RESTORATION TREATMENT ACTIONS, possible methods, and *associated restoration objectives*

A. **Using Prescribed Fire Alone (without mechanical thinning).** Methods include: (1) burning at moderate to high intensities to kill patches of trees, create openings, and alter stand structure; (2) burning at low intensities on surface/understory level to kill young conifers in meadows and forest understories, reduce post-thinning slash, and for maintenance purposes; (3) allowing naturally-ignited fires to burn within specific parameters (fuels, weather, and other conditions)

   - ❖ *Objectives include*: *reducing uncharacteristic wildfires (& costs), improving diversity of native plant communities, moving toward reference conditions and more diverse structural class distributions, increasing large trees*

B. **Mechanical Thinning and Burning.** Methods include using mechanized or manual equipment, and various ways to treat the thinning-generated slash (scattering, piling, chipping, pile-burn, broadcast burn…). Methods include (1) removing wood biomass (in areas with road access and slopes <40%), or (2) leaving wood biomass on-site to utilize it for nutrient cycling, mulching, weed control, erosion control, increasing down log habitat, etc.

   All methods involve:

   - Retaining or increasing numbers of large snags and down logs
   - Strategically placing thinning areas to facilitate large burns
   - Strategically prioritizing treatments on the drier, s/sw slopes and large areas of continuous canopy cover.
   - Emphasizing creation of uneven age-class distributions that move toward reference conditions for each ecosystem; increasing the clumpiness/patchiness in fire-adapted ecosystems

     - ❖ Objectives include*: improving wildlife habitat, increasing large trees and mature forest, providing a reliable supply of wood biomass, increasing the heterogeneity of tree densities, moving toward reference-conditions and diverse structural class distributions, controlling tree disease or insect epidemics, restoring natural fire regimes, reducing uncharacteristic wildfires*

C. **Removing/controlling invasive, non-native/exotic plants**, **and promoting reestablishment of native plants.** Methods include: mechanical, manual, and chemical methods of invasive plant control, along with potential site-preparation, seeding with non-native seeds, or planting native species such as willows and shrubs in riparian areas. Includes rehabilitation of severely burned areas

   - ❖ *Objectives: improving native plant communities, biological diversity, and controlling invasive-exotic plants*

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D. **Removing invasive conifer trees that encroached into historic meadows, grasslands and riparian areas, and promoting reestablishment or abundance of native vegetation.** Methods may include site-preparation, seeding with native seeds, planting native plants.

- *Objectives include: restoring historic grasslands (both low and high montane grasslands), wet and dry meadows, and riparian areas/wetlands (plant species composition and structure); improving wildlife habitat associated with those ecosystems (including jumping mouse, beaver, etc); restoring moisture regimes and water availability in historic wet areas, springs and seeps.*

E. **Remove invasive, non-native/exotic aquatic species (fish, plants), and reestablish native aquatic fish, amphibians and beaver.**

- *Objectives include: restoring native aquatic fish, beavers and amphibians; controlling invasive, non-native or exotic aquatic species; moving toward reference conditions in streams and aquatic habitat*.

F. **Riparian and wetland restoration actions.** Methods include: adding erosion/sediment control structures, planting native vegetation (eg. willows, sedges, shrubs); rehabilitating or closing unneeded roads, trails, and recreation uses in riparian areas; controlling other land use activities along streams (refer to excluding/restricting land uses action).

- *Objectives include: improving water quality and watershed function, restoring riparian habitat, improving aquatic habitat*

G. **Adding (or replacing/fixing) in-stream aquatic-habitat structures such as logs, boulders, other materials.** Methods include adding logs or other woody biomass in streams; adding grade-reduction structures to slow down stream velocities; installing culverts or replacing failed culverts

- *Objectives: promoting: deeper pools, increased stream meandering, better fish migration and breeding habitat, more strategic locations of existing materials, aquatic habitat complexity, abundance of beavers, and other aquatic/stream habitat-quality improvement*

H. **Adding (or maintaining/fixing) developed water sources for redistributing cattle and for wildlife drinking water.**

RESTORATION TREATMENT ACTIONS, possible methods, and *associated restoration objectives*

- *Objectives: improving water availability wildlife, and moving cattle distribution out of sensitive ecosystems (including those being revegetated/restored)*

I. **Decommissioning, rehabilitating or closing (seasonally or year-round) unneeded roads and trails, and upgrading, maintaining, or relocating roads and trails causing resource damage.**

- *Objectives: reducing road density-related impacts to all ecosystems and resources; reducing road-condition-related impacts to all ecosystems and resources; eliminating non-designated roads and trails; discouraging OHV uses and impacts; moving poorly located roads/trails out of sensitive areas; improving water drainage and erosion control features to improve water quality and watershed functions; improving all aquatic and wildlife habitat; reducing impacts to archaeological sites and other sensitive sites).*

J. **Excluding land use activities from sensitive areas and areas being revegetated/restored:** This includes restricting or excluding grazing, vehicles, and certain recreational uses in sensitive areas (eg. riparian areas, wetlands, meadows, archaeological sites, native plant rehabilitation areas ; etc). Methods include: managing recreation away from certain areas; using travel management/motor-vehicle-use designations; fencing; barriers; educational signs/information, regulatory closures, modifiying public access routes, modifying recreational facilities, and other methods.

Actions Applicable to All Restoration Treatments

- Complete pre-implementation/baseline inventories
- Complete baseline and on-going monitoring
- Enforce laws, policies, and rules
- Use a broad public workforce including volunteer groups, youth groups, college students, permit-holders, and public
- Include public education and public relations
- Continue existing restoration programs (eg. Respect the Rio, Firewise, Habitat Stamp, etc.)
- Locate treatments strategically, in mosaic patterns, and to enhance community protection and wildlife habitat needs
- Improve carbon sequestration and resilience to climate change impacts

RESTORATION TREATMENT ACTIONS, possible methods, and *associated restoration objectives*

- Use a variety of grants, agreements, and contract methods
- Improve workforce capacity, within and outside agencies
- Review and modify regulations and forest plan standards for consistency with implementing the restoration strategy (example: consider using the fishing rules established on VCNP onto the SFNF--catch-and-release, barbless hooks
- Include maintenance treatments