



United States Department of Agriculture

Draft Record of Decision

Supplemental Environmental Impact Statement for the Invasive Plant Control Project



Forest Service

Carson National Forest

December 2017

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Decision and Reasons for the Decision

Decision

Based upon my review of all alternatives, information in the 2005 Final Environmental Impact Statement (EIS) and the Supplemental Final EIS, and public input, I have decided to implement alternative B (described in detail in appendix 1). Alternative B is an integrated set of management actions necessary to control weeds on the Carson National Forest with the goal of completely eliminating some and preventing the spread of others. Under policy stated in Forest Service Manual 2903, invasive weeds and other invasive species in aquatic and terrestrial areas of the national forest system are to be managed by using an integrated pest management approach. The integrated pest management approach recognizes that using only one treatment method is unlikely to be effective. Treatment methods used in conjunction with integrated pest management strategies for prevention involve four broad categories:

1. Mechanical/Physical (pulling, mowing, prescribed burning, etc.),
2. Cultural (re-seeding, fertilizing, etc.),
3. Biological (grazing, use of biocontrol agents, etc.), and
4. Chemical (use of herbicides).

Weeds targeted for treatment are those on the New Mexico Department of Agriculture's noxious weeds list at this time or in the future. The Carson National Forest does not intend to treat medicinal plant species such as St. John's wort (*Hypericum perforatum*) and wild licorice (*Glycyrrhiza lepidota*).

During approximately the next 10 years, the Carson National Forest anticipates treating 300 to 800 acres per year, based on anticipated funding. The maximum acreage treated per year, given sufficient funding, would be 1,500 acres. The implementation period could extend beyond 10 years if monitoring shows treatment results are within expected outcomes.

The following treatment methods are included to treat weeds on the State's noxious weed list:

- Hand pulling, grubbing with hand tools or hand operated power tools, mowing and disking, girdling, or plowing with tractor-mounted implements;
- Biological control using insects or plant pathogens introduced into the weed habitat;
- Controlled grazing using goats and sheep to intensively and repeatedly graze weeds;
- Herbicide application using hand or vehicle-mounted sprayer applications; and
- Prescribed burning using limited pile or broadcast burning to eliminate seed heads and resident populations of weeds.

Reseeding or replanting after the initial treatment would follow in some situations, since this has been shown to increase the effectiveness of controlling weeds (Endress et al. 2012).

The scope of this decision includes treatments to existing weed infestations, as well as an adaptive strategy for responding to infestations not yet discovered or established. The adaptive strategy would evaluate new weed populations and allow immediate treatment, if the effects fall

within parameters described in the final supplemental environmental impact statement. Failure to deal immediately with these new—usually small—infestations is likely to lead to larger-scale treatments with greater impacts later.

Appendix 1 provides details of the selected alternative, including treatment criteria and limitations, design features, and monitoring requirements.

Background

In northern New Mexico's Carson National Forest, approximately 2,850 acres of invasive nonnative plant populations (weeds) inhabit national forest system lands. Although this represents less than 0.2 percent of the 1.5 million acres of national forest system lands in the Carson National Forest, weed treatments are most effective when infested areas are still small and before weeds are well established. It is important to control weed infestations at an early stage, before costly large-scale treatments such as aerial herbicide spraying become necessary.

The purpose of, and need for, controlling or eradicating weed infestations on the Carson National Forest is to maintain or improve the diversity, function, and sustainability of desired native plant communities on the Carson National Forest. Protecting the abundance and diversity of native plant communities will also help maintain or enhance other natural resources that can be impacted by weeds and the loss of desired plant communities.

Weeds are aggressive, undesirable plants that are a serious threat to national forests. Weeds typically outcompete native plants for space, water, and nutrients because they have characteristics that give them a competitive advantage over native plant species and they do not have natural insects or diseases to keep them in check. They demonstrate high reproductive capacity through prolific seed production and root sprouting. If left uncontrolled, they tend to dominate areas and reduce the diversity and sustainability of native plant populations. In some areas, weeds have increased so dramatically they create a monoculture by entirely taking over large areas.

Without effective control, weeds will increasingly impact natural resources on the Carson National Forest in the following ways:

- Native plant communities will become more impacted as weeds gradually dominate these communities. Some weed species form monocultures or greatly simplified ecosystems. Ecosystem processes become degraded, with evidence of slower nutrient cycling and lower hydrological stability. They prove less sustainable when confronted with natural disturbances such as fire. Weeds also threaten the continued existence of certain endangered, sensitive, or rare plant species that occur on the national forest.
- Erosion is increased by many weed species. Knapweeds and other weeds have a single, deep taproot and outcompete native grasses that have better soil-holding root systems. Native riparian plants, including rushes, sedges, willows, and cottonwoods, maintain streambank stability better than the weed species currently spreading through the riparian zones on the Carson National Forest.
- Wildlife habitat quality decreases when weeds take over native plant communities. Palatable forage for game and nongame species of wildlife decreases as weeds like thistle, leafy spurge, and toadflax take over. Weeds such as black henbane, poison hemlock, and yellow starthistle can poison animals. Negative impacts to wildlife magnify in riparian areas because of the important role riparian vegetation plays for a large number of southwestern

wildlife species. A large percentage of the known weed infestations occur in or near riparian areas.

- Recreation opportunities are reduced when dense weed infestations limit access to streams and riparian areas. Some weeds cause allergies or skin irritations. Scenic values and wilderness characteristics also typically decline as weeds reduce the abundance and diversity of native plant communities.
- Wildland fires are known to burn more intensely and severely in areas where weed species like saltcedar, Siberian elm, and Russian olive have taken over native riparian ecosystems.
- The majority of known weed infestations on the national forests occurs within 150 feet of roads or trails.

Reasons for the Decision

I have determined that alternative B would do more to minimize the establishment and spread of invasive weeds than any of the other alternatives. Actions under alternative B would protect and improve native plant communities, with positive effects on soil and water conditions, wildlife, and aquatic habitats (final supplemental EIS, page 8). Negative effects to native vegetation, soil, wildlife, water, and aquatic organisms would be minor and of short duration (final supplemental EIS, pages 8–11, 40–42; table S-3 and S-13).

When compared to the other alternatives the selected alternative would provide an integrated approach and an effective set of methods for achieving the project purpose and need while protecting human health and natural resources. All practical means to avoid or minimize environmental harm from the decision have been adopted (see appendix 1) while still moving toward our desired conditions. In making this decision, I reviewed the original final EIS, the final supplemental EIS, and other supporting information, including the Forest Service risk assessments available for the herbicides proposed for use. I also reviewed herbicide information provided by commenters on the DSEIS.

The integrated set of management actions, including an adaptive strategy, can be used in concert with other efforts on national forest system lands which restore forest and watershed health. By protecting the abundance and diversity of native plant communities, the selected alternative would enhance our efforts to improve the overall sustainability of forest ecosystems and resiliency to natural disturbances such as drought, climatic variability, insects, disease, and fire.

The selected alternative would allow the Forest Service to more fully cooperate with other agencies and jurisdictions with an integrated approach for weed control and allow us to do a better job of partnering and sharing resources to be more effective together in our efforts to control invasive plants. It will allow the Forest Service to be a better neighbor by controlling the spread of weeds across boundaries where national forest system lands are adjacent to lands owned or managed by others.

In reviewing the FSEIS, it is evident that the greatest difference in consequences are between no action and the action alternatives. No action would lead to many unwanted changes with unchecked spread of weeds. Weed treatments under alternatives B, C, and D provide long-term, beneficial improvements to native ground vegetation such as grasses, forbs, and shrubs. Riparian vegetation—particularly rushes, sedges, willows and cottonwoods—would benefit from this project as well. Protecting and improving native plant communities would have positive effects

on soil and water conditions, as well as wildlife and aquatic habitats (mostly as a consequence of enhancing riparian vegetation).

In all action alternatives negative effects to native vegetation, soil, wildlife, water, and aquatic organisms would be minor and of short duration (final supplemental EIS, pages 40–42). The increases in sediment (more with alternative C) and any possible herbicide delivery to streams (for alternatives B and D) would have no measurable, long-term consequences. There would be a low risk of adverse impacts to fisheries, including Rio Grande cutthroat trout (a sensitive fish species) or other aquatic organisms based on application of design features, risk assessments, and Environmental Protection Agency guidelines. Other than the effectiveness of treatments and associated costs, there are few other key differences among the action alternatives.

Differences between action alternatives in their effects to air quality, heritage resources, livestock grazing, recreation, wilderness, and visual resources are expected to be negligible, and so they are not be given as much weight in the decision-making process. There would be minor increases in noise and traffic associated with the action alternatives, although generally within background levels.

With an integrated approach for controlling the spread of weeds and protecting native plant communities, habitats, and watershed conditions on the Forest, alternative B would maintain or enhance social or economic conditions, particularly for local rural communities in northern New Mexico who typically rely on the Forest's natural resources for their livelihood, traditional culture, and quality of life. Examples of enhancing social or economic conditions include: improved forage availability for livestock grazing on the Forest and restoration of native vegetation that may be used for medicinal or religious purposes.

In reviewing the information available in the final supplemental EIS, as well as the risk assessments and supporting information, I have determined the risk of harm to people, animals, or non-target plants is small when considered in the context of their use. Although it is certainly true herbicides pose a potential danger because of toxic effects at high doses, the likelihood of exposure occurring at these high levels is very small, as explained in more detail below. Non-target plants are most at risk of being affected when using nonselective herbicides (e.g., glyphosate, imazapic, imazapyr, and others as described in the final supplemental EIS, appendix 3). The advantage of the nonselective herbicides is that they tend to have the lowest risk of harm to people and wildlife. Thus, for a given situation, more risk would be accepted for non-target plants in order to avoid a higher risk to people. I conclude herbicide use poses a very low risk of harm to people or animals, when used properly at the application rates proposed. Design features detailed in appendix 1 will ensure herbicides are used properly.

The analysis found in the risk assessments includes a number of plausible exposure scenarios that assume spills, human consumption of sprayed vegetation soon after application, and other occurrences that I do not believe are likely. In a few theoretical accidental exposure scenarios, the level of concern could be exceeded for some of the herbicides proposed for use with alternative B. Although the possibility of a single spill is slight, the chance of repeated spills in the same place is even less likely. In other words, if these exposure levels were to occur regularly, they would raise the risk of harmful effect. However, these exposures would only occur during scenarios where herbicides were improperly used, or spilled, or where someone travels through a sprayed area before the re-entry period specified on the herbicide label. Although included in the analysis to disclose these possibilities, I believe the more likely outcomes rely on proper application and safety measures included in the design features, which reduce these possibilities to a very small level.

During the public comment period, some commenters noted that because the adaptive strategy places priority on treating areas of high human use, the risk to people from herbicides is greater. I evaluated the risk and do not come to that conclusion. Herbicides, when used with the required application methods following directions for use, can be used without causing harm. In the final supplemental EIS, special attention has been given to the differences among the herbicides so that we can more clearly disclose which herbicides would be most likely to be used in locations that people frequent, and which herbicides are more likely to be used in other areas where the extra protection is not necessary (final supplemental EIS, appendix 3).

Given a large enough workforce (paid or volunteer), some non-herbicidal methods can be effective in small areas for some invasive plant species. Taos has had some success after restricting the use of herbicides, but weed populations have grown as well. The Forest has locations that are readily accessible such as campgrounds, day-use areas, and other places where getting the large number of personnel to control invasive plants presents a realistic possibility. Alternative B would allow non-herbicidal treatment in those areas. However, the Forest also has more remote locations, where the resources are simply not available to send regular patrols for repeated non-herbicidal treatment methods. Moreover, experience with volunteers has shown us that this approach works better in some circumstances (close to towns, in small areas, on invasive plant species that lend themselves to hand pulling). I consider the use of volunteers as a key part of alternative B in those circumstances where it can be effective.

Similar to suggestions to increase volunteer efforts, comments on the draft supplemental EIS mentioned a number of alternative methods, such as covering weeds with rubber mats, and using vinegar and other methods found effective with organic gardening methods. Replacing weed populations with more vigorous plants has also been suggested. Selection of alternative B does not preclude use of these methods as long as they fall within the effects and mitigation measures described in the final supplemental EIS. Alternative B provides for herbicide use where it is the most effective method, which may often be in combination with other treatment methods.

Commenters expressed a concern that alternative B should not be selected simply because it is the least costly. The final supplemental EIS does not support that conclusion, showing that alternative D is the least costly to implement (final EIS, pages 173–179, final supplemental EIS, page 170). I chose alternative B because it is an integrated approach and it is the most effective, not because it costs the least to implement. As noted in the final supplemental EIS, the use of “herbicides only” as proposed in alternative D would result in more repeated treatments where the herbicides had not achieved the desired level of control. Although the cost of treatments in this alternative is the lowest of the three action alternatives, I do not believe that cost alone should be the determining factor in selection. Over time, the less expensive treatments would require closer monitoring and possibly more return visits than alternative B, the integrated approach.

I acknowledge a certain level of uncertainty exists with respect to the effects of herbicides. I have relied on the U.S. Environmental Protection Agency’s methodology to determine this risk and account for this uncertainty. This methodology determines a lower level of exposure with no adverse effect if this dose were given every day over a 70-year lifespan (known as a reference dose). The reference dose accounts for uncertainty by taking the lowest level of no observable adverse effect and reducing it by factors of 10 based on uncertainty. For instance, most tests on the toxicity are conducted on laboratory animals, and so a safety factor of 10 would apply based on species-to-species extrapolation.

Comments on the draft supplemental EIS noted a number of epidemiological studies showing a connection between herbicide use and some forms of cancer. I acknowledge these studies and

their claims, but find the totality of information in the risk assessments more persuasive for each particular herbicides because they provide a broader context, which includes an evaluation of many of the studies and other literature cited by the draft supplemental EIS comments. For instance, the impurity hexachlorobenzene is found in two of the herbicides proposed for use. As noted in the risk assessments and public comment, this substance has been linked to cancer. However, similar tests on the two herbicides (picloram and clopyralid) indicate no such link. Nonetheless, the risk assessments evaluated the risks associated with the use of these herbicides and found them to be less than 1 in 1 million because of the small amount of hexachlorobenzene (below background levels). Although commenters argue that any risk is too much, this no-risk approach does not represent a standard that can be attained because the presence of hexachlorobenzene in the background environment results in some risk of exposure even if these herbicides are not used in this project.

The final supplemental EIS and risk assessments also consider the cumulative effects of using herbicides in conjunction with known other herbicide uses, but also must acknowledge a boundary of what can be known considering the variety of other chemicals in use throughout the communities and on private land that may be adjacent to the national forest system lands being treated. I do not find a substantially greater risk arises because of the potential for other herbicide applications on nearby lands. The greatest risk may be in the non-regulated use by private landowners, which cannot be quantified with any certainty. However, logic and experience tells us coordinated control with landowners in conjunction with advice from local extension services promises to be the best way to assure invasive plants are controlled with the least amount of herbicide used in the most effective and proper way possible.

I recognize the concerns expressed by many commenters regarding the threat of herbicides to people who suffer from the medical condition known as multiple chemical sensitivity. The potential for harm to come to this segment of the population as a result of herbicide use was given careful consideration in my decision. Many comments suggested we avoid herbicides in order to take the most conservative possible approach, especially when considering the low level of herbicides (noted as far below the reference dose) that may have an effect to people with this condition. I considered the possibility of not using herbicides in alternative C which would reduce the risk posed by herbicide use—no matter how small the risk—but would shift to risks associated with other methods, which are also small.

I have reviewed the information provided by draft supplemental EIS commenters, as well as the risk assessments, which review the effects of Forest Service herbicide use to sensitive populations (which in some risk assessments specifically include the multiple chemical sensitivity condition). When considering the low levels of potential effect described by these comments, I cannot single out herbicide use as a cause separate from many other factors in the environment, including such common substances as those found in automobile exhaust, commonly used household products, and other sources of chemicals. I recognize the difficulty of proving a link between multiple chemical sensitivity and the use of herbicides, and although I do not find clear evidence of this link, I do not want to ignore the concern either. I believe we can best respond by including notification provisions in the mitigation measures (final supplemental EIS, pages 33–34) that will allow people suffering from this condition to avoid areas where herbicides are applied by the Forest. I do not believe a complete ban on the use of herbicides would provide the extra level of protection sought out by these commenters.

We developed, and this decision requires, the implementation of 14 measures to ensure the public and employees are not exposed to unacceptable levels of herbicides (appendix 1, pages 23-24; final supplemental EIS, pages 33–34).

I have adopted notification procedures to alert the public about where herbicides would be used, and under the adaptive strategy these procedures are subject to modification for increasing their effectiveness. This strategy will result in treated places being unavailable for some people to use for a period of time after treatment. I acknowledge this potential result, but at the same time do not see this as unique to the use of herbicides. Such temporary use restrictions are common for other activities, such as thinning, prescribed burning, or road paving. As in those cases, we must weigh such short-term restrictions against the results of inaction, which would restrict use in a more subtle way as the resources people value and use become compromised.

The selected alternative includes necessary herbicide application licenses as required by Federal and state statutes. Training and certification programs are used to assure anyone applying and supervising the application of herbicides has the knowledge to assure proper use.

In summary, alternative B includes mitigation measures and notification procedures to assure the risk of adverse effects caused by herbicides is negligible. Given the low risk to people, animals, or sensitive non-target plants, this alternative provides the most options and tools, giving us the most effective program to deal with invasive plants on the Forest.

Other Alternatives Considered

In addition to the selected alternative, I considered three other alternatives, which are discussed below. Alternative B is the environmentally preferred alternative. A more detailed description of these alternatives can be found in the final supplemental EIS (pages 27–40). A comparison of alternatives is located on pages 40–42 of the final supplemental EIS, with full analysis found in Chapter 3 of the final supplemental EIS.

Alternative A—No Action

Under the no-action alternative, current management plans would continue to guide management of the project area. This is the baseline for comparing the other alternatives and is the alternative where proposed weed control actions would not occur on the national forest. This means the Forest would not have an integrated, Forest-wide approach to managing weeds. Previously approved, project-specific weed treatments such as goat grazing of yellow toadflax south of Tres Piedras and annual, ongoing manual control (hand pulling) would be implemented, along with those of other jurisdictions within the national forest boundaries, such as along Federal, state, and county roads. Weed inventories and prevention activities would continue.

Alternative A would not help maintain or improve diverse, sustainable, native plant communities in weed-infested areas. It would result in continued invasion and spread of weeds, particularly on and near currently infested areas.

Alternative C—No Herbicides

This alternative does not include herbicide use and was developed in response to public concerns raised about potential effects of herbicides on human health, fish, wildlife, and non-target native vegetation. Weed inventories and prevention activities would continue to occur.

The main reason I did not choose alternative C is that it would limit our options for dealing with weed populations in situations where herbicides could be safely and effectively used to better

control weed populations. Under alternative C, it is likely the rate of weed spread would exceed the rate of weed control, and we would not be able to get ahead of the weed problem (final supplemental EIS, pages 60-61).

Not using herbicides means that the invasive plant control efforts would not be as effective across the Forest. With a given amount of funding and human resources available to fight the problem, fewer invasive populations could be controlled. I would be more inclined to reduce the level of effectiveness in order to protect public health and safety if I had found clear and convincing evidence that herbicide use, as proposed with this project, was likely to cause harm. On review of both the Forest Service risk assessments and information provided by draft supplemental EIS commenters, I have not found this evidence.

Given a large enough workforce (paid or volunteer), some non-herbicidal methods can be effective in small areas for some invasive plant species. Taos has had some success after restricting the use of herbicides, but weed populations have grown as well. Experience with volunteers has shown us that this approach works better close to towns, in small areas, and on invasive plant species that lend themselves to hand pulling. The Forest has weed population locations, such as campgrounds, day-use areas, and other places readily accessible, where getting the large number of personnel to control invasive plants without herbicide use presents a realistic possibility. However, the Forest also has more remote locations, where the resources are simply not available to send regular patrols for repeated non-herbicidal treatment methods.

Alternative C would limit the Forest Service's ability to fully cooperate with other agencies and jurisdictions with an integrated approach for weed control. It would hamper our efforts to partner and share resources in our efforts to control invasive plants by not allowing us to effectively control the spread of weeds across boundaries where national forest system lands are adjacent to lands owned or managed by others.

Alternative C would eliminate the risks associated with herbicide use on the national forest, but it would increase other risks, such as those associated with smoke, because of the greater amount of burning included in this alternative. Other treatments, such as hand pulling or mowing, have small risks associated with them as well. These risks range from injury due to repetitive motion and back and knee pain, skin irritations, to physical injuries due to accidents with mechanical equipment (final supplemental EIS, pages 160–168). I do not believe that the risks of other methods are substantially different from those of herbicide use. Although these risks are considered minor, increasing their use simply shifts the risk without eliminating it.

The potential increases in sediment would be more with alternative C, but there would be no measurable, long-term consequences, and long-term soil productivity would be protected (final supplemental EIS, pages 42, 102, 112, and 121). So, even though this a consideration, it was not a big factor when I decided to not select it.

Alternative D—Herbicides Only

This alternative would exclusively rely on herbicides and was developed in response to the cost effectiveness issue associated with proposed non-herbicide treatments. Weed inventories and prevention activities would continue to occur.

By controlling the spread of weeds and protecting native plant communities, habitats, and watershed conditions on the Forest, alternative D would maintain or enhance social or economic conditions. However, because it is not an integrated approach it would limit options for treatment where herbicide use is not the best method for a given situation.

Although alternative D would be the most cost-effective alternative (final supplemental EIS, page 170), using only herbicides would trade cost savings with a level of effectiveness because it would give up those many instances where integrated management actions could be used. Studies show herbicides alone are not as effective as when they are combined with other methods (final supplemental EIS, page 60–61, 69).

One important example is the treatment of saltcedar. Saltcedar has been successfully treated with a combination of herbicides and mechanical treatments which proved more effective at controlling or eradicating saltcedar than using herbicides alone (final supplemental EIS, page 61).

As noted in the final supplemental EIS, the use of “herbicides only” would result in more repeated treatments where the herbicides had not achieved the desired level of control, and continuous use of herbicides alone can lead to other problems (final supplemental EIS, page 61). Although the cost of treatments in this alternative is the lowest of the three action alternatives, I do not believe that cost alone should be the determining factor in selection. Over time, this alternative would require closer monitoring and possibly more return visits than alternative B, the integrated approach.

Public Involvement

Collaboration and Scoping

In 1996 and 1997, the Forest Service met informally with other Federal, state, and county agencies to discuss the threat of weeds and coordinate treatments. In 1998, the Forest Service began scoping for this project, starting with public meetings held in Taos and Espanola. In March 2000, a letter was sent to approximately 450 individuals, agencies, Tribes, and organized groups to inform them about the Forest Service’s weed control treatment proposals. At that time, the Santa Fe National Forest and the Carson National Forest were independently working on separate environmental assessments for Forest-wide weed control projects. As a result of the March 2000 scoping, a decision was made to combine the efforts of the two national forests and document the analysis in an EIS. In December 2000, the Forest Service sent a new letter to the public about the proposed action. On December 15, 2000, the Forest Service published a notice of intent to prepare an EIS in the *Federal Register*.

The Forest Service first contacted Tribal governments about treating weeds in 1999. The Carson and Santa Fe National Forests included the Tribal governments in their March and December 2000 scoping efforts. In December 2003, the Forest Service sent another letter to all potentially affected Tribal governments to initiate consultation and solicit their comments about the proposed project.

Issues were identified from the comments received during scoping. The treatment that appeared to be of greatest concern to those who commented was the use of herbicides. Most opposition was based on concerns that herbicides could adversely impact human health, non-target plants, and wildlife. Concerns over the impact to water quality and fish were also mentioned. In response to these concerns, alternative C was developed to treat weeds with no herbicides.

On the other hand, others were concerned that non-herbicidal methods would be less effective and weeds would spread faster than they could be controlled due to the cost of treating weeds without herbicides. Alternative D was developed to address this issue, and it relies exclusively on herbicides and was developed in response to the cost effectiveness issue associated with proposed non-herbicide treatments.

Public Comment on the Draft Environmental Impact Statement

On July 16, 2004, the Forest Service published a notice of availability of the draft EIS in the *Federal Register*. The legal notices announcing the start of the 45-day comment period were published in the newspapers of record on July 22, 2004. The Forest Service received 106 letters on the draft EIS; of these, 7 were received after the end of the comment period, which was August 30, 2004.

The Forest Service's interdisciplinary team identified approximately 750 individual comments contained in the letters. As with scoping, the use of herbicides continued to be a main concern among members of the public. In response, the final EIS clarified and expanded its discussion of the risks associated with the use of herbicides (see appendix 3 of the final EIS and final supplemental EIS). Appendix 9 of the final EIS responds to comments received on the draft EIS.

Appeal of the Record of Decision

On September 12, 2005, the Carson and Santa Fe National Forest Supervisors signed a record of decision selecting alternative B. The Forests published a notice of availability of the final EIS and record of decision in the *Federal Register* on November 18, 2005. The legal notices announcing the start of the 45-day appeal period were published in the newspapers of record on November 23, 2005. Eight appeals of the record of decision were submitted. The Forest Service met with the appellants but was unable to resolve the issues stated. On February 23, 2006, the deputy regional forester remanded the decision for further analysis and documentation.

Draft Supplemental Environmental Impact Statement

The Forest Service prepared a draft supplemental EIS to address concerns identified by the deputy regional forester and to update the analysis where needed pursuant to 40 CFR 1502.9(c)(1). In accordance with the Council of Environmental Quality regulations at §1502.9(c)(4), the draft supplemental EIS was “prepare(d), circulate(d), and file(d) ... in the same fashion (exclusive of scoping) as a draft and final statement.” The project was not re-scoped, but the public had the opportunity to comment before this draft decision was made available.

In February 2012, the Forest Service sent postcards to 274 people and organizations anticipating the draft supplemental EIS would be published that spring, and asking them how they would like to be notified. Seventeen responses were received.

On March 21, 2014, the Forest Service published a notice of availability of the draft supplemental EIS in the *Federal Register*. The legal notices announcing the start of the 45-day comment period were published in the newspapers of record on March 24, 2014. The Forest Service received 33 letters on the draft supplemental EIS.

The Forest Service's interdisciplinary team identified approximately 75 distinct comments contained in the letters. The use of herbicides continued to be a main concern among members of the public. Appendix 10 of the final supplemental EIS responds to comments received on the draft supplemental EIS.

Findings Required by Other Laws and Regulations

Endangered Species Act

This decision is consistent with the Endangered Species Act of 1973. For the species that apply to the Carson National Forest (final supplemental EIS, page 79) the U.S. Fish and Wildlife

Service (USFWS) concurred that the project will have insignificant and discountable effects to the Mexican spotted owl and its designated critical habitat, southwestern willow flycatcher and its designated critical habitat, New Mexico meadow jumping mouse and its proposed critical habitat, and yellow-billed cuckoo (USFWS letter dated January 9, 2015). Treatment criteria and limitations, design criteria, and monitoring requirements provide protection for these species (appendix 1, pages 24-26; final supplemental EIS, pages 31–38, 41–42, 78–83).

Sensitive Species

Federal law and direction applicable to Forest Service sensitive species are included in the National Forest Management Act and Forest Service Manual (2670). The regional forester has developed the sensitive species list for plants and animals for which population viability is a concern (final supplemental EIS, pages 83–91). Based on the analyses and projected effects on all sensitive species listed as occurring or possibly occurring on the Forest, it has been demonstrated in the biological evaluations that there will be no trend toward Federal listing for any sensitive species (final supplemental EIS, pages 86–91).

National Historic Preservation Act

This decision adheres to the requirements laid out in “Appendix F–Standard Consultation Protocol for Noxious Weed Control” of the First Amended Programmatic Agreement Regarding Historic Property Protection and Responsibilities. This agreement is binding among the national forests in New Mexico, New Mexico State Historic Preservation Office, and the Advisory Council on Historic Preservation. It addresses applicable section 106 requirements of the National Historic Preservation Act.

Pursuant to the programmatic agreement, subsequent initiation of noxious weed control projects will be contingent upon completion of the identification and protection of historic properties, and compliance with applicable provisions of National Historic Preservation Act in accordance with appendix F (final supplemental EIS, pages 130–132). Cultural resource clearance for individual treatments will occur as individual weed treatment activities are proposed. Weed treatments include design features to protect cultural resources (appendix 1, pages 26–27). Adverse effects would primarily be mitigated by avoidance of significant sites (final EIS, page 150). If adverse effects cannot be avoided, additional consultation will be required to develop a mitigation plan (project file: 20140310_HeritageClearanceISA).

The National Forest Management Act of 1976 (PL 94-588)

The project complies with the management direction and standards and guidelines for all management areas described within the Forest Plan for the Carson National Forest, and a forest plan amendment is not needed (final supplemental EIS, page 171).

This decision is consistent with the goals and objectives of the Forest Plan for the Carson National Forest (final supplemental EIS, page 171; project file: document #699). The project will help maintain ecological diversity, long-term soil productivity (final supplemental EIS, page 119; final EIS, page 40), water quality (final supplemental EIS, pages 8, 42, 89, 112–115), habitat for rare plant and animal species (final supplemental EIS, pages 8–9, 40–42, 63–70, 78, 81–83, 86–91), visual quality (final supplemental EIS, pages 143–146), and high quality forage availability (final supplemental EIS pages 52-56 and 146-153) which are all threatened by continued weed infestation and spread (final supplemental EIS, pages 1–2, 13–14).

The desired condition of the Forest is to have minimal establishment or spread of weed infestations. It would be virtually impossible to eradicate all weeds within the Forest boundaries. However, to meet Forest Plan goals for resource protection, it is important to control the

establishment and spread of invasive weeds, particularly in special plant and wildlife habitats, riparian areas, wilderness areas and roads leading to them, livestock grazing allotments, recreation sites, and administrative sites.

National Environmental Policy Act (NEPA)

The NEPA requires Federal agencies to consider and disclose the effects of proposed actions that significantly affect the quality of the human environment. The Invasive Plant Control Project Final Supplemental EIS analyzes the alternatives and displays the effects in conformance with NEPA (40 CFR 1500 to 1508 and FSH 1909.15).

The Clean Water Act

The Clean Water Act of 1948, as amended, establishes as Federal policy the control of point and nonpoint pollution and assigns the states the primary responsibility for control of water pollution. Compliance with the Clean Water Act by national forests in New Mexico is achieved under state law. Alternative B will result in long-term protection of water quality (final supplemental EIS, pages 104–115). With the use of the site-specific design features, mitigation measures, and best management practices, this alternative meets the laws and associated regulations designed to protect water quality. Based on this analysis, I find that alternative B is consistent with the Clean Water Act.

The Clean Air Act

The basic framework for controlling air pollutants in the United States is the 1970 Clean Air Act as amended in 1990 and 1999 (42 USC 7401 et seq.). The primary concern with this project for air quality is with ground application of herbicides. Impacts will be distributed across the national forest and concentrations of air contaminants will not accumulate to the point of violating air quality standards for any area (final supplemental EIS, pages 123–130).

The Migratory Bird Treaty Act

Alternative B—with treatment criteria and limitations, design criteria, and monitoring requirements described in the final supplemental EIS—provides for adequate conservation measures for migratory birds. Overall impacts on land birds are expected to be minimal (final supplemental EIS, pages 92–96).

Executive Order 12898—Environmental Justice

Executive Order 12898 governs Federal actions to address environmental justice in minority and low-income populations. The provisions also apply to programs involving Native Americans. There would not be a disproportionately high or adverse effect on minority or low-income populations with this decision. The risks of exposure to the public would be negligible with the treatment criteria and limitations, design criteria, and monitoring requirements described in the final supplemental EIS. The minority and low-income populations, being tied to the land and tending to use the land for economic benefit and subsistence uses, could have a higher rate of exposure than the general population. However, an actual exposure to hazardous chemicals is highly unlikely because of the design features described (final supplemental EIS, pages 31-39, 153-156).

36 CFR Subpart A, Section 222.8

This regulation directs the Chief of the Forest Service to cooperate with county or other local weed control districts in analyzing noxious farm weed problems and developing control programs in areas which the national forests and grasslands are a part. Alternative B complies with this

direction and would allow the Forest to more fully cooperate with other agencies and jurisdictions with an integrated approach for weed control. It includes an implementation plan that will be coordinated with other agencies as discussed in this record of decision. The Forest met with other county, state, and other Federal land management agencies to discuss the threat of noxious weeds and coordinate treatments (record of decision, page 9). Coordination with other agencies is included as part of the design features (appendix 1, design features 13, and 16).

Federal Noxious Weed Act of 1974 (Section 9)

Alternative B complies with this authorization for the Secretary of Agriculture to cooperate with other Federal and state agencies or political subdivisions thereof, and individuals in carrying out measures to eradicate, suppress, control, or prevent the spread of noxious weeds. See previous discussion of 36 CFR subpart A, section 222.8.

Plant Protection Act of 2000, PL 106-224, Farm Bill, and PL 101-624

These acts and laws direct the Forest Service to develop and coordinate management programs for controlling undesirable plants. Alternative B complies with this direction. See previous discussion of 36 CFR subpart A, section 222.8.

USDA Policy 9500-10

Under this directive the Agency is to integrate noxious weed management into all programs and activities and to develop, demonstrate, and apply the essential science, technology, and stewardship to effectively manage and prevent the spread of these plants. Alternative B complies with this direction. It is an integrated set of management actions, and weed prevention and education efforts will continue (refer back to page 3).

In addition, alternative B also complies with and compliments the following:

Forest Service Manual 2900 – Invasive Species Management (December 5, 2011):

Specifies management activities for invasive species will be based upon an integrated pest management approach. It prioritizes prevention, early detection and rapid response, control and management, restoration, and organizational collaboration as needed. Alternative B provides an integrated approach for invasive plant control, and the direct and indirect effects to native vegetation from controlling or eradicating weeds would be an increase in the amount, vigor, and diversity of native plants (final supplemental EIS, page 61). Because of the diversity of treatment methods available, weeds are the most likely to be successfully controlled under alternative B, thus restoring the most native vegetation and promoting biological diversity (final supplemental EIS, page 66).

Executive Order 13112 (February 3, 1999): As pertains to this project, it directs Federal agencies to: ... (2)(b) detect and control [invasive] species; (c) monitor population of such species; and (d) provide for restoration of native species. Alternative B includes monitoring, control, and restoration.

USDA Forest Service National Strategy and Implementation Plan for Invasive Species Management (USDA Forest Service, October 2004): Provides overall strategic direction for addressing invasive species. It contains four elements: prevention, early detection and rapid response, control and management, and rehabilitation and restoration. With alternative B prevention and education efforts would continue. Alternative B includes detection (monitoring) and control which would restore native vegetation (final supplemental EIS, page 67).

Noxious Weed Management Act (1978): The State of New Mexico enacted this legislation to recognize the adverse economic and environmental impacts of weeds and the need for action to reduce this threat. Approval of alternative B supports the intent of the Noxious Weed Management Act because it would allow a more extensive, integrated weed control effort on the Carson National Forest.

Forest Service Manual 2150–Pesticide-Use Management and Coordination (USDA Forest Service 2013b): Provides requirements for use of pesticides (including herbicides). Treatment criteria and limitations and design features would ensure requirements are followed (final supplemental EIS pages 31-38; appendix 1, pages 22-27).

Implementation

If no objection is filed, implementation may begin on, but no sooner than the fifth business day following the end of the 45-day objection filing period (36 CFR 218.12). If an objection is filed, implementation may begin immediately following the date of the final decision.

Administrative Review or Objection Opportunities

This decision is subject to objection pursuant to 36 CFR part 218, subparts A and B. The objection must be filed by way of regular mail, fax, e-mail, hand-delivery, or express delivery with the Objection Reviewing Officer: Regional Forester, Southwest Region, USDA Forest Service, 333 Broadway Blvd., SE, Albuquerque, New Mexico 87102. The fax number is (505) 842-3173.

The office business hours for those submitting hand-delivered objections are: 8:00 a.m. to 4:30 p.m., Monday through Friday, excluding Federal holidays. Electronic objections must be submitted in a format that can be read with optical character recognition software such as an e-mail message, plain text (.txt), rich text format (.rtf), portable document file (.pdf), or Word (.doc) to objections-southwestern-regional-office@fs.fed.us with Subject: **Carson NF Draft ROD for the Invasive Plant Control Project**. In cases where no identifiable name is attached to an electronic message, a verification of identity will be required. A scanned signature is one way to provide verification.

Objections, including attachments, must be filed within 45 days from the publication date of this notice in *The Taos News*, the newspaper of record. Attachments received after the 45-day objection period will not be considered. The publication date in the newspaper of record is the exclusive means for calculating the time to file an objection. Those wishing to object this project should not rely upon dates or timeframe information provided by any other source.

Individuals or organizations who submitted comments during the comment period specified at 215.6 may file an objection to this project. The notice of objection must meet the content requirements at 36 CFR 218.8.

Responsible Official and Contact Person

I am the responsible official for this decision. For additional information concerning this decision or the Forest Service objection process, contact Kathryn Furr, Environmental Coordinator, Carson National Forest, 208 Cruz Alta Road, Taos, New Mexico 87571, (575) 758-6255.

---- DRAFT ----

JAMES D. DURAN
Forest Supervisor
Carson National Forest

---- DRAFT ----

Date

Appendix 1. Selected Alternative

Introduction

The selected alternative allows the application of one or more methods to eradicate, control, or contain weeds as they occur on the Forest. A common element of all treatments is to destroy the plant, disrupt growth, or interfere with the reproduction cycle. Treatments will occur during the weed's growing season—spring, summer, or fall—depending on the weed species and treatment method. Based on expected funding, the Forest anticipates treating 300 to 800 acres annually, with an annual maximum of 1,500 acres, over the next 10 years.

An adaptive management strategy will be used to apply treatments to newly discovered weed populations or to modify treatment prescriptions based on results of monitoring. Treatment methods will need to be within the scope of the treatments and effects described in the final supplemental EIS to be implemented under the adaptive management strategy. The strategy, including criteria and parameters that must be met to treat new weed sites or alter treatment prescriptions, is described later in this appendix.

This alternative applies a variety of methods including manual, mechanical, biological, cultural, prescribed fire, grazing, and herbicides, determined to be the most feasible and appropriate methods for meeting treatment objectives, primarily based on the particular weed species and population size, along with considerations about specific locations and public concerns. Selection of the most feasible and appropriate treatment also depends on the specific objective (eradication, control, or containment), risk of weed expansion, weed species biology, time of year, and environmental setting. By allowing several methods for weed control, this approach recognizes that using only one management method is unlikely to be effective in all situations.

The known weed populations have a footprint of about 2,850 acres. This is a snapshot in time and does not necessarily encompass the full extent of acreage proposed to be treated. The selected alternative will treat existing weeds and new populations as they are discovered. Any new populations to be treated must be on New Mexico Department of Agriculture's weed list and must follow the adaptive management strategy described in chapter 2 of the final supplemental EIS. Figure S-2 (page 19 of the final supplemental EIS) shows the locations of known weed populations. Final supplemental EIS appendix 7 shows how each species will be treated.

Proposed Treatment Methods

Herbicides

Chemicals used to control plants are known as herbicides. Herbicides kill the existing plant but often allow remaining seeds to germinate. Herbicides are known through experience with similar Forest Service efforts to be the most effective treatment method for eradicating or controlling weed species that currently exist on the Forest, especially when used in conjunction with an integrated treatment effort that improves the effectiveness of nonchemical treatments, either concurrently or as follow-up treatments. Herbicides are proposed for weed sites where non-herbicide methods are not feasible or appropriate, due to ineffectiveness of other treatments, species characteristics, population size, treatment priority and objective, or access or terrain limitations of other methods.

Thirteen herbicides are proposed for use: 2,4-D, aminopyralid, clopyralid, chlorsulfuron, dicamba, glyphosate, hexazinone, imazapyr, metsulfuron methyl, sulfometuron methyl, picloram, and triclopyr. The herbicide aminopyralid was added as a proposed herbicide in the draft supplemental EIS; the others were proposed and analyzed in the final EIS. Appendix 3 (final EIS, pages 223–285 and final supplemental EIS pages 185–192) contains detailed information about each herbicide. Treatments using the herbicides are tailored to specific species and site conditions. Mixture of herbicides can be used where they provide more effective control, particularly for weeds that may have developed resistance to a particular chemical, but this is expected to be a rare case, given the weed species present and size of populations.

No aerial application of herbicides will be used for this project. Herbicides will be applied using ground-based methods such as: hand applications using a glove, rag, or wick to wipe the chemical onto the weed while preventing it from getting on non-target vegetation or other resources; or spray using a backpack containing the herbicide attached to a flexible sprayer, wand, or other hand application device that directs the chemical onto the target weed. Vehicles may be used with a mounted herbicide tank and boom or wand spray device to direct the spray, provided that the conditions described in the mitigation measures can be met for each respective herbicide used. Booms or wands may be articulated or fixed. All these methods have turnoff capabilities in or near the operator's hand. Herbicides (such as hexazinone) may also be applied in granular or pellet form.

Where objectives for a given population are eradication and the target weed species has developed a large seedbed, herbicide applications usually require follow-up treatment, either as additional herbicide applications or using another method. Because the herbicides proposed for use do not persist in the soil at effective levels for more than a few months (at the maximum), in many invasive plant populations with seedbeds established, follow-up treatments are needed to eliminate new sprouts that were seeds during the initial treatment.

Biological Methods

Biological control methods include release of insects or plant pathogens that are proven natural control agents of specific weed species. The insect or plant pathogen will attack, weaken, and kill a targeted weed species and reduce its competitive or reproductive capacity. Biological controls will be used for reducing population densities and rates of spread (when the objective is containment), because they are not effective for eradicating or substantially controlling weeds. This treatment is most effective on dense infestations of a weed species covering large areas.

Host-specific insects are proposed for use on some of the larger populations of riparian weeds like saltcedar, along with spotted knapweed (insects such as seed gall fly, root or seed head moth, flower or root boring weevil), and leafy spurge (e.g., flea beetles). In general, biological agents require an infestation large enough (more than 20 acres) to allow for the establishment of the controls to occur. Weed infestations on adjacent lands combined with populations on national forest system lands may comprise large enough populations to increase the effectiveness of this treatment.

Manual Methods

Manual control methods involve hand pulling, digging with hand tools like shovels or hoes, or using hand-operated power tools. It may also involve clipping or cutting off the tops of plants. If enough root mass is removed, the plant may be destroyed. Cutting plants reduces reproduction of plants by seeds. Cutting also depletes the carbohydrate reserves in roots, thereby weakening a plant's competitive advantage on a site. This method will be most often applied to small

populations (less than an acre) of herbaceous weeds that spread primarily by seeds rather than through root sprouts.

Controlled Grazing

Grazing with goats or sheep has been shown to suppress weeds in some prolonged applications. Goats have a digestive system that can handle most vegetation including weeds. Goats have been used on a limited basis in efforts to control weeds, using hay, water, or minerals to attract them to the weed patch. Other grazing methods include herding and fencing to confine the goats/sheep within a specific area. For example, sheep can be induced to eat leafy spurge which is toxic to cattle but not to sheep or goats. Sheep are known to suppress leafy spurge populations, but usually do not eradicate this weed.

This method may be used to reduce the vigor of some weeds where numerous, repeat treatments can be applied at the appropriate times. The availability of herds managed for this type of control may be limiting. This method is primarily proposed as a minor, incidental treatment method, and will be evaluated for effectiveness. Where appropriate, grazing will be integrated with other treatment methods to achieve more effective weed control.

This weed control method will be conducted in accordance with Forest Service grazing regulations and regional policy. A site-specific project operation plan will be developed for the treatment area that will consider factors such as target weed species, type of livestock to be used, forage preference, planned grazing intensity, herding characteristics, topography, water availability, season of use, and a monitoring program. Forest Service regulations, policies, and the appropriate mitigation measures will be followed.

Mechanical

Mechanical control methods include actions such as mowing, girdling, or root tilling. Mowing cuts plants off above ground. Root tilling digs into the soil to unearth roots. Girdling is a method that may be used for invasive trees, such as Siberian elm. Mowing and root tilling employ large mechanized equipment such as tractors with specially designed attachments. These methods have not been demonstrated to be effective in eradicating or substantially reducing weed infestations, and typically require frequent repeat treatments. They do reduce plant and root vigor. Feasibility for these two methods is also quite limited on the Forest due to steep slopes and other terrain features such as trees, boulders, or logs. Thus, this method is proposed for minor, incidental use, mainly along highways in conjunction with ongoing road maintenance actions. Most mechanical treatment is proposed in combination with other methods.

Prescribed Burning

Burning is similar to plowing or cutting the tops of weeds. It removes the seed heads and for some plants can reduce the seedbank in the soil. Broadcast burning weeds on the soil surface may be employed if there are sufficient fuels to carry a fire, or propone torches may be used on weeds where a surface fire will not carry through the weed population. Generally burning is not highly effective when used alone to eradicate or control most weed populations, so it will typically be used in combination with other methods.

Cultural Methods

Cultural methods are actions such as planting or seeding with desirable native plants immediately following a weed control treatment or other methods that allow desirable plants to out-compete the weed species. These methods are not proposed to be used alone to eradicate or control weed populations and will be used where needed on treated sites as a follow-up method to favor native

species and minimize subsequent weed infestation. This method will also be used where necessary to minimize soil erosion or stream sedimentation where needed following removal of weed species and exposure of bare soil.

Adaptive Strategy

The selected alternative will employ an adaptive strategy needed for the success of weed control projects and is consistent with Forest Service policy (USDA Forest Service 2001b). As part of this adaptive strategy, weed treatments must be monitored, evaluated and modified as necessary to improve effectiveness of future treatments while reducing the potential for adverse effects to people and natural resources. This strategy allows for adopting findings from research studies on different practices or impacts, or changes in land or resource conditions. This strategy is key to finding and treating infestations that are not currently identified.

The adaptive strategy provides for flexibility to use the appropriate treatment method, based on the results of monitoring and evaluation. The adaptive strategy allows any of the integrated weed control methods to be used on a given site. The adaptive strategy will cover weeds found in additional locations as well as new species found on the Forest. The Forest proposes an adaptive strategy with the following actions:

- Annually inventory portions of the Forest that are likely to have new infestations (e.g., areas burned by wildfires) and map any new weed infestations. Budget will govern the extent of these inventories.
- Identify the weed treatment objective, priority, and methods to use for newly mapped infestations based on the specific criteria described later in this section.
- Monitor the effectiveness and effects of weed treatment activities and associated mitigation measures.
- Evaluate and disclose monitoring results, and use those results to determine appropriate modifications in treatment prescriptions, mitigation measures, or implementation practices.
- New information (as described in Table A-1) would be evaluated in accordance with Forest Service Handbook 1909.15, chapter 10, section 18, to determine if additional environmental analysis under the National Environmental Policy Act is required.
- Implement modifications or other feasible and appropriate treatment methods based on monitoring results, as long as the new or modified action and its effects are considered by an interdisciplinary team and determined by the responsible official to be within the scope of actions and effects evaluated in this final supplemental EIS (and in accordance with Forest Service Handbook FSH 1909.15 §18).

Treatment Objectives, Priorities, and Decision Criteria

Treatment objectives for a given weed species fall into one of the following three categories:

- Eradication (elimination)
- Control (reducing the population over time)
- Containment (preventing the population from spreading)

Eradicating or controlling every weed infestation at the same time is beyond the budget and personnel resources of the Forest. Eradication will be the objective applied to first priority species or situations, followed by control for second priority situations, and containment for third priority. Therefore, a system for setting priorities is proposed so that treatment concentrates on species that

have the greatest impact on the resource base, and those that become more difficult to control if action is delayed. Most weeds become much more difficult to control once they have spread.

Thus, the highest priority is to eradicate new species occurrences on the Forest, and then to keep existing populations from spreading or increasing in size.

Weed species of limited extent are eradicated or controlled. Because the size threshold varies by weed species, this determination will need to be made based on site-specific conditions.

Extremely widespread and common weeds are much more difficult to control, and so they are generally scheduled to “contain” as a priority 3 species.

Treatment objectives and priorities are interconnected, and will be based on the following criteria, which is consistent with New Mexico’s weed control laws and procedures.

Priority 1—Eradicate New Populations of High-threat Species

This priority immediately eradicates new populations of species that pose a high threat to resources. Eliminating these populations while they are small creates the best opportunity to avoid impacts from these species. Eradication includes all viable seeds and vegetative propagules. High-threat species are those that can rapidly expand into native habitats and displace native vegetation throughout the forests in a relatively short period of time. Eradicate all infestations of class A weeds, which are those species exotic to New Mexico, but threatening to invade the State. Examples include black henbane, leafy spurge, and toadflax. They have limited distribution on the Forests (e.g., yellow toadflax); but if they become widespread; they pose a threat to agriculture crops; rangelands; plants listed as endangered, threatened or sensitive; and other resources in the State.

Priority 2—Control Existing Populations of High-threat Species

This priority gradually reduces existing populations of high-threat species. Control is accomplished by preventing seed production throughout the target area, decreasing the area coverage of the weed over time, and preventing the weed from dominating the area’s vegetation. This priority strives to achieve low levels of the weed populations if eradication is not feasible. For class B weeds, this priority will decrease the population size and eventually eliminate this class of weeds, which are exotic (NMDA 1999) and of limited distribution in the Forests, but are common in other parts of the State, and so likely to appear. As a general rule, the objective will be to substantially reduce class B weed infestations. For populations of 5 to 25 acres in size this means reducing the size by about 75 to 100 percent. For class B weed infestations greater than 25 acres in size, this means reducing the size by 50 percent. Examples of class B weeds include bull thistle and musk thistle.

Priority 3—Contain Existing Populations of High-threat Species

This priority holds existing populations of aggressive weeds in check, so that they do not increase from their current size. Containing populations is accomplished by preventing weeds from expanding beyond the perimeter of the infestation, perhaps providing only limited treatment within the infestation, and treating to eradicate or control the weed outside the perimeter of the infestation. This priority will contain the spread of class B weeds that are of limited distribution on the Forests (e.g., poison hemlock). For class C weeds, which are widespread throughout the State and Forests, contain them to their present population size, or for populations greater than 5 acres in size, strive to reduce by 50 percent. Examples include saltcedar, Russian olive, and Siberian elm.

Priority 4—Eradicate New Populations of Moderate-threat Species

This priority eradicates new populations of less aggressive weeds. This priority immediately treats these new populations to eradicate them early, although they are not as high a priority as priority 1 weeds. These populations expand into native habitats more slowly and/or are less successful than priority 1 weeds in displacing native plants.

Priority 5—Control Existing Populations of Moderate-threat Species

This priority gradually reduces existing populations of less aggressive weeds.

Priority 6—Contain Existing Populations of Moderate-threat Species

This priority holds in place existing populations of less aggressive weeds.

Additional Criteria for Prioritizing and Determining Objectives and Methods

In addition, weed infestations found in the following locations will likely be given an elevated priority ranking:

- Areas that are now relatively weed free and have little or no road access, such as areas designated as wilderness, roadless recreation or semi-primitive, non-motorized, including the road corridors and trails that lead to those areas;
- Areas that are now relatively weed free that provide unique and desirable wildlife habitat, such as recovery habitat for threatened or endangered species, deer and elk winter range; and riparian habitat;
- Areas on the Forest with weed populations adjacent to other land ownerships where land managers have active weed control programs; and
- Areas of high human use, including but not limited to administrative sites, developed recreation sites such as campgrounds, scenic viewpoints, interpretive sites, and trailheads.

Schedules for implementing weed treatments will be based first on the priorities just described, and spread out over time based on levels of funding and staffing on the Forest.

Selection of treatment method is based to a large extent on the priority of the weed species and associated objective, along with site-specific factors such as proximity to water or roads (which increases chance of spread), and the size of the weed infestation (small sizes are easier to eradicate).

For example, a priority 1 weed species (spotted knapweed) is found in a site that suggests eradication is the objective (it lays along a major highway). The size of the infestation is more than can be hand pulled (more than 2 acres). Therefore, herbicides will be used because that is the only method known to be highly effective and economically feasible for this weed population.

In addition to using treatment objectives, priority rankings, and infestation size, additional criteria that will be used in selecting the most appropriate treatment method under the adaptive strategy is shown in Table A-1.

Table A-1. Additional Treatment Criteria and Limitations

Weed Site Conditions	Treatment Method Limitations
Area of high human use such as a recreation site, administrative site, or area where people often collect plants	Method(s) must have been documented to have a low risk of causing harm to people. Examples include non-herbicide methods with lowest risk (for example, those that avoid burning) or herbicide formulations and application methods having the lowest risk of harmful effects to humans (for example, aminopyralid, glyphosate, imazapyr, imazapic, metsulfuron methyl, clopyralid products would be available for use per risk assessment results found in final supplemental EIS, appendix 3). Also adhere to other design features that apply to protection of human health and safety (for example, notification). Use of herbicides shall occur during weekdays only.
Area where there is a shallow water table (no more than 6-feet deep) and soil with a high permeability rate, where there may be a risk of an herbicide leaching through the soil to the groundwater	Non-herbicide method(s) appropriate for the site conditions (manual pulling or mowing) or an herbicide appropriately labeled for use in these locations (for example, short-lived, non-leachable herbicides such as glyphosate, imazapic, imazapyr, metsulfuron methyl, clopyralid, chlorsulfuron) that have been registered by the Environmental Protection Agency for use on permeable soils with shallow water tables. Herbicides that use picloram as their active ingredient (for example, Tordon 22K) would not be used in these situations per risk assessment results. Also adhere to design features to protect soil and groundwater resources.
In riparian areas, including outstanding national resource waters, or areas next to live water bodies containing aquatic species	Method(s) determined and documented to have low risk to fish or other aquatic species. Examples include a non-herbicide method (for example, mowing) that avoids erosion/sediment production or herbicides registered by the Environmental Protection Agency for aquatic habitats; for example, chlorsulfuron, glyphosate formulations such as Rodeo (which does not use the surfactant polyethoxylated tallowamine), imazapic, and imazapyr. Also adhere to design features to protect to riparian, water, and aquatic resources.
Threatened, endangered, or sensitive plant species are present	Method(s) determined and documented to have low risk to native plant species, such as non-herbicide methods (hand pulling) with appropriate disturbance controls. Herbicide applications include spot treatment (by hand or backpack spray) that avoid vehicle boom spray application of herbicides such as imazapyr, imazapic, clopyralid, chlorsulfuron, because they have high potential to affect non-target plants up to several hundred feet away. Herbicides, if used from boom spray, could be used if risk ratings are similar to 2,4-D, which has low risk of impact beyond 25 feet of drift. Adhere to design features to protect threatened, endangered, or sensitive plant species, including limitations on herbicide spraying from vehicles.
Occupied threatened, endangered, or sensitive wildlife species habitat	Method(s) used must have been determined to have low risk to wildlife species. These methods include non-herbicide methods at the proper timing (for example, burning outside seasonal restrictions). Herbicide applications must be shown to be below the level of concern through specific risk assessment for the herbicide used when applied in these habitats (see final supplemental EIS, appendix 3). No direct application of herbicides to water would be permitted under the adaptive strategy even where formulations are registered for such use (for example, AquaKleen formulation of 2,4-D). This restriction is imposed because of possible effects of direct application to Rio Grande cutthroat trout. Also adhere to other design features to protect threatened, endangered, or sensitive wildlife species.
Wilderness and designated nonmotorized areas	Motorized vehicles and mechanized equipment are prohibited in all wilderness areas. In the Pecos Wilderness, sheep or goat grazing for weed control would continue to be prohibited by an existing closure order. In other locations of Rocky Mountain bighorn sheep habitat, managed grazing for weed control would also be prohibited. See design features in the following section.

Design Features and Monitoring Requirements

Table A-2. Design Features and Monitoring Requirements

Row No.	Description of Design Feature and Monitoring Requirement
Human Health and Safety	
1	Herbicide formulations (specific products including mixtures) will not be used unless they have been registered for use by the Environmental Protection Agency and all Environmental Protection Agency label requirements (including limitations) are strictly followed. Only herbicides with a completed risk assessment per Forest Service standards would be used.
2	In areas of human habitation or high use such as a recreation site, administrative site, or area where people often collect plants, the treatment method must have low risk of harmful effects to humans. Examples include nonherbicide methods (manual/mechanical/grazing) or herbicides rated as having the lowest risk of harmful effects to humans (see final supplemental EIS, appendix 3).
3	Herbicide application will strictly adhere to Environmental Protection Agency label instructions regarding temperature, humidity, wind speed and other weather variables, to avoid spray drift to nontarget plants or other resources while increasing treatment effectiveness.
4	Herbicide use will be restricted to Environmental Protection Agency-registered application rates (usually in terms of pound per acre of active ingredient applied) and conditions listed on the label. Follow-up application of a second herbicide to an area should be conducted only after reviewing best available information on compatibility with the previous application's formulation.
5	Herbicides may only be applied by a trained applicator under supervision of a licensed applicator, in accordance with Forest Service directives.
6	Herbicide use will comply with the direction contained in Chapter 2150 of Forest Service Manual 2100 - Environmental Management (USDA Forest Service 2013b), including the requirement that a pesticide use proposal (form FS-2100-2) be completed for all proposed pesticide (that is, herbicide) uses on national forest system lands.
7	Herbicide applicators will have the chemical spill plan and emergency cleanup kit onsite during treatments. The spill plan identifies methods to avoid accidental spills as well as how to report and clean up spills. The kit will contain appropriate spill cleanup supplies (see appendix 6). ¹
8	Workers handling herbicides will be required to wear protective clothing, including a long-sleeved shirt and long pants to reduce worker exposure. For herbicides containing hexazinone, respiratory protection is also required per label direction. Clothes should be cleaned daily. Workers will also wear waterproofed boots, gloves, and other safety clothing and equipment listed on the herbicide label. Workers mixing or loading herbicides will be required to wear eye protection (goggles or eye shields) and Tyvek suits or herbicide-resistant aprons.
9	A pesticide application record (PAR) will be completed on a daily basis for each project area detailing the herbicide application, treatment area, target species distribution and density, weather conditions, and recommendations for followup treatments or rehabilitation.
10	The Forest Service will provide public information about weed treatments using herbicides, including herbicide to be used, locations, application schedules, and so forth. This information will be posted on the Carson National Forest websites and mailed to those who request it.
11	To further notify forest visitors and users, signs regarding herbicide use will be placed at access points to treatment areas prior to herbicide application. Signs will include the herbicide to be used, effective dates, and phone number for obtaining more information.
12	Traffic control and signing during weed treatment operations will be used as necessary to ensure safety of workers and the public. Recreation sites, roads, trails, or other areas scheduled for treatment may be temporarily closed during weed treatment activities to ensure public safety.

¹ A comment on the draft environmental impact statement submitted in 2004 by the New Mexico Environment Department states that in the event of spills, the Ground Water Quality Bureau Chief must be notified. This requirement is listed in appendix 6 on page 295 under "Major Spills".

Row No.	Description of Design Feature and Monitoring Requirement
13	Weed treatments will be coordinated with potentially affected adjacent landowners and range allotment permittees. Cooperative efforts on adjacent lands and range allotments would increase treatment effectiveness and the ability to meet weed control objectives.
14	In highly used, developed recreation areas, use of herbicides would occur during weekdays only.
Native Vegetation and Treatment Effectiveness	
15	Prescribed burning, digging, pulling, and tilling weeds, and other ground-disturbing activities will be designed to avoid or minimize impacts to native plants of cultural and traditional concerns. Prior to implementation, a Forest Service biologist or other qualified person will locate these plants to the extent possible.
16	Range allotment permittees will be contacted about upcoming treatments (methods, locations, schedules, and so forth) that may affect their grazing operations. Annual operating instructions may be adjusted as needed. Early coordination will minimize the impact of adjusting grazing operations during and after treatments, the extent and duration of which will be determined by site-specific conditions and weed treatment objectives.
17	Weed treatments will only be applied where weeds actually exist, not on areas with a potential for weed infestations.
18	Vehicles used for weed treatments will be properly cleaned prior to entering national forest system lands and again before leaving the treated area to avoid further spread of weeds.
19	Where treatments result in exposing bare mineral soil, those sites will be evaluated to determine the need for revegetation (seeding, planting), mulching, or other erosion or sediment control measures. The evaluation would consider the potential for subsequent reinvasion by weed species, potential for erosion, water runoff, and stream sedimentation. Where seeding is used, certified weed-free seed will be required. Seed mixes will be based on site-specific conditions and objectives. Treatment combined with reseeding has been shown to be effective at controlling weeds (Endress et al. 2012).
20	Herbicides will not be applied if snow or ice covers the target weed plants to avoid runoff into soil and onto nontarget vegetation.
21	After treatment, livestock grazing will be deferred where needed to achieve weed treatment objectives, based on site-specific conditions. This will be accomplished by working with permittees and adjusting their annual operating instructions as necessary.
22	Biological agents will not be released until screened for host plant specificity and approved by the U.S. Department of Agriculture Animal Plant Health Inspection Service and the New Mexico Department of Agriculture.
23	All weeds that are mechanically or hand excavated after flower bud stage will be double bagged and properly disposed of at an approved facility (for example, a covered landfill).
24	Use of prescribed fire must adhere to restrictions contained in the Forest Plan and Forest Service directives, such as those for using fire within wilderness (Forest Service Manuals 2324.2 and 2324.04(b)), requirements for detailed burn prescriptions, and other requirements intended to avoid unexpected consequences.
Threatened, Endangered and Sensitive Plants	
25	Applies to implementation on the Santa Fe National Forest only. Intentionally left blank.
26	Ground-disturbing activities, such as tilling, pulling, and digging up weeds, will be designed to avoid trampling or other direct impacts to threatened, endangered, and sensitive plants.
27	Applies to implementation on the Santa Fe National Forest only. Intentionally left blank.
28	Prior to implementing any managed grazing, spray application of herbicides, mechanical (for example, mowing), or prescribed fire treatments within sensitive plant species habitats, a Forest Service biologist or other qualified person will visibly mark a 50-foot buffer around groups or isolated individuals of the subject plants.
29	Within, and for 25 feet around, sensitive plants occupied habitats, only hand treatments will be permitted (for example, wick or rag to apply herbicides; shovel to dig up weeds); no spray herbicide application will be permitted.

Row No.	Description of Design Feature and Monitoring Requirement
30	A Forest Service biologist or other qualified person will be present during any ground-disturbing activity within sensitive plant species occupied habitats.
31	Where sensitive plant roots may be intermingled with weed roots, a Forest Service biologist or other qualified person will determine how to safely remove the weed(s).
32	Herbicide use proposals within any threatened, endangered, or sensitive plant species potential habitat will require a survey of that habitat, if possible. If no survey is conducted, the potential habitat will be treated as if occupied by the threatened, endangered, or sensitive plant and all applicable occupied habitat design features will apply.
Wildlife, including Threatened, Endangered and Sensitive Species	
33	For treatment areas exceeding 1 acre within threatened, endangered, or sensitive species wildlife habitat, surveys for the species will be conducted prior to implementation. If surveys are not conducted prior to implementation, that area will be treated as if occupied. Within occupied threatened, endangered, or sensitive species habitats, loud, persistent noise disturbances or modifications of breeding habitat features will be avoided. If a potentially adverse effect cannot be avoided, a supplemental biological assessment will be prepared and consultation with U.S. Fish and Wildlife Service will be initiated to determine the appropriate design features.
34	For occupied Mexican spotted owl and southwestern willow flycatcher habitat, applicable breeding season restrictions will be implemented as specified in forest plans and U.S. Fish and Wildlife Service recovery plans for those species.
35	In areas that have suitable habitat for wintering bald eagles and where weed treatments are proposed during that period (winter months through March), a presence/absence survey must be completed within a 0.5-mile radius of the work site before any work can begin and following any breaks of more than 10 days. If an eagle is present within the 0.5-mile radius, work will stop until the bird leaves of its own volition or if, in consultation with the U.S. Fish and Wildlife Service, a Forest Service biologist determines that the potential for harassment is minimal. If bald eagles nest on national forest system land within 0.5-mile of areas planned for treatment, the U.S. Fish and Wildlife Service will be contacted to determine what additional consultation may be needed.
36	Survey to protocol must be completed for all treatment units within southwestern willow flycatcher occupied habitat before treatment can begin, if the timing of treatment coincides with dates birds are likely to be present in the area. If the flycatcher is found, no treatments can occur; if the flycatcher is not found, treatment can proceed.
37	No prescribed burns will be done within Mexican spotted owl protected activity centers. Treatments will be done by hand pulling, grubbing, or herbicide application during part of the breeding season (early June to mid-July) to be effective. Treatments will be short-duration, low-disturbance activities that would occur once or twice in a season (depending on size of the treatment area). A biologist can accompany applicators to monitor any owl activity that might occur. A year after treatment, monitoring would be done for any reoccurrence of the weed.
38	In areas proposed for treatment occupied by Forest Service sensitive wildlife species, and where individuals in the population may be impacted, a Forest Service biologist will prescribe design features to avoid or minimize the impacts to individuals, while continuing to maintain population viability and avoid a trend toward Federal listing.
39	Only herbicides documented to have a low risk to wildlife and domestic animals (for both ingredients and application rates) will be used.
40	No controlled grazing with sheep or goats will be permitted in areas occupied or frequented by bighorn sheep (high country/wilderness).
42	No herbicide or soil-disturbing treatments, including controlled grazing, will occur within 50 feet of Rio Grande cutthroat trout occupied streams between June 1 and June 30 (spawning season).
Air, Soil, Water, Riparian, Fish, and Other Aquatic Resources	
43	All prescribed burning must comply with the New Mexico smoke management requirements (permitting, monitoring, and so forth) to maintain levels of these emissions within State and Federal air quality standards.

Row No.	Description of Design Feature and Monitoring Requirement
44	Heavy mechanized equipment such as tractors with tillers or mowers will not be used on slopes over 40 percent, to minimize erosion potential.
45	Heavy equipment will not be used to mechanically dig up weeds within riparian zones unless a Forest Service soil, water, or fisheries specialist examines the site-specific conditions and determines there would be no adverse impacts to water quality, stream morphology, or aquatic resources.
46	Herbicides used within 25 feet of a waterbody, or within riparian or other areas with a shallow water table, will be restricted to hand application of a short-lived, nonleachable herbicide that has been registered by the Environmental Protection Agency for use on permeable soils, near water, or in areas having shallow water tables (for example, 2,4-D, glyphosate, triclopyr). Herbicides with picloram as their active ingredient (for example, Tordon 22K) will not be used in these locations. A Forest Service soil, water, or fisheries specialist, or other qualified person will verify and map, and if necessary, visibly mark these areas.
47	Herbicide application within a riparian area or 50 feet from a waterbody is limited to hand application onto individual weed plants (using backpack spray wand or glove, wick, or rag). Backpack spray application upwind of surface water or when precipitation is likely will be avoided. If necessary, a Forest Service soil, water, or fisheries specialist, or other qualified person will visibly mark these areas prior to implementation.
48	Mixing, pouring, loading, or transferring herbicides (even small amounts) will not occur within 200 feet of open water and will comply with the approved chemical handling, and spill prevention and containment plan (see final supplemental EIS, appendix 6). In the event of a spill of sufficient quantity that would reasonably injure or be detrimental to human health, animal or plant life, or property, the Forest Service will contact the New Mexico Environment Department Ground Water Quality Bureau chief and Surface Water Quality Bureau Chief.
49	In riparian areas or next to live waterbodies containing fish, methods used must have been documented to have low risk to aquatic species.
50	Prescribed burning in riparian areas will be incidental to the primary activity (for example, pile burning slash from mechanical treatment of woody invasive species). No broadcast burning will be permitted in riparian areas solely for the purpose of treating weeds.
Heritage Resources	
51	Adhere to "Appendix F—Standard Consultation Protocol for Noxious Weed Control" of the First Amended Programmatic Agreement Regarding Historic Property Protection and Responsibilities, including conducting pre-implementation heritage inventories and evaluations, applying appropriate design features to avoid adverse impacts, consulting with the State Historic Preservation Office and Tribes, and monitoring treatment activities for effects to cultural resources.
52	Ground-disturbing activities will be designed to avoid direct impacts to cultural resource sites. Root tilling, mowing, hand pulling, digging, or other weed treatments that disturb the soil beyond an aggregate of one meter square will require heritage inventory, evaluation, and consultation with the State Historic Preservation Office and Tribes. Follow the protection measures specified under stipulation 6 in appendix F of the protocol discussed in #51 above.
53	No herbicides will be applied from vehicles within 25 feet of cultural resources consisting of perishable materials with analytic or informational value, including wood, organic ceramic paints, datable materials, and residues on artifacts. Within 25 feet of such cultural resources, herbicides must be applied by hand to individual weeds to avoid getting herbicides or carrier fluids onto those remains. Prior to implementation, a Forest Service archaeologist or other qualified person will mark areas for hand application or avoidance.
54	Apply the design features listed previously under "Native Vegetation" and "Threatened, Endangered, and Sensitive Plants" to minimize potential harm to plants of ethnographic concern and native plants.
55	Notification of Tribes and other traditional-use groups will occur before herbicides are used to inform them of pending chemical treatment activities and schedules. This measure will reduce the risk to native plants used for traditional cultural purposes and the risk to the health of individuals who gather these plants.

Row No.	Description of Design Feature and Monitoring Requirement
56	Sheep or goat grazing will not be used on heritage resource sites easily damaged by trampling as identified through heritage resource inventories prior to implementation.
57	Conduct fuel assessments and remove fuels from around cultural resource sites with perishable materials before prescribed burning or avoid burning around sites with perishable materials altogether. Use burn prescriptions that ensure low temperature, intensity, duration, and residence time on sites that fire will burn through.
Monitoring and Adaptive Management	
59	Weed inventories and mapping will be conducted annually, and treatment of newly found populations will be identified and prioritized based on criteria in the “Adaptive Strategy” section of this chapter.
60	Treated sites will be monitored, evaluated, and the results documented to determine: ■ Effectiveness of the method(s) used in meeting the objective; ■ Whether impacts to resources or people were within the scope of predictions; and ■ Implementation and effectiveness of design features, and whether mitigations should be modified or added to enhance effectiveness.
61	Changes in prescriptions made as a result of monitoring and evaluation, and treatments for newly found weed populations, must comply with all design features and monitoring requirements. The actions and effects must be within the scope of those considered in the EIS. New actions or effects outside of those considered in the EIS will be evaluated in accordance with Forest Service Handbook 1909.15, chapter 10, section 18, to determine if additional environmental analysis under the National Environmental Policy Act is required.