcoming meetings in April in May. The Executive Team will review input and recommendations from all of the teams and will ultimately make the decision.
- Suggestion: To better plan for Phase 3, consider including in the LRS:
 - An explanation of the purpose and need.
 - A foundation for a cumulative effects analysis.
 - Right-side/left-side analysis (graphics, structures, themes, etc.).
 - Evaluate emergency evacuation plans (per Homewood and Martis Valley West court decisions).
- Q: How will the timing of the LRS line up with the TRPA thresholds update?
 - TRPA will present propose changes to thresholds to their Board in September 2018. There will be opportunity for Stakeholders to engage in the process.
 - A draft will be developed to be delivered to the TRPA Board in July.
 - The TRPA standards update should not conflict with the LTW planning process (Phase 3).

2. Intended Landscape Outcomes

Ms. Di Vittorio overviewed the role of the Intended Landscape Outcomes (ILO) in the LTW project. ILOs are based on the Landscape Resilience Framework developed in Phase 1. They will serve as an important conceptual underpinning to Phase 2 and will inform model evaluation and strategy development.

Forest Schafer presented the ILO Table. The purpose of the document is to outline how LTW is achieving its goals and how this may be measured. The overarching goal of LTW is to restore the resilience of the west shore's forests, recreational opportunities, and communities to threats such as wildfire, persistent drought, changing climate conditions, and a potential bark beetle epidemic. The ILO Table defines how to this goal will be achieved and measured through a suite of indicators, drawn from both the LRA and science modeling. These indicators are related to different Landscape Values and Services, which are more broad categories, also derived from the LRA.

Overall, the Table helps to refine the LTW goals and objectives to be more outcome-based and serves to narrow the scope of what the outcomes may represent. The ILO Table is a synthesis tool that will allow for comparison/analysis of outputs across modeling Scenarios. It will help to provide the overall picture, inform strategy, and identify indicators that may always be troublesome or successful.

The ILO Table is not all-encompassing, nor is it a hierarchy of indicators. There are some indicators that address multiple ILOs. The Table does not include indicators that are not impacted by management interventions, and it relies on some indicators that still need to be developed in the LRA Version 2. As a result, there is a need to consider other indicators beyond those listed in the table.

Discussion followed:

- Q: Should recreation be included in the ILO Table?
 - Recreation is included to encourage project to look for opportunities for improvement, where possible. Keeping recreation as an ILO will also be useful for transferability to other forests.
 - Suggestion: Reword the recreation ILO to focus on minimizing impacts.
- Q: What is the baseline/comparison/scale for reducing risk or restoring resilience? Relative to what?
- Suggestion: Change ecosystems ILOs to “restore and maintain” rather than just “restore” or “maintain and restore.”
- Suggestion: Strategies should be “cross-cutting,” achieving multiple objectives.
- Suggestion: The ILOs table should include a column of Strategies. That would communicate how the Strategies specifically help us achieve the ILOs.
- Q: Where are we addressing species composition? How will you know if ILOs are being achieved without a measure of species composition?
 - Composition class as an indicator was removed from the Landscape Resilience Assessment, due to a lack of data. However, modeling will provide new data and information, and there may be potential to develop new indicators from modeling outputs or by combining LRA Version 1 indicators.
- Suggestion: Include potential new indicators in the ILO Table (anything informed by models). Remove “removed” indicators. Clarify where LRA indicators are actually modeling-informed.
- Indicators also work at different spatial (landscape vs. non-landscape) and temporal scales (fine scale vs. 50-100 years), a complicating factor.
- Q: Will EMDS allow for data rich comparisons of the modeling results?
 - Yes, EMDS will allow for data rich comparisons and assess indicators and trends in a variety of ways. An EMDS Workshop is planned for those seeking more information

what EMDS is and how it functions. [Note: the afternoon of the May 1 stakeholder meeting will include an EMDS workshop.]

- Q: How will the ILOs in the table inform/structure the EMDS framework and ultimately the Strategies?
 - The ILO Table will be used to inform the strategy and EMDS, however, it is not all encompassing and there are other factors that still need to be integrated (ex. economics, risk, feasibility).
- Suggestion: Continue to bring future iterations of the ILO Table to Stakeholders to keep them informed and receive feedback.
- Q: Is role of property owners/defensible space being considered in modeling?
 - Defensible space on private property is a factor in the LRA, specifically the fire resilience indicator. The small scale of these areas means they cannot be effectively modeled in LANDIS.
 - Suggestion: Remain cognizant of relationship of fire resilience to private landowners and defensible space.
 - Suggestion: Include wording about the importance of fire-adapted communities in LRS.
 - Homes are fuel, and will catch fire in these environments.
 - Suggestion: Include a Scenario where all private property owners implement defensible space to quantify the potential impact and communicate importance to communities.

3. Modeling Status Updates

With regard to overall modeling approach:

Ms. Restaino provided an update on modeling efforts. She reviewed the general methodology of LANDIS modeling, which will employ 8-10 separate Scenario runs. Scenarios 1-4 will be used to “pin the corners” of potential treatment approaches. Scenario 1 reflects a “no treatment” approach, while Scenario 2 reflects a “business as usual” approach. Scenarios 3 and 4 will treat at a higher pace, scale and intensity than Scenarios 1 and 2, but will differ by treatment type. Scenario 3 will test a mechanical thinning approach, while Scenario 4 will reflect a prescribed fire approach.

Considerable time has been spent constructing and documenting methods to translate “real world” measures into a language that LANDIS can comprehend. For instance, land managers use size class to categorize trees, while LANDIS uses age class.

In order to address the range of questions we would like to ask our models, the Design Team and Science Team are working carefully to craft Scenarios and inputs. This effort has been complicated by the inherent way in which LANDIS functions and how it produces outputs. For example, LANDIS does not allow for “switches” to test Environmental Safeguards (slope limit, burn windows, etc.). In fact, to turn a “switch” on/off would require entirely separate model runs and processing of outputs. In other words, they would be two different Scenarios.

Due to constraints in time and funding, the Design Team and Science Team had to think critically about how to address Environmental Safeguards and which ones to prioritize. The three Environmental Safeguards approved through the Executive Team were: (1) slope limit on mechanical treatment (30%); (2) tree diameter limit on removal (30”); and (3) treatment restrictions in Protected Activity Centers (PACs).

To adapt to these needs and constraints, an updated modeling framework has been developed. The document details the overall modeling approach and how Environmental Safeguards will be tested. In Step 1 of this framework, Scenarios 1 - 4 will be run under a moderate climate change scenario. In Step 2, we will apply what learned from modeling Scenarios 1-4 to develop Scenarios 5 and 6, tweaking them to improve results and/or further test constraints, if necessary. In Step 3 we will model Scenarios 5 and 6 under both moderate and extreme future climates.

Stakeholders had a variety of clarifying questions and suggestions about the modeling.

- Q: Which climate models are used for “moderate” and “extreme” climate change attributes?
 - “Moderate” = Warm/wet; “Extreme” = Hot/dry
- Q: Why are only Scenarios 5 and 6 modeled with both “moderate” and “extreme” climate change attributes? Will we miss important information about how Scenarios 1-4 would perform under extreme climate?
 - Funding and time constraints will allow for 8-10 model runs at most. Part of the goal of the updated framework is to be able to test integrated scenarios that are as realistic as possible. With Scenarios 1-4 acting as less realistic “pinned corners,” it may not be as meaningful to test them with both climate attributes. Instead we will use those runs to assess how the scenario runs compare to one another, rather than against an extreme climate.
 - (Sarah note: in conversations after this meeting we learned that the LANDIS modelers do plan to run Scenarios 1-4 under both moderate and extreme climate, so we will be able to access those results if needed. But it will take extra time to process those results, so we will focus on the moderate climate runs only, unless there is some reason to go look at the extreme climate results.)
- Q: How were Environmental Safeguards identified to be tested?
 - Through conversations with the Environmental Review Team, Design Team, and Executive Team.
- Q: What measures will be used to assess the Environmental Safeguards?
 - Measures are still being determined, though some include: large tree occurrence, size of habitat (for PACs), water quality, and fire resilience indicators.
 - Suggestion: Be prepared with a hypothesis driven approach and a plan for what measures will be used to verify this hypothesis.
 - Of the four Scenarios developed thus far, only Scenario 3 will test slope and tree diameter Environmental Safeguards.
- Q: At what point will modeling return to Stakeholders for review and input?
 - We will share results of Scenarios 1-4 and work with stakeholders to help develop Scenarios 5 and 6.
- Q: At what point(s) will EMDS be utilized?
 - EMDS will be used for evaluation throughout model runs.
 - Suggestion: Include stakeholders in the upcoming EMDS workshop.
- **ACTION ITEM:** Sarah and Evan will explore an alternative date for the Ecosystem Management Decision Support (EMDS) Workshop so Stakeholders and others to be able to attend. (Note: the EMDS workshop will take place in the afternoon on May 1, following the SSC meeting. SSC members will be invited.)

With regard to Scenario inputs:

Brian reviewed and explained LANDIS inputs for Scenarios 1-4. In Scenario 1, treatment is based on suppression of wildfire only. In Scenario 2, treatments are based on the current pace and scale. Scenarios 3 and 4 have the same targets for pace and scale (4,000 acres/year, developed through LRA conclusions), but differ by treatment approach. Brian reviewed specific differences between Scenarios and inputs. For instance, Scenario 4 is only scenario that will allow for managed wildfire, while Scenario 3 will remove slope and tree diameter Environmental Safeguards and allow for helicopter logging/removal.

The LRA was used to develop targets for biomass removal in Scenarios 3 and 4, based on areas analyzed as “resilient” from the trees per acre indicator in the LRA. Biomass removal targets in Scenarios 3 and 4 are extreme to create contrast and to examine how biomass removal and tree diameter limits may drive stand structure.

Tree diameter limits in Scenario 3 were developed using recommendations for the Spotted Owl Strategy (38” DBH vs. 30” DBH) and by observing limits that allow for some structure while removing smallest amount of large trees. Targets for larger trees are lower than for smaller trees, and LANDIS will not remove a fraction of a tree. Therefore, treatments will only remove large trees if there are enough of them in a given stand.

The seasonality of treatments was based on a typical Basin season (9 months), and salvage was estimated based on Forest Service experience in the Basin. Stands become eligible for treatments (are put back in a random selection pool) using time increments based on the mean fire return interval (~11 years). With the planning area roughly 60,000 acres in size, and treatment targets of 4,000 acres/year, being put back in the pool does not mean these areas will be retreated.

Discussion followed:

- Q: Is size class/age class the primary determinant in removal?
 - Yes, biomass removal goals are not a LANDIS input. They are reached through size class/age class removal targets which are calibrated based on data from previous treatments to reflect biomass removal goals.
- Q: How were stands delineated in LANDIS?
 - Based on slope and the California Wildlife Habitat Relationships (CWHR) classification framework.
 - Stands are based on ecological characteristics and are not all the same size. They are designed to make inferences about slope and stand composition.
 - Stand delineation is critical in LANDIS, as treatments are implemented at stand scale (but note fire spread is not based on stands).
- Q: Is there any criteria for retaining 30”+ diameter trees on the landscape? Fire, even low intensity, may kill a 30”+ tree.
 - LANDIS uses a probability of mortality for each fire and age class.
 - 3 Fire classes: low (0-4), medium (4-8), high (over 8).
- Suggestion: The Landscape Restoration Strategy should recommendations beyond what is being modeled, such as raking duff away from trees.
- Q: Are metrics such as “% of stand treated” and “% of live biomass removed” within each stand or overall?
 - “% of stand treated” – within each stand.
 - “% of live biomass removed” is not a LANDIS input.

- Q: Does LANDIS model pile burning?
 - LANDIS cannot model pile burning; it assumes biomass is removed and used off site.
 - In reality, the goal for mechanical treatment is to have biomass removed, but hand treatments will be pile burned.
- Q: Why not include more prescribed fire treatments in Scenario 3?
 - Scenario 3 is dominated by mechanical treatment to create contrast between Scenarios and to test how resilience is affected when mechanical treatment drives stand structure, and not fire.
- Q: How does LANDIS select how to treat a stand?
 - LANDIS randomly selects stands from a pool of eligible cells.
- Q: Are the prescriptions based on ILO measures, such as flame lengths (surface vs. ladders)?
 - Other models, such as Fine-scale Fire, Water Quality and Air Quality build from LANDIS results to analyze fire severity factors and how vegetation is represented.
 - Suggestion: Apply prescriptions to some samples to ensure that desired stand structure is occurring.
- Suggestion: Analysis should highlight the cross-walk between stand condition, ladder/surface fuels, and treatment.
 - Could be addressed by examining treatments through time.
- Q: How will LANDIS address ladder fuels? Retreatments? Treatment placement? Will assumptions embedded in how LANDIS does these things perhaps bias the results?
 - Suggestion: We should carefully document the ways that LANDIS does not represent the real world, to provide context in how we interpret the results.
 - We might be able to use more management zones in Scenarios 5 and 6 to place treatments more strategically on the landscape (LANDIS places treatments randomly, based on some rules we provide.)
- Q: Will modeling address low intensity thinning?
 - Yes, through hand thinning treatments in Scenarios 2-4.
- Q: Will LANDIS account for areas that were treated before LTW was implemented?
 - LANDIS cannot account for treatments that have already occurred.
- Q: How does LANDIS decide how much of a management zone to treat?
 - LANDIS uses percentages dictated by model inputs.
- LANDIS does not take treatment adjacency into account when selecting stands.
 - Suggestion: Think about strategic placement and how to force adjacency into the model, if possible.
- Suggestion: Base risk of wildfire ignition on forest condition, if possible.
- LANDIS results can be aggregated over 10 year time steps.
- LANDIS will be able to answer broad, landscape scale questions about the effects of treatment over time.
- Suggestion: Results need to address current hypotheses on where high severity fire will occur.
- Q: Could mean fire return interval misrepresent realistic treatments/retreatments in certain cases (ex. red fir, high elevation areas)?
 - Possible, but unlikely - areas dominated by red fir are unlikely to be treated and are mostly in wilderness).
 - Median fire return interval (~11 years) only dictates when stands becomes available for treatment again (a maximum of 4,000 acres/year over 60,000 acres will be treated).

4. General Business

Ms. Di Vittorio requested that any Stakeholders who have not already submitted a biography do so at their earliest convenience.

- **AGREEMENT**: Stakeholders agreed to finalize January and February Meeting Summaries.

Ms. Britting requested overview of LANDIS fire modeling.

- **ACTION ITEM**: **The Design Team** will follow up with Sue Britting to address her questions about how LANDIS works.

5. Action Items and Agreements

Action Items:

1. **Sue Britting** will send Sarah suggestions on ordering of the LRS Outline.
2. **Sarah and Evan** will explore an alternative date for the Ecosystem Management Decision Support (EMDS) Workshop so Stakeholders and others to be able to attend. (Note: the EMDS workshop will take place in the afternoon on May 1, following the SSC meeting. SSC members will be invited.)
3. **The Design Team** will follow up with Sue Britting to address her questions about how LANDIS works with respect to fire, stand selection, and other components.

Agreements:

1. **AGREEMENT**: Stakeholders agreed to finalize January and February Meeting Summaries.

Meeting Attendees

Organizing and Participating Agencies

CTC – California Tahoe Conservancy

LSLT - League to Save Lake Tahoe

NFF – National Forest Foundation

State Parks – California State Parks

TFFT – Tahoe Fire and Fuels Team

TRPA – Tahoe Regional Planning Agency

USFS LTBMU – U.S. Forest Service Lake Tahoe Basin Management Unit

USFS PSW – U.S. Forest Service Pacific Southwest Research Station

Stakeholder Science and Community

Committee Members

1. Jennifer Quashnick
2. Sue Britting
3. Roland Shaw
4. Maria Mircheva
5. Casey Blann
6. Zach Bradford
7. Brett Storey

Staff

8. Jason Vasques, CTC
9. Forest Schafer, CTC
10. Patrick Wright, CTC
11. Jen Greenberg, CTC
12. Sarah Di Vittorio, NFF
13. Evan Ritzinger, NFF
14. Svetlana Yegorova, State Parks
15. Daniel Shaw, State Parks
16. Christina Restaino, TRPA
17. Brian Garrett, USFS LTBMU
18. Victor Lyon, USFS LTBMU