
Appendix C – Mitigation Measures for the Competing Vegetation Correction Strategy

The FEIS quantitative risk assessment (see appendix D in USDA Forest Service 1988) predicted the amount of human exposure – both to project workers and the public – from typical forestry herbicide operations, and also from a large accidental spill. The risk assessment compared predicted health risks to established EPA standards of acceptable risk for human health effects. Any herbicide operations that exceeded the EPA standards were identified as a “moderate” or “high” risk. Specific mitigation measures were then designed to reduce human exposure from such operations; they are mandatory for every applicable project on National Forest lands.

The following 34 mitigation measures pertain to application of herbicides within Tower Fire reforestation units that are predicted to exceed the 30% canopy coverage threshold.

1. Seedlings will be protected from direct spray during herbicide application.
2. A Human Health Risk Management Plan will be developed, including: A Project Risk Plan, An Environmental Monitoring Plan, A Spill Incident Response Plan, and an Herbicide Application Plan.
3. Adjacent water users and landowners who could be directly affected by stream transport of herbicides, or an accidental spill, will be notified prior to any chemical application (normally 15 days prior).
4. Permittees grazing cattle in or near the proposed herbicide areas will be provided with advance notification of the treatment schedule. They will be given a two-week warning before any herbicide applications occur.
5. All applicable state and federal laws, including the labeling requirements of the Environmental Protection Agency (EPA), will be strictly followed.
6. Herbicides will be applied within the prescribed environmental conditions stated on the label and in permits issued to licensed applicators.
7. Herbicides will not be applied when wind speeds are such that the material leaves the application zone (a 3-foot radius around each seedling).
8. Herbicide applications will be conducted in accordance with direction in the Forest Service's Environmental Management Manual, chapter 2150 (Pesticide-Use Management and Coordination).
9. Forest Service Handbook 2109.14 (Pesticide-Use Management and Coordination) will be used to direct project planning. This handbook establishes procedures to guide managers in planning, organizing, conducting, and reporting pesticide use projects. It also provides direction for herbicide storage facilities, posting, handling, accountability, and transportation, as well as spill prevention, planning, cleanup, and container disposal requirements.

10. All contractors will be required to be licensed pesticide applicators or commercial operators. The Pesticide Applicator Licensing and Training program administered by the Oregon Department of Agriculture will be used to evaluate this requirement. Training and testing of applicators includes information about laws and safety, protection of the environment, handling and disposal, pesticide formulations and application methods, calibration of application devices, use of labels and material safety data sheets, first aid, and recognition of pesticide exposure symptoms.
11. All Forest Service employees and contract workers involved in herbicide mixing, loading, and backpack applications will wear protective clothing.
12. A Forest Service representative will be on site whenever herbicide mixing or application occurs.
13. Public notification will be used for all applications, requesting that people who know or suspect that they are hypersensitive to herbicides contact the local Forest Service office to determine appropriate risk management measures.
14. Workers (both Forest Service and contract) who know that they are hypersensitive to herbicides will not be used for application projects. Workers who display symptoms of hypersensitivity to herbicides during application will be removed from the project.
15. Material Safety Data Sheets will be posted at chemical storage facilities, in vehicles, and made available to workers. The sheets provide physical and chemical data, fire and reactivity information, specific health hazard warnings, spill or leak procedures, instructions for worker hygiene, and any special precautions.
16. The Material Safety Data Sheets, Herbicide Specimen Labels, and R6 Herbicide Information Profiles will be used to ensure that all employees and workers are fully informed about the potential effects and correct mitigation measures for the herbicides being used.
17. Forest Service Handbook 6709.11 (Health and Safety Code, Chapter 9) serves as the guide for project safety. This handbook establishes basic safety procedures, and discusses safety aspects of the storage, transportation, and disposal of the herbicides.
18. Both worker and public exposure monitoring is required for all herbicide application projects. Pertinent details will be documented, including the herbicides used, land areas treated, dates and times of application, people involved, and mitigation measures that were followed.
19. Any employee not wanting exposure to the herbicides glyphosate, hexazinone, or triclopyr will be given alternate work assignments that do not involve direct contact with the herbicides. There are many assignments, even in an herbicide project, that do not involve direct contact with herbicides.
20. Each worker (Forest Service or contract employee) shall be informed of any known potential human health effect associated with the herbicides being used. Notification shall occur prior to initiation of the project. Each worker will be provided with a copy of the relevant Herbicide Information Profiles produced by the Pacific Northwest Region. Prior to project initiation, each worker shall sign a statement indicating that he or she has reviewed the materials, and either agrees to work on the project as assigned, or requests a reassignment to other duties.
21. All herbicide application projects shall have available at the work site a permanent or portable eyewash unit and other washing facilities, including a supply of uncontaminated water and soap that is sufficient to wash hands as required, and to wash the entire body in the event of accidental contact with herbicides.
22. All workers shall have a complete change of clothes available at the work site in case of accidental exposure to herbicides. A complete set of clean clothes shall be worn daily.
23. Where premixed packages exist in operationally efficient quantities for the herbicide formulations selected for use, they shall be used. When effective, exposure-reducing equipment such as drip-free couplings and nozzle shields for hand-held spray wands shall be used in both Forest Service and contract operations.
24. For all backpack applications of herbicide, the following personal protective equipment made from materials impervious to the herbicide shall be available at the job site for each worker: overpants and jacket or coveralls, hood, unlined gloves, face shields, and goggles. These items may be

either disposable or reusable; in either case, they must be used in accordance with the manufacturer's requirements and may not be used beyond the manufacturer's recommended wear-times. Workers may elect to use all or any of these items. However, impervious gloves and rubber boots (which may be the responsibility of the worker to provide) as well as any other items required by the herbicide labels or material safety data sheets must always be worn. Contracts for herbicide application shall include a provision that specifies the personal protective equipment described here.

25. Precautions will be taken to ensure that equipment used for storage, transport, mixing, or application will not leak herbicides into surface water or the soil. Areas used for mixing herbicides and cleaning equipment shall be located where spillage will not run into surface waters or result in ground water contamination.
26. Designated locations for mixing herbicides must be at least 300 feet away from streams and stream channels. The Forest Service will designate all water drafting and mixing locations prior to project initiation.
27. Applications must not take place within 6 hours of predicted rainfall. Spot weather forecasts will be made available to the applicator.
28. Streams or other surface waters must not be used for washing equipment or personnel.
29. To minimize the risk of contamination, a separate water truck will be required for drafting water for mixing. The chemical mix truck will not be used for drafting water from approved sources.
30. No herbicide applications will occur within designated Riparian Habitat Conservation Areas (300 feet on each side of class 1 and 2 streams; 150 feet on each side of class 3 streams; 100 feet on each side of class 4 streams). In order to minimize the potential for a spill into surface waters, applicators will not travel through Riparian Habitat Conservation Areas (except by road) when transporting herbicide application equipment (backpack sprayers) and herbicides from one treatment area to another.
31. When transporting more than 120 gallons of herbicide concentrate or 2,000 gallons of mix or ready-to-use formulation on forest roads, a pilot vehicle will be used. Truck drivers shall be briefed on all haul route hazards, defensive driving, the project safety plan, and the Spill Incident Response Plan.
32. Full and empty herbicide containers must remain in locked storage. Containers will be checked frequently for leaks, tears, or loose lids. If containers are in poor condition, contents will be transferred to a suitable container and labeled properly. The labels of herbicide containers will be protected to maintain their legibility. Herbicides will be stored away from pesticides or fertilizers.
33. All known occurrences of endangered, threatened, or sensitive plant or animal species in the project area will be protected by means of avoidance, including any occurrences identified during the course of a project.
34. To help protect the public from inadvertent exposure to herbicides, warning signs will be posted in areas where herbicide applications have occurred. The signs will be posted along roads, trails, or other routes where people would be likely to gain access to a treated area. Signing will provide information about the treatment date, name of the herbicide(s) that were applied, and who to contact for further information about the project. The public and Forest Service employees will be excluded from treated areas during any restricted entry intervals (REI) required by the herbicide label.