APPENDIX E
TREATMENT PRIORITIES, ADAPTIVE MANAGEMENT, AND MINIMUM TOOL GUIDELINES

To help assess priorities for weed treatments, priority criteria have been established and should be followed (see Table E – 1). To quickly and effectively treat newly discovered weed infestations, a decision tree based on site characteristics, weed species, and location would be used to select treatment methods as part of an adaptive management strategy. As another part of the adaptive management strategy in order to improve effectiveness and reduce impacts, new technologies, biological controls, adjuvants, or herbicides could be evaluated for use (see Table E – 2). Minimum tool guidelines have been established For Wilderness Areas, Hiking Areas, or other Remote Areas with Difficult Access and should be followed (see Table E – 3). See Table E – 4 for risk assessment guidelines for use of riparian or aquatic herbicides.

TREATMENT PRIORITY CRITERIA

The following table depicts weed treatment priorities to be utilized on the Custer National Forest due to limited funding and treatment effectiveness aspects. Priority is generally given to those new populations of aggressive invader species where long-term management can be successful. An example would be a new site consisting of five plants of salt cedar. On larger, well established infestations, such as 200 acres of leafy spurge, where long term effectiveness is questionable, containment strategies play a much more important role. Even then, control emphasis is provided along the spread vector areas such as trailheads, roadways, campgrounds, and parking areas. Choice of treatment is based on site specific conditions.

TABLE E – 1. TREATMENT PRIORITY CRITERIA

Priority	Description	Treatment
Highest Priority for Treatment	• Eradication[1] of new species (focus on aggressive species with potential for significant ecological impact including but not limited to State listed high priority species – Category 3[2]) • New infestations (e.g. populations in areas not yet infested; "spot fires"; any State, County, and Forest-listed highest priority species – Category 2[3]). • Areas of concern such as: Areas of high traffic spread vectors and sources of infestation (e.g. parking lots, trailheads, roadsides, horse camps, gravel pits) • Areas of special concerns: (e.g. wilderness, research natural areas, big game winter ranges, adjacent boundaries/access with National Parks) Riparian corridors or Sensitive plant populations where there is a high threat to species of concern. • Areas where partnership / cooperator agreements are in place.	• Cultural/mechanical - isolated plants or small populations. • Herbicide treatment if manual/mechanical is known to be ineffective or population too large. • Remove seed heads. This is an interim measure if cost/staff is an issue.
Second Priority of Treatment	• Containment[4] of existing large infestations (e.g. focus on State, County, and Forest-listed highest priority species – Category 1[5]) – focus on boundaries of infestation. • Roadsides, Trails, and Trailheads – focus first on access points leading to areas of concern.	• Cultural /mechanical - isolated plants or small populations in spread zones. • Herbicide treatment for larger populations along perimeter.
Third Priority of Treatment	• Control[6] of existing large infestations (e.g. State-listed and Forest second priority species)	• Biocontrol on large infestations • Livestock grazing • Mechanical
Fourth Priority of Treatment	• Suppression[7] of existing large infestations when eradication/control or containment is not possible.	• Biocontrol on large infestations • Livestock grazing • Mechanical

[1] **Eradication:** Attempt to totally eliminate an invasive plant species from a Forest Service unit, recognizing that this may not actually be achieved in the short term since re-establishment/re-invasion may take place initially.
[2] **Category 3 Species** - These invaders are the highest priority for control. The discovery of any new populations would prompt immediate eradication action using the most efficient IPM approach. No populations of Category 3 invaders would be allowed to persist.
[3] **Category 2 Species** - Some infestations of Category 2 species are relatively large, yet they are still geographically limited to only a portion of the CNF. For this reason containment is the primary goal. If contained, many of these Category 2 species can be eradicated if acted upon immediately thus preventing these new invaders from affecting native plant communities. If eradication is not possible, then control and containment is the goal to at least limit the impacts these species would have on the native ecosystem. Category 2 invaders should therefore be prevented from infesting new areas, and should be eliminated in some existing populations, while the remainder would be contained.
[4] **Contain**: Prevent the spread of the weed beyond the perimeter of patches or infestation areas mapped from current inventories.
[5] **Category 1 Species -** Because most of these species exist in extensive, widespread infestations, a great deal of resources would be required to reduce or eradicate populations. For especially hardy species with extensive root systems, eradication of large infestations could prove to be impossible since we do not have the tools or technology to effectively kill all plant parts and prevent regrowth (Sheley and Petroff 1999). Therefore, the key management approach with these species is to control and contain existing populations (keep them from spreading into uninfested areas) and to eradicate new populations in uninfested areas. The IPM approach is to prevent Category 1 species from spreading beyond current infestations. Therefore, Category 1 invaders would not necessarily be eliminated, but infestation spread into uninfested native plant communities would be reduced.
[6] **Contro**l: Reduce the infestation over time; some level of infestation may be acceptable.

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ADAPTIVE MANAGEMENT APPROACH

The following adaptive management strategy applies to Alternative 1- Proposed Action and Alternative 2 – No Herbicide. However, herbicide aspects of the adaptive management strategy would not be available under Alternative 2. The adaptive management approach is made up of two principle components:

Principle 1: To quickly and effectively treat newly discovered weed infestations, a decision tree based on site characteristics, weed species, and location would be used to select treatment methods (see Appendix E, Table E-2). Using an adaptive management approach allows treatment of new sites or new species without a lengthy delay, while still addressing other resource concerns. Although treatments of weeds are expected to be effective in reducing existing weed infestations, all infestations cannot be treated immediately due to budgetary and logistical constraints. Existing infestations will expand before they can be treated, and new areas will be identified. Since every acre of the Custer National Forest has not been inventoried for weeds many existing sites have yet to be identified. Also, new invasive weed species may be added to the invasive weed list and they will be incorporated into this analysis. The strategy includes:

- The decision (if and how) to treat newly discovered infestations would be driven by the Decision Tree for New Weed Locations as shown in Appendix E, Table E - 2;
- New invaders, as identified by local and State agencies, should be given high priority for eradication, if feasible;
- New infestations may be treated with herbicide as long as the areas treated remain within the limits described in Appendix E, Table E – 1 and adhere to all protection measures listed in Appendix C; and
- Appropriate methods and environmental protection measures described in Appendices C and E would be used.

Principle 2: To improve effectiveness and reduce impacts, new technologies, biological controls, adjuvants, or herbicides would be evaluated for use. New technology, biological controls, herbicide formulations, and supplemental labels are likely to be developed within the next 15 years. These new treatments would be considered when there are indications that they would be more weed-specific than methods analyzed here, less toxic to non-target vegetation, or less persistent and less mobile in the soil. New herbicides may be used when they become available if they are permitted by the EPA, have a human health and environmental risk assessment completed per direction of Forest Service Handbook 2109.14, Chapter 10, and are registered for use by the states of Montana or South Dakota. The Adaptive Management Strategy would allow incorporation of these new products and treatment methods.

- New herbicides or formulations registered and approved by the US Environmental Protection Agency would be applied according to label specifications;
- Application methods and protection measures (environmental design criteria) described above would be used;
- The decision by the line officer to use a new treatment method would be driven by an interdisciplinary review (FSH 1909.15, 18.4) to confirm that the new treatment is within the scope of the analysis in this EIS, and a site characteristic evaluation (Appendix E, Table E - 2);
- A risk assessment must be completed per Forest Service Handbook 2109.14, Chapter 10 for the herbicide. These assessments could be completed by the Forest Service, the Natural Resources Conservation Service, USDA Agriculture Research Station, Environmental Protection Agency, or other authorized agency.
- New biological control agents that are approved and certified by the Animal Plant Health Inspection Service and the applicable State (Montana or South Dakota) prior to their introduction. Biological agents should be virtually harmless to native or desirable non-native plants, and;
- Cost effective mechanical methods of treatments are developed. These methods would be reviewed before use to determine if other resource quality standards can be maintained.

[7] **Suppress**: Prevent seed production throughout the target patch and reduce the area coverage. Prevent the invasive species from dominating the vegetation of the area; low levels may be acceptable.

APPENDIX E
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TABLE E - 2. DECISION TREE FOR NEW WEED LOCATIONS

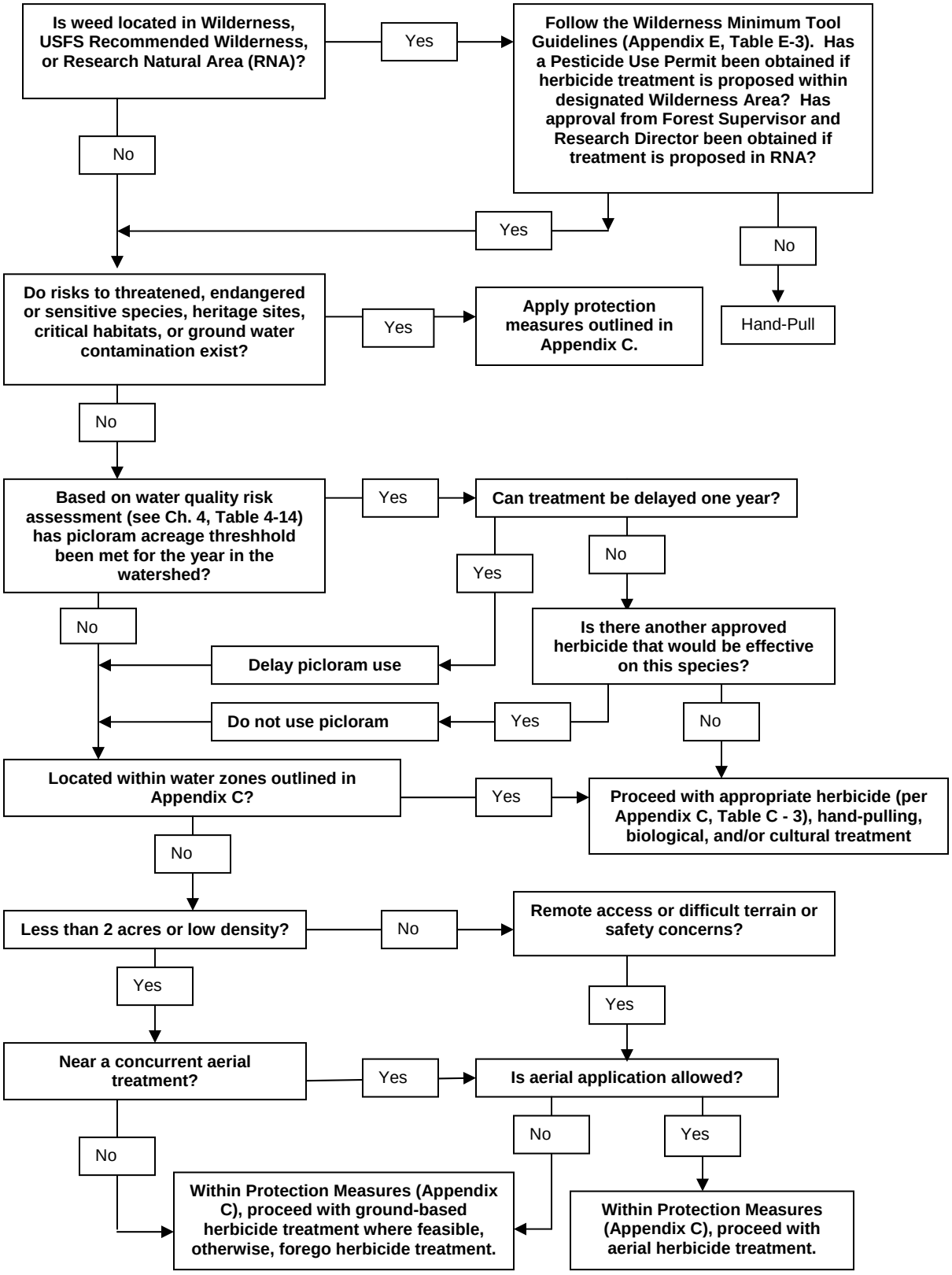

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TABLE E – 3. MINIMUM TOOL GUIDELINES - FOR WILDERNESS AREAS, HIKING AREAS, OR OTHER REMOTE AREAS WITH DIFFICULT ACCESS