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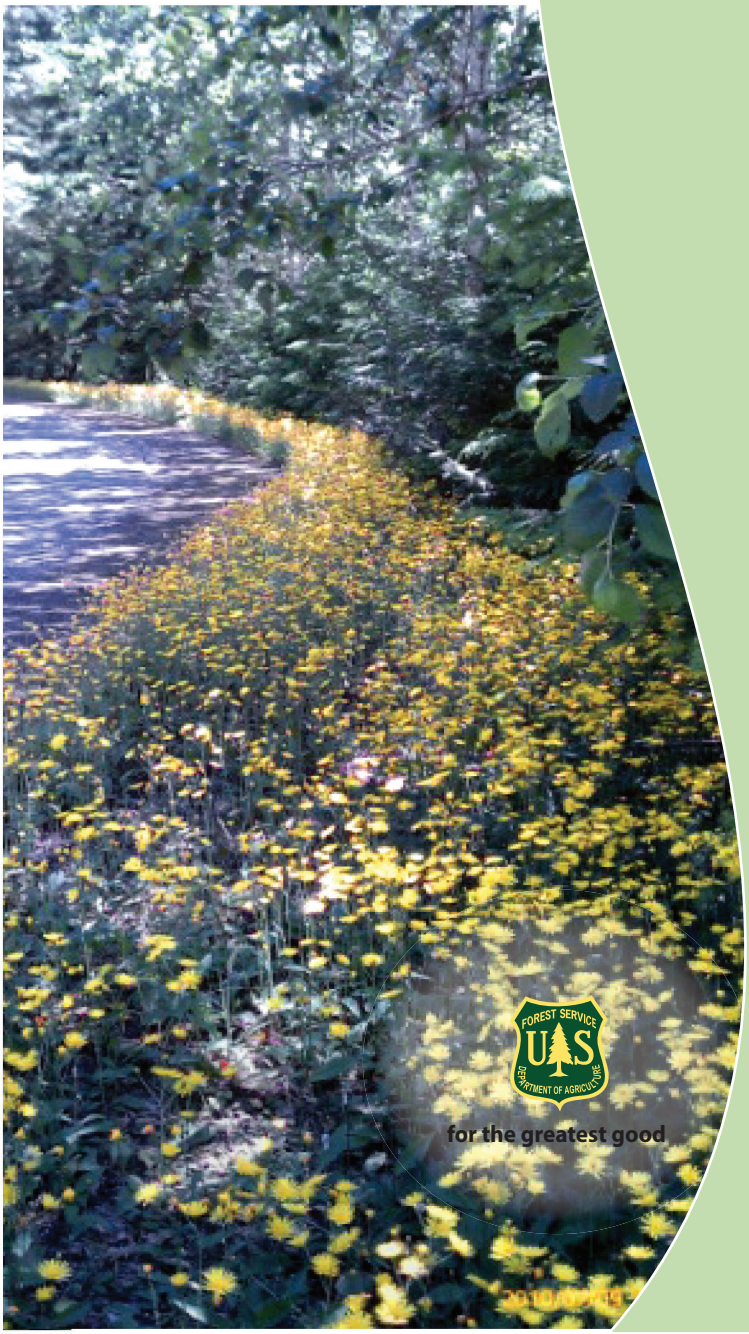
# Mt. Baker-Snoqualmie National Forest Invasive Plant Treatment

## Draft Record of Decision

**Whatcom, Skagit, Snohomish, King, and Pierce Counties, Washington**

**March 2015**



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# Introduction

This Record of Decision (ROD) documents my decision and rationale for selecting Alternative 2 of the Mt. Baker-Snoqualmie National Forest Invasive Plant Treatment Project. Alternative 2 is the environmentally preferred alternative. My decision authorizes a range of integrated invasive plant treatment and restoration methods that will be implemented across the Mt. Baker-Snoqualmie National Forest for the next 5 to 15 years or longer.

My decision includes a non-significant amendment to the Mt. Baker-Snoqualmie National Forest Land and Resource Management Plan (Forest Plan), adding aminopyralid to the list of herbicides for use as part of the integrated treatment toolbox for invasive plants on the Mt. Baker-Snoqualmie National Forest (MBS).

In arriving at my decision, I have considered the analysis that is documented in the *Mt. Baker-Snoqualmie National Forest Invasive Plant Treatment Project Final Environmental Impact Statement* (FEIS) (USDA Forest Service 2015), information in the project file, and input received from the public during the course of the analysis of this project as required by the National Environmental Policy Act (NEPA) of 1969.

This ROD was developed according to requirements of the National Environmental Policy Act of 1969 (42 USC §§ 4321-4370), the Council of Environmental Quality's implementing regulations (40 CFR §§ 1500-1508), Forest Service NEPA regulations (36 CFR Part 220), and Forest Service policy in Forest Service Manual 1900, Chapter 1950, and Forest Service Handbook 1909.15.

# Location and Area

The project area includes the entire Mt. Baker-Snoqualmie National Forest, wherever invasive plants are found now or into the future. Figure 1 displays the vicinity of the project within the Mt. Baker –Snoqualmie National Forest.

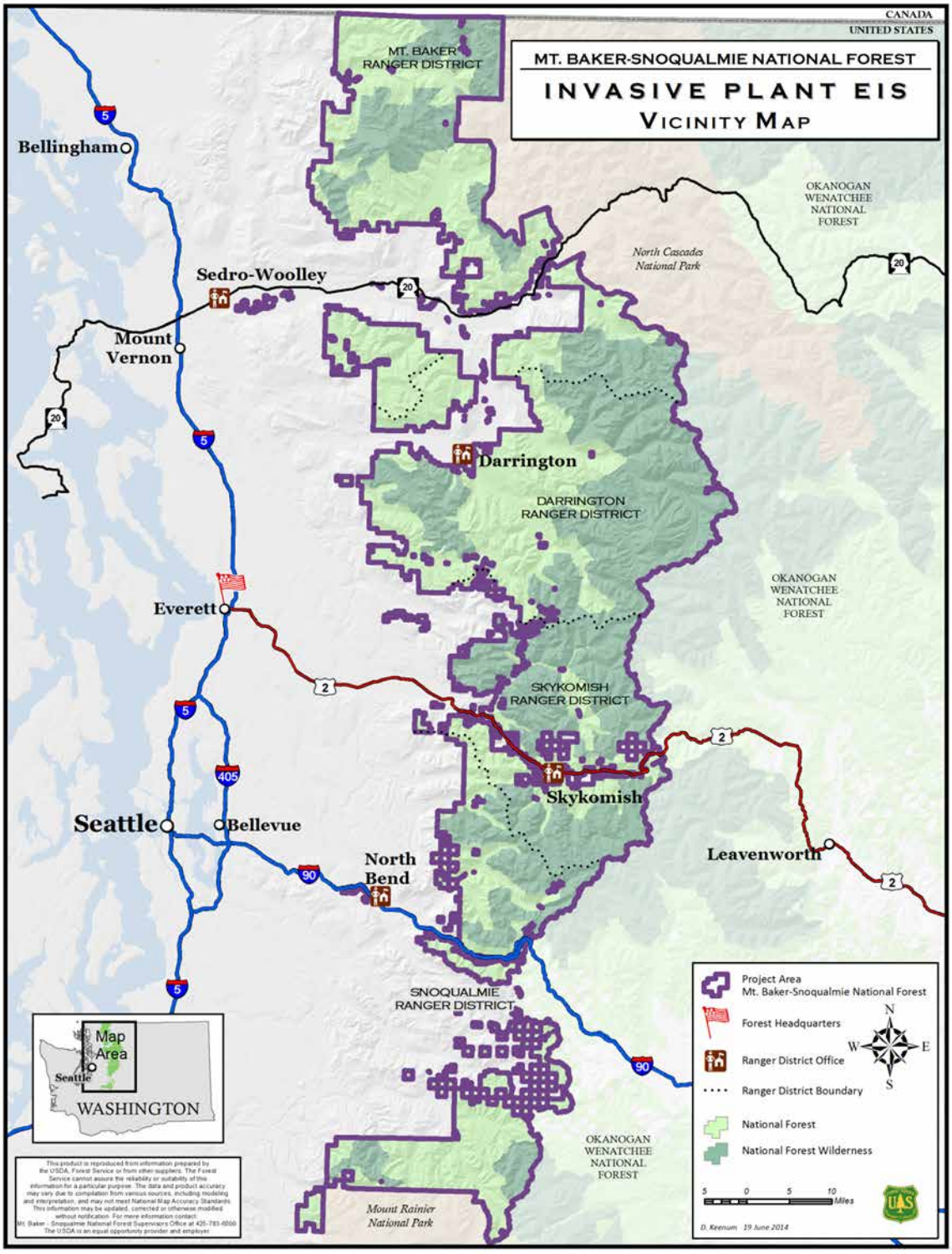


**Figure 1. Project area vicinity map**

# Background

Invasive plants are "non-native plants whose introduction does or is likely to cause economic or environmental harm or harm to human health" (Executive Order 13112). Invasive plants are distinguished from other non-native plants by their ability to spread (invade) into native ecosystems. Invasive plants include but are not limited to noxious weeds identified on state lists.

On the Mt. Baker-Snoqualmie National Forest (MBS or the Forest), about 40 species of invasive plants have been mapped within 936 sites, totaling approximately 4,000[1] infested acres. The project area includes the entire Mt. Baker-Snoqualmie National Forest, totaling about 1,724,229 acres.

In 2005, the Mt. Baker-Snoqualmie Environmental Assessment and Decision Notice for Treatment of Invasive Plants and New Invaders Strategy (MBS 2005 EA/DN) were published. At that time, 90 invasive plant sites were mapped on the Forest, and most of the sites were smaller than 0.1 acre. The more than ten-fold increase in invasive species is partly due to increased awareness and mapping, however, this is also because the MBS 2005 DN has not resulted in effective treatment of the existing invasive plants. Since 2005, invasive plants have been located in wilderness areas on the MBS.

Soon after the MBS 2005 DN was signed, the Regional Forester signed the Pacific Northwest Region Invasive Plant Program, Preventing and Managing Invasive Plants Record of Decision (R6 2005 ROD). The R6 2005 ROD added management direction for invasive plants to the MBS Land and Resource Management Plan (Forest Plan 1990), including a list of approved herbicides. Since the publication of the R6 2005 ROD, a new herbicide, aminopyralid, has been found to have lower risk to aquatic organisms than previously approved herbicides and higher effectiveness on many broadleaf invasive plant species found on the Forest.

In 2008, the Skiyou Island Invasive Weeds Decision Notice was signed (MBS 2008 DN). This project allowed for broadcast of glyphosate and metsulfuron methyl (one of the herbicides analyzed in the R6 2005 FEIS), as a part of a vegetation restoration project at Skiyou Island in the Skagit River drainage. Also in 2008, the Forest Supervisor found that use of two additional herbicides analyzed in the R6 2005 FEIS (clopyralid and imazapyr) as a replacement for aquatic glyphosate on some sites would not result in adverse effects beyond the scope of the MBS 2005 DN, based on a supplemental information report (MBS 2008 SIR).

[1] When acres are counted for each invasive plant target species, the total acreage is 4,878 (about 20 percent of the infested areas contain more than one invasive plant species). Since treatment options and timing of treatment vary by target species, this document frequently cites the amount of treatment acres as 4,878.

## Desired Condition

The desired condition relative to invasive plant management in the R6 2005 ROD is:

> In National Forest lands across Region Six, healthy native plant communities remain diverse and resilient, and damaged ecosystems are being restored. High quality habitat is provided for native organisms throughout the region. Invasive plants do not jeopardize the ability of the National Forests to provide goods and services communities expect. The need for invasive plant treatment is reduced due to the effectiveness and habitual nature of preventative actions, and the success of restoration efforts.

To meet this desired condition, invasive plants would be contained, controlled or eradicated,[2] and desirable vegetation would be restored on approximately 4,000 infested acres of National Forest System land. New or spreading invasive plants would be treated as quickly as possible after detection. Invasive plant treatments would be conducted in a manner that minimizes or eliminates human health and environmental risks from treatment activities. Reaching this desired condition could take 5 to 15 years depending on funding and site-specific response to treatment.

## Purpose and Need

In this project, the Forest Service is responding to the underlying need for timely containment, control, or eradication of invasive plants, including those that are currently known and those discovered in the future. The purpose of the project is to achieve the desired condition in the most cost-effective manner possible, while meeting R6 2005 ROD and other Forest Plan management direction and minimizing adverse impacts to people and the environment. The more cost-effective the treatments considered, the more likely that the purpose and need will be met.

Treatments and planning processes that are currently authorized in the 2005 MBS DN lack sufficient tools and efficiency to achieve timely eradication, containment and control of invasive plants. The following are examples of how the current program has not met treatment needs:

- The herbicides approved in the MBS 2005 DN are not always effective on the invasive plant target species here. For example, glyphosate has been repeatedly applied to hawkweed (in the sunflower family) along the Mountain Loop Highway, yet this target species continues to increase. Additional herbicide options are needed to most effectively treat several invasive species found on the Forest.
- Since the publication of the R6 2005 ROD, a new herbicide, aminopyralid, has been found to have lower risk to aquatic organisms than previously approved herbicides and higher effectiveness on some aggressive broadleaf invasive plant species, such as hawkweeds and knapweeds. A Forest Plan amendment is needed to add this herbicide to the list of approved ingredients for invasive plant treatment.
- The MBS 2005 DN did not authorize broadcast spraying; however, spot treatments are not effective in treating some higher density or larger invasive sites. The broadcast spray method is needed to increase the effectiveness of herbicide applications in some locations.

[2] A spreadsheet showing the treatment objective for each infested area is available on line at http://www.fs.fed.us/nepa/nepa_project_exp.php?project=34208. “Eradication” means that invasive plants are completely removed from a site. “Control” means that invasive plants have been reduced to low levels on a site. “Containment” means that an invasive plant treatment site is not growing larger.

- New sites have been detected in wilderness areas since 2005. The MBS 2005 DN did not explicitly address treatments of new invaders in wilderness areas. The ability to treat wilderness infestations is needed to minimize the potential for invasive plants to spread within wilderness areas. Currently, six sites in three wilderness areas are in the mapped inventory. About 34 miles of old roads in the Wild Sky Wilderness are unsurveyed but likely contain invasive plants (a recent survey indicates invasive plants are present that were not previously mapped.). Many more trails have not been surveyed but may contain invasive plants. These areas are a high priority to treat to maintain native plant communities within the wilderness. Rapid treatment of wilderness infestations while they are small improves the chances of successfully controlling or eradicating invasive plants in the wilderness, and reduces the potential for impact on wilderness character.
- The MBS 2005 DN did not authorize any mechanical mowing or motorized string trimmers. This method is needed as part of the effective integrated treatment program.
- The strategy for new invaders in the MBS 2005 DN did not provide rapid enough response, for example, common comfrey invaded a log deck and waste rock disposal site in 2008 and tripled in density within 1 year. Increased efficiency in early detection and rapid response to new invaders is needed to reduce the potential for them to become established or spread.

# Scoping

Public scoping on this Proposed Action was initiated during fall 2010. In spring 2012, additional scoping was conducted to include additional invasive plant populations and wilderness sites. At this point in the analysis, the Forest Supervisor decided that an Environmental Impact Statement (EIS) would be appropriate to document potential effects of the proposed treatment so a Notice of Intent to prepare an EIS was published in the Federal Register on February 28, 2012. [3]

During the 2010 scoping period, comments were received from 1 agency, 2 organizations and 3 other people. During the 2012 scoping period, comments were received from 4 agencies, 1 organization, 1 American Indian Tribal member (see above), and 10 other people. Scoping outreach and responses are in the Project Record.

# Decision

Based on the analysis disclosed in the FEIS and project record, I have decided to select Alternative 2, the proposed action for the Mt. Baker-Snoqualmie National Forest Invasive Plant Treatment Project. This alternative is the most cost-effective approach to invasive plant treatment while minimizing the potential adverse effects of treatment according to the Mt. Baker-Snoqualmie National Forest Plan as amended by the R6 2005 ROD.

Invasive plant treatments will be completed according to integrated treatment prescriptions (see Attachment 1, Table 1- 1) and Management Recommendations /Mitigation Measures (MR/MM, see Attachment 1, Table 1- 2). Treatments would be adapted to changing conditions over time following an Early Detection and Rapid Response (EDRR) and implementation planning process

[3] Scoping in 2012 included 195 acres in the Yakima River watershed that were removed from analysis in the MBS Invasive Plant Treatment EIS, but will be addressed by planning conducted on the Okanogan-Wenatchee National Forest. The scoping proposal in 2012 also contained a 113.1-acre site (Treatment Analysis Area 54) that was later found to not contain invasive plants, so was dropped from the analysis.

(Chapter 2.4.6 and 2.4.7). My decision includes monitoring to ensure that the treatments are implemented properly and adverse effects are minimized. See Attachment 1 for a detailed description of the elements of Alternative 2.

Alternative 2 would be the most effective in containing, controlling, or eradicating invasive plants. It would allow the most effective treatment method and herbicide ingredient on all known infestations. Alternative 2 has the best chance of controlling and eradicating populations of invasive plants, including the largest, densest and most aggressive noxious weeds sites on the MBS. The total cost of treating known infestations and restoring favorable vegetation in a 4-year period would be least for this alternative. The average cost per restored acre is least. Given a fixed budget and current funding levels, Alternative 2 is estimated to take 12 to 13 years or more to accomplish (MBS FEIS 3.2.3).

I acknowledge that herbicide applicators and other people may be exposed to the herbicides used to treat invasive plants under Alternative 2. The nature of the project and the type of treatments proposed; the MR/MM; the Forest Plan standards; and the Forest Service pesticide use policy together minimize potential for worker and public exposure. The herbicide triclopyr is associated with relatively greater risks. This herbicide is the first choice for about 15 acres of current infestations (thus very little of this herbicide is likely to be used). Risks are mitigated by restrictions on the method of application (no broadcast of triclopyr) and extra caution relative to use around edible fruit (e.g., blackberries); given the low extent and mitigation measures, risks would not be substantially increased over the No-Action Alternative (FEIS Chapter 3.3.3)

The addition of aminopyralid would likely be a positive factor relative to human health. Aminopyralid is not associated with any worker or public exposures over the threshold of concern (for aminopyralid, all calculated Hazard Quotient (HQ) values, even for upper estimates and maximum rates, are below 1). Use of aminopyralid could reduce the potential for human health effects compared to the other alternatives, especially where it could be effective as an alternative to triclopyr (ibid.).

I recognize that some individual non-target plants may be killed or harmed during implementation of this project. An individual rare plant may be damaged or die. Effects on non-vascular plants and fungi are particularly uncertain. The potential exists for non-target plants to be inadvertently damaged or killed, especially adjacent to broadcast operations. However, the Management Requirements and Mitigation Measures project minimizes the potential for native plants to be adversely affected (FEIS 3.4.3).

Invasive plant treatments proposed under Alternative 2 would not alter habitat structure or composition for terrestrial wildlife species (FEIS Chapter 3.5.3). The project would be beneficial to wildlife. Negative impacts to wildlife, including species of local interest, are far more likely with invasive plants than with the treatments proposed. The current infestations amount to approximately 0.3 percent of the Mt. Baker-Snoqualmie National Forest. The Forest is 1.7 million acres in western Washington, and treatments are limited to no more than 5,000 acres per year total. This cap, along with realistic budget constraints, further limits the size of treatments in any one location in sensitive wildlife habitats. Infestations, and therefore treatments, are primarily along roadsides and other disturbed sites, which do not provide quality habitat for most wildlife. While some infestations do occur in important wildlife habitat like early seral stage vegetation or wetlands, MR/MM and herbicide use buffers minimize which the potential for adverse exposure so much that there is virtually no potential for exposures to accumulate and cause harm to any habitat or species (FEIS Chapter 3.5.3).

Invasive plant treatments will not adversely affect soil biology or productivity. Restrictions on the rate, type, and frequency of specific herbicides would reduce herbicide build up in the soil and impacts on soil organisms or productivity (FEIS Chapter 3.6.3). Most of the herbicides adsorb to soil within the top 20 inches; below 40 inches, only trace amounts remain (ibid). Picloram, imazapyr, and metsulfuron methyl have very slow decay rates once they move below the biologically active soil layer. The application of these herbicides is limited to once every other year to limit risk for accumulating these herbicides in groundwater. Aminopyralid can have a moderately slow degradation rate and thus would be limited to one application per year to avoid buildup in groundwater.

None of the alternatives are likely to have substantial impacts on water resources. Some herbicides may reach water but no beneficial uses of water would be adversely affected; effects would be positive to the extent that riparian habitat is improved (FEIS Chapter 3.7.3).

Herbicide use in accordance with the herbicide use buffers and the MR/MM would keep herbicides from reaching streams to a minimum, and no adverse effects to beneficial uses are expected. The use of aminopyralid would improve the Forest Service's ability to treat invasive plants near water, which would help restore riparian habitats (ibid.).

MR/MM limit the potential for herbicides to enter water in the action alternatives, including: MR/MM 7 (weather conditions and nozzle size); MR/MM 8 (herbicide transportation and handling safety); MR/MM 19 (limitations on acreage treated annually within riparian reserves); MR/MM 22 (restrictions on mixing of herbicides near streams); MR/MM 25 (restrictions on use of herbicides on seasonally high water tables); and MR/MM 27 (limits herbicide use on sites more prone to run off). Treatments would not add measurable amounts of organic matter or nutrients to streams or lakes or further degrade water chemistry due to the discontinuity of the treatments, limited spatial scale, and required mitigation measures (ibid.).

I recognize that Alternative 2 "May Impact" sensitive aquatic species, but would not affect the viability of any species or cause any sensitive species to be listed under the Endangered Species Act (FEIS Chapter 3.8.3). Alternative 2 would result in long-term restoration where natural plant communities and disturbance regimes have been altered by invasive plants. Alternative 2 has the greatest potential to benefit aquatic resources by effectively treating invasive plants (ibid.).

MR/MM would minimize the potential for adverse effects on fish and habitat. None of the chemicals proposed for use would result in long-term adverse alteration of aquatic habitat. The impacts of invasive plants on the environment can last decades, while the impacts of treatment tend to be short term (weeks or less). Active restoration at selected sites would accelerate native vegetative recovery in treated areas (ibid). Herbicide use buffers in the alternatives would substantially limit the amount of herbicide potentially coming in contact with water. The potential amount of herbicide coming in contact with water after application of herbicide use buffers would be minimized to near non-detectable levels (ibid).

Eradication of invasive plants would allow vegetation within wilderness areas to evolve in a more natural way, which would promote the untrammeled character of wilderness. I understand that the use of herbicides in wilderness areas may reduce the wilderness experience for some users in the short term, but active treatment provides the best protection of wilderness character and values (FEIS Chapter 3.9.3). Adverse effects to outstandingly remarkable values on Wild and Scenic Rivers would be minimal given the MR/MM and herbicide use buffers. In the long run, treatment of invasive plant and restoration of treated areas would enhance wilderness and Wild and Scenic

River values. Alternative 2 would be more favorable to wilderness and Wild and Scenic River values because of the increased effectiveness and selectivity associated with use of aminopyralid.

Invasive plant treatments are unlikely to adversely affect heritage sites (FEIS Chapter 3.10.3).

Alternative 2 is my selected alternative given the low likelihood of serious adverse effects. Alternative 2 has the greatest potential for positive benefits from treatment.

## Policies and Management Direction Related to Invasive Plant Management

Forest Service policies and management direction related to invasive plant treatment clearly supports taking action to contain or reduce density of invasive plants on National Forests. Prevention, early detection and rapid response, invasive plant control measures, restoration and organizational collaboration are all addressed in the Forest Service 2900 Manual.

The R6 2005 ROD (Mt. Baker-Snoqualmie National Forest Plan) also provides management direction for this project. The R6 2005 ROD lays out several objectives for invasive plant management including:

> Objective 1.3: Detect new infestations of invasive plants promptly by creating and maintaining complete, up-to-date inventories of infested areas, and proactively identifying and inspecting susceptible areas not infested with invasive plants.
>
> Objective 1.4: Use an integrated approach to treating areas infested with invasive plants. Utilize a combination of available tools including manual, cultural, mechanical, herbicides, biological control.
>
> Objective 1.5: Control new invasive plant infestations promptly, suppress or contain expansion of infestations where control is not practical, conduct follow up inspection of treated sites to prevent reestablishment.
>
> Objective 3.1: Avoid or minimize public exposure to herbicides, fertilizer, and smoke.
>
> Objective 3.2: Reduce reliance on herbicide use over time in Region Six
>
> Objective 4.1: Maintain water quality while implementing invasive plant treatments.
>
> Objective 4.2: Protect non-target plants and animals from negative effects of both invasive plants and applied herbicides. Where herbicide treatment of invasive plants is necessary within the riparian zone, select treatment methods and chemicals so that herbicide application is consistent with riparian management direction.
>
> Objective 4.3: Protect threatened, endangered, and sensitive species habitat threatened by invasive plants. Design treatment projects to protect threatened, endangered, and sensitive species and maintain species viability.

I find that the design of Alternative 2 will help us meet these objectives. The objective of reducing herbicide use over time is best met by implementing effective, integrated treatments that may include chemical use, as has been proposed in Alternative 2. Alternative 2 is by definition the most cost-effective alternative because it allows for the widest range of treatment tools.

# Other Alternatives Considered

In addition to the selected alternative, we analyzed two other alternatives: no action (Alternative 1) and one action alternative (Alternative 3). Table 1 summarizes the activities included in each alternative analyzed in detail compared to the selected alternative.

**Table 1. Activities Included in Alternatives**

| | No Action (Alternative 1) | Proposed Action (Alternative 2) | No Aminopyralid (Alternative 3) |
|---|---|---|---|
| Treatment Methods | Manual, biological and chemical (herbicide) | Manual, mechanical, cultural, biological, and chemical (herbicide) | Manual, mechanical, cultural, biological, and chemical (herbicide) |
| Herbicides Approved | Clopyralid<br>Aquatic glyphosate<br>Aquatic imazapyr<br>Metsulfuron methyl (Skiyou Island only) | Aminopyralid<br>Chlorsulfuron<br>Clopyralid<br>Glyphosate<br>Imazapic<br>Imazapyr<br>Metsulfuron methyl<br>Picloram<br>Sulfometuron methyl<br>Triclopyr | Chlorsulfuron<br>Clopyralid<br>Glyphosate<br>Imazapic<br>Imazapyr<br>Metsulfuron methyl<br>Picloram<br>Sulfometuron methyl<br>Triclopyr |
| Risk From Invasive Plants | Invasive plants may continue to threaten native plant communities, wildlife habitats and riparian areas. | Most likely to reduce threats from invasive plants | Less likely to reduce threats from invasive plants because aminopyralid would not be approved for use. |
| Forest Plan Amendment | No | Yes | No |
| Application Methods | Selective and spot (broadcast at Skiyou Island only) | Broadcast, spot and selective | Broadcast, spot and selective |
| Potential Broadcast Acres (Known Sites, First Year Treatment) | About 212 at Skiyou Island using glyphosate and metsulfuron methyl | 2,470 using aminopyralid, clopyralid, glyphosate and metsulfuron methyl | 2,407 using clopyralid, glyphosate and metsulfuron methyl |
| Treatment Acreage Limitations | None | 5,000 per year, 13,500 over the life of the project, 18% of the area within 150 feet of a stream annually | 5,000 per year, 13,500 over the life of the project, 18% of the area within 150 feet of a stream annually |

| | No Action (Alternative 1) | Proposed Action (Alternative 2) | No Aminopyralid (Alternative 3) |
|---|---|---|---|
| EDRR Approach | Annual pre-season list | Develop site prescriptions and address any resources of concern. Use criteria in "decision to use herbicide" to determine preferred method. Integrate MR/MM into implementation prescription based on site conditions. Treat as soon as possible after finding new sites. Treatments would not be limited to those identified in a pre-season report. | Develop site prescriptions and address any resources of concern. Use criteria in "decision to use herbicide" to determine preferred method. Integrate MR/MM into implementation prescription based on site conditions. Treat as soon as possible after finding new sites. Treatments would not be limited to those identified in a pre-season report. |

# Alternative 1 – No Action

Under the No-Action Alternative, the MBS 2005 DN and 2008 Skiyou Island Invasive Weeds Decision Notice (2008 Skiyou Island DN) would continue to guide invasive plant treatments within the project area (Forest). These decisions authorized the following treatments:

- Pulling, cutting, or digging by hand or with non-motorized tools
- Use of biological control agents
- Cultural treatments such as competitive seeding and tarping
- Restoration of treated sites
- Spot and selective herbicide using aquatic glyphosate, imazapyr, or clopyralid
- Limited broadcast at Skiyou Island, using glyphosate and metsulfuron methyl
- Use of the surfactant Agri-Dex®

## Why Alternative 1 was not Selected

The FEIS describes why the No-Action Alternative (Alternative 1) is the least effective alternative (FEIS Chapter 3.2.3). Alternative 1 would not have been likely to result in eradication and/or control of dense or large infestations. It would have likely been the most costly alternative, with the least favorable results. Ground disturbance in close proximity to already infested ground would have been at highest risk for invasive plant spread (FEIS Chapter 3.6.3). Threats to native vegetation would have been greatest in this alternative (FEIS Chapter 3.4.3). Habitat for a variety of wildlife could have degraded to a point that it becomes unsuitable. Infestations could have become so well-established that future treatment would have been cost-prohibitive, eventually resulting in a permanent loss of wildlife habitat (FEIS Chapter 3.5.3). Alternative 1 would have included the most extensive use of glyphosate, especially within riparian areas (FEIS Chapter 3.7.3). Under Alternative 1, invasive plants would have continued to grow and spread in wilderness and along the Wild and Scenic Rivers, which would have the potential to disrupt natural processes. The scenic integrity could be reduced and wilderness character could be adversely impacted by invasive plant expansion into native plant communities. Treatments that are currently approved have not kept up with treatment needs, which may result in reduced plant diversity and a loss of scenic value (FEIS Chapter 3.9.3).

I acknowledge that Alternative 1 involves the least potential extent of herbicide use since no broadcast treatments would occur. However, the risks associated with herbicide use remain low in the action alternatives.

## Alternative 3 – No Forest Plan Amendment, No Aminopyralid

Alternative 3 is described in detail in Chapter 2.3.4 of the FEIS. Alternative 3 was developed to evaluate the tradeoffs involved with adding aminopyralid to the list of available herbicides for use on the Mt. Baker-Snoqualmie National Forest. Under this alternative, no aminopyralid would have been used, and the Forest Plan would not have been amended. More clopyralid, metsulfuron methyl and triclopyr would have likely been used in comparison to Alternative 2.

All of the MR/MM and herbicide-use buffers associated with Alternative 2 would have applied, except for those that refer to use of aminopyralid. The herbicide-use rates, MR/MM and herbicide-use buffers associated with aminopyralid would have become non-applicable.

### Why Alternative 3 was not Selected

I did not select Alternative 3 because it would have been less effective and more costly, and would not have reduced risks associated with herbicide use. It would have reduced our ability to eradicate, control or contain invasive plants. It would not have reduced environmental risks compared to Alternative 2.

Alternative 3 would have reduced options for effectively treating about 274 acres near streams. If Alternative 3 were selected, more triclopyr (about 150 acres in Alternative 3 versus 15 acres in Alternative 2) would likely need to be used. Triclopyr may be associated with greater risks to human health than other herbicides proposed for use (FEIS Chapter 3.3.3).

# Tribal Consultation and Public Involvement

Government to Government consultation letters regarding the project were sent to the following local Tribes on 2/24/2012: Lummi Nation, Muckleshoot Indian Tribe, Nisqually Indian Tribe, Nooksack Indian Tribe, Puyallup Tribe, Samish Tribe, Sauk-Suiattle Tribe, Snoqualmie Tribe, Stillaguamish Tribe, Suquamish Tribe, Swinomish Indian Tribal Community, the Upper Skagit Tribe, the Tulalip Tribes and the Yakama Tribe. Follow up calls were made to the tribes to seek comments.

The Snoqualmie Tribe responded (4/16/2012) with a concern that herbicide treatment might occur near traditional harvest areas. No other replies were received from American Indian Tribal governments regarding this project.

Public scoping on this Proposed Action was initiated during fall 2010. In spring 2012, additional scoping was conducted to include additional invasive plant populations and wilderness sites. At this point in the analysis, the Forest Supervisor decided that an Environmental Impact Statement (EIS) would be appropriate to document potential effects of the proposed treatment so a Notice of Intent to prepare an EIS was published in the Federal Register on February 28, 2012.

During the 2010 scoping period, comments were received from 1 agency, 2 organizations and 3 other people. During the 2012 scoping period, comments were received from 4 agencies, 1 organization, 1 American Indian Tribal member (see above), and 10 other people. Scoping outreach and responses are in the Project Record.

# Issues

Two key issues were identified:

- Treatment effectiveness
- Herbicide toxicity

Table 2 displays the comparison of alternatives in terms of issue indicators.

**Table 2. Alternative Comparison, Issue Indicators**

| Issue and Indicator | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|
| Cost-Effectiveness: Estimated total cost in dollars for treating known sites known sites treatment plus restoration | 2,719,000 | 2,535,600 | 2,630,400 |
| Cost-Effectiveness: Estimated average cost per treated/restored acre in dollars | 557 | 520 | 539 |
| Cost-Effectiveness: Years to effectively treat known sites assuming annual budget of $200,000 per year | 14 | 12-13 | 13 |
| Cost-Effectiveness: Estimated maximum cost in dollars, assuming average cost treatment plus restoration applied to known sites plus 13,500 acres of EDRR sites | NA | 9.5 million | 10 million |
| Cost-Effectiveness: Estimated acres where ability to control or eradicate target species may be compromised due to broadcasting restrictions | 1,200 | 0 | 274 |
| Herbicide Toxicity/Human Health: Number and character of “plausible exposure scenarios” where “Hazard Quotient” may be greater than 1 for herbicide applicators (workers) | none | Triclopyr HQ = 1.5 for a worker wearing contaminated gloves (15 “first year/first choice” acres) | Triclopyr HQ = 1.5 for a worker wearing contaminated gloves (143 “first year/first choice” acres) |

| Issue and Indicator | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|
| Herbicide Toxicity/Human Health: Number and character of "plausible exposure scenarios" where "Hazard Quotient" may be greater than 1 for the public | none | Triclopyr HQ = 7.8 for consumption of contaminated vegetation (15 "first year/first choice" acres) | Triclopyr HQ = 7.8 for consumption of contaminated vegetation (143 "first year/first choice" acres) |
| Herbicide Toxicity/Human Health: Character and effectiveness of Management Requirements and Mitigation Measures (MR/MM) intended to minimize or eliminate risk to human health | MR/MM minimize risks; herbicide ingredients pose low risks to human health | MR/MM minimize risks; risk is greater than Alternative 1 due to inclusion of triclopyr, less than Alternative 3 due to inclusion of aminopyralid. | MR/MM minimize risks; risk is greater than Alternative 1 due to inclusion of triclopyr. |
| Herbicide Toxicity/Botany: Relative risk to botanical species of conservation concern from herbicide use | Very Low, no broadcast near rare plants. Non-selective herbicide use may be needed near water (glyphosate). | Very Low; broadcast treatments are proposed in 7 TAAs where botanical species of conservation concern are located, however MR/MM would minimize risk. Use of aminopyralid is likely to decrease risk compared to non-selective herbicide use. | Low; broadcast treatments are proposed in 7 TAAs where botanical species of conservation concern are located, however MR/MM would minimize risk. Non-selective herbicide use may be needed near water (glyphosate). |
| Herbicide Toxicity/Wildlife: Relative risk to wildlife from herbicide use | Invasive plant treatments are primarily along roadsides and other disturbed sites, which do not provide quality habitat for most wildlife. MR/MM minimize the potential for adverse exposure. | Same as Alternative 1 | Same as Alternative 1 |

| Issue and Indicator | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|
| Herbicide Toxicity/Aquatic Organisms: Relative risk to aquatic organisms from herbicide use | Herbicide use poses relatively low risk of impact to aquatic organisms. Aquatic glyphosate poses risk of non-lethal impact to fish, however the MR/MM minimize the potential for herbicide to reach streams. | Same as Alternative 1. | Same as Alternative 1 |
| Herbicide Toxicity/Aquatic Organisms: First year/first choice use of aquatic glyphosate or triclopyr within aquatic influence zones | 961 acres of aquatic glyphosate | 926 acres of aquatic glyphosate | 939 acres of aquatic glyphosate and 12 acres aquatic triclopyr |

# Findings Required by Laws and Regulations

This decision to implement the Mt. Baker-Snoqualmie National Forest Invasive Plant Treatment Project is consistent with the intent of the forest plan's long term goals and objectives listed on page 4-135 of the Mt. Baker-Snoqualmie Forest Plan and in amendments to the Forest Plan since 1990:

- Final Supplemental Environmental Impact Statement on Management of Habitat for Late Successional and Old-growth Forest Related Species Within the Range of the Northern Spotted Owl, as adopted and modified by the April 1994 Record of Decision, which provides additional standards and guidelines (USDA FS, USDI BLM 1994), and commonly known as the ROD, or the Northwest Forest Plan (NWFP).
- Best Management Practices for Prevention of Noxious Weeds (MBS 1999, 2005)
- Record of Decision for the Pacific Northwest Region Invasive Plant Program: Preventing and Managing Invasive Plants (R6 2005 ROD).

# National Forest Management Act

A Forest Plan amendment would be implemented with this decision. The 2012 Planning Rule (36 CFR Part 219) allows plan amendments to be made using the procedures from the 1982 planning regulations during the 3-year transition period (36 CFR § 219.14 (b)(2)). Under the 1982 planning regulations, four factors are to be used when determining whether a proposed change to a Forest Plan is a significant amendment. The four factors are:

1. Actions that do not significantly alter the multiple-use goals and objectives for long-term land and resource management.

2. Adjustments of management area boundaries or management prescriptions resulting from further on-site analysis when the adjustments do not cause significant changes in the multiple-use goals and objectives for long-term land and resource management.

3. Minor changes in standards and guidelines.

4. Opportunities for additional projects or activities that will contribute to achievement of the management prescription.

This Forest Plan amendment enhances the agency's ability to address invasive species management objectives but does not alter multiple-use goals and objectives on the MBS National Forest to any extent. This Forest Plan amendment does not change any Forest Plan management area boundaries or management prescriptions on the MBS National Forest.. The Forest Plan amendment authorizes the use of a registered herbicide, aminopyralid. This herbicide is not currently listed among the ten herbicides approved by the Regional Forester in 2005 (R6 2005 ROD). The Risk Assessment for aminopyralid (SERA 2007) was completed subsequently and demonstrates that use of this herbicide will not pose new or significant risks compared to the ten already approved. FEIS table 21 (Chapter 3.1.2) shows a comparison between aminopyralid and the herbicides already approved. Aminopyralid is generally a lower risk herbicide and the proposed use will not pose additional risks to human health or the environment. This Forest Plan amendment allows more effective and efficient treatment of invasive plants by adding aminopyralid to the list of approved herbicides on the MBS National Forest. Aminopyralid is an herbicide that is very effective for most of the invasive plant species found within the MBS National Forest. It was developed specifically for wildland use and is effective at low rates. It requires less restrictions than most of the other herbicides already approved in the LRMP (for instance it can be broadcast sprayed to the water's edge, which will improve treatment effectiveness and efficiency relative to other herbicides). Authorizing the use of aminopyralid will not foreclose on opportunities for additional projects or activities that will contribute to achievement of the management prescription. It will make those projects more effective in controlling invasive plants.

# Endangered Species Act of 1973

My decision is consistent with the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1544, 87 Stat. 884). Consultation has been completed with the NMFS and is nearing completion with USFWS.

## Plants

No botanical species are federally listed as threatened, endangered or proposed for listing.

### Fish

Consultation with the US Fish and Wildlife Service and National Marine Fisheries concluded that the proposed action "may affect and is likely to adversely affect" (LAA), but will not jeopardize the continued existence of, Puget Sound Chinook salmon, Puget Sound steelhead, Bull trout or result in the destruction or adverse modification of their designated or proposed critical habitat. Analysis and discussion of the impacts resulting in the conclusions of LAA for effects to ESA-listed fish species and LAA for effects to critical habitat are found in the Biological Assessment (BA). In summary:

1. Impacts to Baseline Conditions for Matrix Indicators: Riparian area invasive plant treatment will be conducted in a manner as to "Maintain" long-term water quality with respect to chemical contamination and nutrients, with limited short-term adverse effects. While best management practices will minimize adverse effects, modeling from the worst case scenario suggests that some short term impact could occur to aquatic plants and thus affect primary production for fish species.

2. Effects to Individual ESA-listed Fish: The combination of application methods, low toxicity herbicides, project design criteria and mitigation measures are likely to restrict adverse effects from herbicide exposures on listed fish to infrequent, short-term occurrences. While the exposure is infrequent and short term, some adverse impacts to fish could not be ruled out.

3. Effects to Critical Habitat: The analysis of effects to habitat indicators corresponding to water quality indicate that some short term impact could occur to aquatic plants that may affect primary production and subsequent ecosystem processes for listed fish species. These impacts again are expected to be short term and limited in any adverse effects.

### Wildlife

In consideration of the direct, indirect, and cumulative effects, the proposed activities, the wildlife biologist found that the project "May Affect, but are not Likely to Adversely Affect " the northern spotted owl, marbled murrelet, grizzly bear, and gray wolf. The project has a low likelihood of herbicide exposure to wildlife and low level of disturbance from human activities. The wildlife biologist found "No Effect" to designated critical habitat for the northern spotted owl and marbled murrelet.

## Wilderness Act of 1964

My decision is consistent with the Wilderness Act of 1964 (16 U.S.C. 1131-1136; 78 Stat. 890).

## Roadless Area Conservation Rule

My decision is consistent with the Forest Service's Roadless Area Conservation Rule (36 CFR Part 294, Subpart B, 66 FR 9, pp. 3244-3273, 1/12/2001). By utilizing the appropriate project design feature and treatment methods, it is anticipated invasive species infestations in inventoried roadless areas will be eliminated, reduced, and the rate of spread retarded.

## Wild and Scenic Rivers Act

My decision is consistent with the Wild and Scenic Rivers Act (16 USC 1271-1287; 82 Stat. 906).

## National Historic Preservation Act of 1966

My decision is consistent with the National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq.; 80 Stat. 915) because it will have no potential to affect historic resources.

## Migratory Bird Treaty Act of 1918 and Executive Order 13186

My decision is consistent with the Migratory Bird Treaty Act (16 U.S.C. 703-712; Ch. 128; 40 Stat. 755) and Executive Order 13186. There will be no reduction in native vegetation, and all alternatives will help to reduce invasive plants and maintain migratory bird habitat.

## Irreversible or Irretrievable Impacts

No irreversible or irretrievable uses of resources are associated with this project. This project restores native vegetation in areas where non-native plants have been introduced. Herbicide treatments in accordance with the alternatives will have relatively short-lived impacts; effects on non-target species will be minimized; such effects will not be permanent. No adverse impacts on roadless areas or degradation of roadless area quality will occur.

## Long-term Productivity

Soils will be protected in this project and no loss of long-term productivity is predicted. The no-action alternative could have negative impacts on long-term productivity if invasive plants become so dense as to change soil characteristics, and capacity for restoration to desirable plant communities is lost.

The natural resources issues associated with this project have been resolved through adherence to project design feature (MR/MM) that reduce or eliminate the potential for adverse effects. However, some adverse effects are inherent to invasive plant treatments and cannot be avoided. These include:

- Taxpayers will likely be responsible for the costs of some if not all of the treatments.
- Herbicide toxicity exceeding thresholds of concern are unlikely, but possible in the event of a large herbicide spill. The MR/MM make the potential for a large spill extremely unlikely.
- Minor to moderate physical injuries during forestry work are possible.
- There may be temporary local effects on some groups of soil micro-organisms that are sensitive to certain herbicides. However, the MR/MM address the potential for long-term impact to soil organisms or productivity.
- Some common non-target plants are likely to be killed by their close proximity to treatments. This is most likely with broadcast herbicide treatments and less likely (but possible) for all other treatment methods. The adverse effects of the invasive plants themselves far outweigh the potential for adverse effects of treatment.

## Energy Requirements and Conservation Potential

No unusual energy requirements are associated with this project. No unusual equipment will be used.

## Prime Farmlands

No prime farmlands will be adversely affected by this project. There could be a beneficial impact to the extent that the alternatives reduce the potential for invasive plant spread from the Mt. Baker-Snoqualmie National Forest to prime farmlands.

## Executive Orders 11988 and 11990: Floodplains and Wetlands

Floodplains and wetlands will not be adversely affected by this project. As discussed in Chapter 3.4 of the FEIS, adverse effects to water quality and the beneficial uses of water will be negligible. The extent of treatment and potential for water contamination is low, and all alternatives are designed to protect water resources on the Mt. Baker-Snoqualmie National Forest.

## Executive Order 13112: Invasive Species

This project specifically addresses the duties of federal agencies to manage invasive plants. Specifically:

> Sec. 2 (a)(2) (i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; (iii) monitor invasive species populations accurately and reliably; (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded; (v) conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; and (vi) promote public education on invasive species and the means to address them; and (3) not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

## Executive Order 12898: Environmental Justice

Executive Order #12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, directs federal agencies to address effects accruing in a disproportionate way to minority and low income populations. FEIS, Chapter 3.2.3 discusses the potential impacts of this project on these groups. The R6 2005 FEIS noted that some minority groups may be disproportionately exposed to herbicides, either because they are disproportionately represented in the pool of likely forest workers, or in the pool of special forest product or subsistence gatherers. The R6 2005 FEIS suggested that Hispanic/Latino forest workers and American Indians are minority groups that could be disproportionately affected by herbicide use. On the Mt. Baker-Snoqualmie National Forest, Asian matsutake mushroom pickers and others who collect or use special forest products may also be disproportionately affected.

The potential exposures and effects to minority groups who apply herbicides or gather or use forest products are the same as those evaluated above under the worker and public herbicide exposure analysis sections of the FEIS (Chapter 3.2). Even given plausible inadvertent acute or

chronic exposures, minority forest workers, special forest product harvesters, and subsistence gatherers are not likely to be exposed to a dose that exceeds a threshold of concern. MR/MM requiring public and tribal notification, use of dye in spray mixes, on-the-ground signing, and restrictions on herbicide and surfactant use will further reduce the potential for exposure.

### Executive Order 13443: Facilitation of Hunting Heritage and Wildlife Conservation

This order was signed on August 16, 2007 and directs Federal agencies that have programs and activities that have a measurable effect on public land management, outdoor recreation, and wildlife management, including the Department of the Interior and the Department of Agriculture, to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat. The project is consistent with this order by improving wildlife habitat through the reduction of invasive plant infestations and the maintenance of native 2rowse.

## Environmentally Preferred Alternative

Alternative 2 is the environmentally preferred alternative in accordance with Council on Environmental Quality (CEQ) regulations (40 CFR Part 1505.2 (b)). Alternative 2 is preferable because it will most effectively reduce the presence and influence of invasive plants on National Forest System lands. It will also do the most to protect and allow for re-establishment of native plant ecosystems that have been or are in danger of displacement by invasive plant populations. The FEIS acknowledges that this alternative most aggressively utilizes herbicides and herbicide application methods to accomplish the project purpose and need. This FEIS also prescribes MR/MM, herbicide use buffers and other limitations necessary to ensure protection of the natural and human environment.

## Pre-Decisional Administrative Review or Objection Opportunities

My decision selects a project or activity implementing a land management plan that is not authorized under the Healthy Forests Restoration Act of 2003 (Pub. L. 108-148, 117 Stat 1887). Therefore, my decision is subject to pre-decisional administrative review and objection pursuant to 36 CFR Part 218, subparts A and B. My decision includes a Forest Plan Amendment.

The Mt. Baker-Snoqualmie National Forest Invasive Plant Treatment Project was originally scoped under the provisions of 36 CFR Part 215. For this project, individuals or organizations who submitted specific, written comments in response to scoping conducted under 36 CFR Part 215 or provided comments to the draft environmental impact statement will be considered to have standing to object under 36 CFR Part 218, Subparts A and B.

Issues raised in objections must be based on previously submitted timely, specific written comments regarding the proposed project unless the issue is based on new information arising after the designated comment opportunities.

The following address should be used for objections sent by regular mail: Objection Reviewing Officer, USDA Forest Service, Pacific Northwest Region, Pacific Northwest Region, USDA Forest Service, Attn: 1570 Appeals and Objections, PO Box 3623, Portland, OR 97208-3623.

Objections delivered by mail must be received before the close of the fifth business day after the objection filing period.

Objections sent by private carrier or hand delivery must go to: Objection Reviewing Officer, USDA Forest Service, Pacific Northwest Region, 1220 SW 3rd Avenue, Portland, OR 97204. Hand deliveries can occur between 8:00 AM and 4:30 PM, Monday through Friday except legal holidays.

Objections can be faxed to the Objection Reviewing Officer, Attn: 1570 Objections at (503)-808-2339The fax coversheet must include a subject line with "Mt. Baker-Snoqualmie National Forest Invasive Plant Treatment Project" and should specify the number of pages being submitted.

Electronic objections must be submitted to the Objection Reviewing Officer via email to objections-pnw-regional-office@fs.fed.us. with "Mt. Baker-Snoqualmie National Forest Invasive Plant Treatment Project" in the subject line. Electronic submissions must be submitted in a format that is readable with optical character recognition software (e.g., MS Word, PDF, Rich Text Format) and be searchable. An automated response should confirm your electronic objection has been received.

The objection must meet the content requirements of 36 CFR § 218.8(d), and include the following information: (1) the objector's name and address, with a telephone number or email address, if available; (2) a signature or other verification of authorship upon request (a scanned signature for email may be filed with the objection); (3) when multiple names are listed on an objection, identification of the lead objector as defined in 36 CFR § 218.2 (verification of the identity of the lead objector shall be provided upon request); (4) the name of the project being objected to, the name and title of the responsible official, and the name of the national forest and ranger district on which the project will be implemented; (5) a description of those aspects of the project addressed by the objection, including specific issues related to the project and, if applicable, how the objector believes the environmental analysis or decision specifically violates law, regulation, or policy; suggested remedies that would resolve the objection; and supporting reasons for the reviewing officer to consider; and (6) a statement that demonstrates the connection between prior specific written comments on the particular project or activity and the content of the objection, unless the objection concerns an issue that arose after the designated opportunity for formal comment. With certain exceptions (36 CFR § 218.8(b)), all documents referenced in the objection must be included with the objection.

Objections, including attachments, must be filed within 45 days from the publication date of a "Legal Notice of the Opportunity to Object" for this project in the *Everett Herald*, the newspaper of record (78 FR 241, p. 76101, 12/16/2013). 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.

It is the objector's responsibility to ensure timely filing of a written objection with the reviewing officer pursuant to 36 CFR § 218.9. All objections are available for public inspection during and after the objection process. Responses that do not adhere to these requirements make review of an objection difficult and are conditions under which the reviewing officer may set aside an objection pursuant to 36 CFR § 218.10.

# Implementation

The Mt. Baker-Snoqualmie National Forest Invasive Plant Treatment Project may be implemented after the completion of the objection process and immediately upon my issuance of a signed Record of Decision. I will notify interested or affected parties of the availability of this ROD as soon as practicable after signing (36 CFR § 220.5(g)).

# Contact Person

For additional information concerning this decision, the Forest Service pre-decisional administrative review and objection process, or to request additional copies of the FEIS or ROD, contact Phyllis Reed, Project Coordinator by e-mail at plreed@fs.fed.us or by telephone at 360-436-2332.

JENNIFER EBERLIEN
Forest Supervisor
Mt. Baker-Snoqualmie National Forest

[DATE]

# Attachment 1

**Table 1- 1. Integrated Treatment Prescriptions – Selected Alternative**

| Target species (Common Name) | Approx. Number of Sites | Approx. Acreage Infested 1 | First Choice Herbicide (those NOT available in current program are bolded) | Other Possible Herbicides (those NOT available in current program are bolded) | Effective Non-Herbicide Treatments (alone or in combination with herbicide use) |
|---|---|---|---|---|---|
| Absinth wormwood | 1 | 2 | **Aminopyralid** | Clopyralid<br>Glyphosate | Non-herbicide treatments are not effective. |
| Birds-foot trefoil | 2 | 22 | Clopyralid | **Aminopyralid**<br>**Triclopyr**<br>Glyphosate | Manual digging. Removing flowering plants, non-flowering can be left on site to dry. |
| bittersweet nightshade | 1 | <1 | Glyphosate | Imazapyr<br>**Triclopyr**<br>**Imazapic** | Manual digging. All plant parts should be removed from site. |
| Black locust | 1 | <1 | **Triclopyr** | Glyphosate | Hand cutting |
| Bull thistle | 107 | 63 | **Aminopyralid** | Glyphosate<br>**Triclopyr**<br>Clopyralid | Effective biological control agents. Manual pulling and digging. Leave roots on site to dry, bag seed heads if present |
| Butterfly bush | 15 | 22 | Glyphosate | **Triclopyr**<br>Imazapyr | Effective biological control agents. Manual pulling, digging and cutting. Rhizomatous, suckering plants, remove all plant parts from site. |
| Canada thistle | 159 | 404 | **Aminopyralid** | **Picloram**<br>Clopyralid<br>Glyphosate<br>**Chlorsulfuron** | Effective biological control agents. |
| Common burdock | 2 | <1 | **Triclopyr** | Clopyralid<br>Glyphosate<br>**Aminopyralid** | Manual pulling and digging. Seeds to be removed from site, all other plant parts can remain on site. |
| Common comfrey | 3 | <1 | Glyphosate | Clopyralid | Non-herbicide treatments are not effective. |

| Target species (Common Name) | Approx. Number of Sites | Approx. Acreage Infested 1 | First Choice Herbicide (those NOT available in current program are bolded) | Other Possible Herbicides (those NOT available in current program are bolded) | Effective Non-Herbicide Treatments (alone or in combination with herbicide use) |
|---|---|---|---|---|---|
| Common groundsel | 4 | <1 | Clopyralid | Glyphosate | Manual pulling and digging Non-flowering plants can be left on site, remove plants that are in bud/flowering stage. |
| Common periwinkle | 4 | <1 | Glyphosate | **Triclopyr**<br>**Picloram** | Manual pulling, raking and digging. Can be left on site to dry. |
| Common tansy | 19 | 73 | **Metsulfuron methyl** (Approved Currently At Skiyou Island) | **Chlorsulfuron**<br>Glyphosate | Manual digging. Remove all flower/seed heads from site, all other plant parts can be left at site. |
| Common teasel | 1 | <1 | **Triclopyr**<br>Clopyralid\ | Glyphosate<br>**Metsulfuron methyl**<br>**Chlorsulfuron**<br>**Imazapic** | Non-herbicide treatments are not effective. |
| Cutleaf blackberry | 12 | 32 | **Triclopyr** | Glyphosate | Manual pulling and digging. All plant parts can be left on site to dry. |
| Dalmatian toadflax | 8 | 24 | **Chlorsulfuron** | **Picloram**<br>**Imazapic**<br>**Metsulfuron methyl**<br>Glyphosate | Effective biological control agents. Manual pulling and digging. All parts except seeds can be left on site. |
| Diffuse knapweed | 3 | 41 | **Aminopyralid** | Clopyralid<br>**Triclopyr**<br>Glyphosate<br>**Picloram** | Effective biological control agents. Manual pulling and digging. All plant parts except flower/seed heads can remain on site. |
| Elephant ear/Japanese sweet coltsfoot | 2 | <1 | Glyphosate | Glyphosate | Manual digging. Plant parts can be left on site to dry. |
| English holly | 4 | <1 | Glyphosate | Glyphosate | Manual pulling and digging. Mechanical cutting. Plants can be left on site to dry. |
| English ivy | 3 | <1 | **Triclopyr** | Glyphosate | Manual pulling and digging. Seeds if present, to be removed, all other plant parts can be left on site to dry |
| European lily of the valley | 1 | <1 | Glyphosate | **Metsulfuron methyl**<br>**Chlorsulfuron** | Manual digging. Remove all plant parts from site. |

| Target species (Common Name) | Approx. Number of Sites | Approx. Acreage Infested 1 | First Choice Herbicide (those NOT available in current program are bolded) | Other Possible Herbicides (those NOT available in current program are bolded) | Effective Non-Herbicide Treatments (alone or in combination with herbicide use) |
|---|---|---|---|---|---|
| Field bindweed | 4 | <1 | Glyphosate | **Triclopyr**<br>**Picloram** | Effective biological control agents. |
| Giant hogwee**d** | 1 | <1 | Glyphosate | **Triclopyr** | Manual pulling and digging. Plant can be left on site, but should be removed in areas where the public may encounter the plant. |
| Hairy cat's ear | 2 | 159 | Clopyralid | Glyphosate<br>**Picloram** | Manual digging. Competitive seeding. All but flower/seed heads can be left on site. |
| hawkweed – Non-native (common, orange, yellow, spotted, smooth, tall) | 140 | 1,233 | **Aminopyralid** | Clopyralid<br>**Triclopyr**<br>Glyphosate | Effective biological control agents. Manual pulling and digging. All plant parts should be removed from site. |
| Hedge false bindweed | 4 | <1 | Glyphosate | **Triclopyr**<br>**Picloram** | Non-herbicide treatments are not effective. |
| Herb Robert | 126 | 850 | Glyphosate | Glyphosate | Manual pulling and digging. Plants not in flower can be left on site, all others removed. |
| Himalayan blackberry | 14 | 55 | **Triclopyr** | Glyphosate | Manual pulling and digging. All plant parts can be left on site to dry. |
| Jewelweed | 1 | 3 | Glyphosate | **Triclopyr**<br>**Metsulfuron methyl** | Manual pulling. Plants in flower should be removed. |
| Knotweed (Bohemian, giant, Japanese) | 74 | 892 | Glyphosate<br>Imazapyr | Glyphosate<br>Imazapyr | Non-herbicide treatments are not effective. |
| Meadow knapweed | 3 | 11 | **Aminopyralid** | Clopyralid<br>**Triclopyr**<br>Glyphosate<br>**Picloram** | Effective biological control agents. Manual digging. All plant parts except flower/seed heads can remain on site. |
| Oxeye daisy | 3 | 156 | **Aminopyralid** | Clopyralid<br>**Picloram**<br>Glyphosate | Manual pulling and digging. All plant parts except flowers can be left on site. |
| Poison hemlock | 1 | <1 | Glyphosate | **Metsulfuron methyl**<br>**Triclopyr** | Manual pulling and digging. Plant parts except seeds can be left on site. |

| Target species (Common Name) | Approx. Number of Sites | Approx. Acreage Infested 1 | First Choice Herbicide (those NOT available in current program are bolded) | Other Possible Herbicides (those NOT available in current program are bolded) | Effective Non-Herbicide Treatments (alone or in combination with herbicide use) |
|---|---|---|---|---|---|
| Policeman's helmet | 1 | <1 | Glyphosate | **Triclopyr**<br>**Metsulfuron methyl** | Manual pulling and digging. Remove flower heads/seed from site. |
| Reed canary grass | 3 | 121 | Glyphosate | **Sulfometuron methyl**<br>Imazapyr | Approved non-herbicide methods are not effective. |
| Rhubarb | 1 | <1 | Glyphosate | Imazapyr<br>Clopyralid | Manual digging. Plant can be left on site to dry. |
| Scotch broom | 73 | 141 | **Aminopyralid** | Glyphosate<br>**Triclopyr** | Effective biological control agents. Manual pulling and digging and mechanical cutting. All plants parts except those with seed pods can be left on site. |
| Spotted knapweed | 32 | 173 | **Aminopyralid** | **Picloram**<br>**Triclopyr**<br>Clopyralid<br>Glyphosate | Effective biological control agents. Manual pulling and digging. All plant parts except flower/seed heads can remain on site. |
| St. Johnswort | 1 | 2 | **Aminopyralid** | **Picloram**<br>**Metsulfuron methyl**<br>Glyphosate | Effective biological control agents. Manual pulling and digging. Remove all plant parts from site. |
| Sulphur cinquefoil | 12 | 75 | **Metsulfuron methyl** | **Picloram**<br>Glyphosate<br>**Triclopyr**<br>**Aminopyralid** | Manual pulling and digging. All plant parts except seeds can be left on site. |
| Tansy ragwort | 75 | 319 | **Aminopyralid** | **Picloram**<br>Metsulfuron methyl<br>Clopyralid<br>Glyphosate<br>Triclopyr | Effective biological control agents. Manual pulling and digging. All flowering parts, including those not yet in bloom, removed from site. |
| Wild carrot | 4 | 2 | **Metsulfuron methyl** (Approved Currently At Skiyou Island) | **Chlorsulfuron**<br>**Triclopyr**<br>Glyphosate | Manual pulling. Remove flower/seeds from site. |
| Woolly hedgenettle | 1 | <1 | Glyphosate | **Triclopyr**<br>Imazapyr | Manual pulling and digging. Remove all plant parts from site. |

| Target species (Common Name) | Approx. Number of Sites | Approx. Acreage Infested 1 | First Choice Herbicide (those NOT available in current program are bolded) | Other Possible Herbicides (those NOT available in current program are bolded) | Effective Non-Herbicide Treatments (alone or in combination with herbicide use) |
|---|---|---|---|---|---|
| Yellow archangel | 6 | <1 | Glyphosate | **Triclopyr**<br>Imazapyr<br>**Metsulfuron methyl** | Manual pulling and digging. Remove all plant parts from site. |
| Yellow flag iris | 1 | <1 | Imazapyr | Glyphosate | Manual pulling and digging. Remove rhizomes and seeds from site. |
| Estimated Total[1] | 935 | 4,878 | | | |

[1]Infested acreage is imprecise and likely to far overestimate the extent of inventoried target species. Some of the target species co-occur within infested acres.

## Post-Treatment Restoration (Revegetation)

Revegetation would occur following treatment if needed to restore native plant communities. Each treatment site was classified into one of five categories:

1. **None**. These are areas where revegetation is either not desirable, or not realistic, or inappropriate. For instance, revegetation would not be desirable in a naturally unvegetated area such as a gravel bar. Revegetation would not be realistic if the area is constantly being graded or cleared such as a gravel pit. Revegetation would not be appropriate in cases such as a tree climbing vine like ivy or clematis.
2. **Passive Revegetation.** Site is expected to revegetate naturally because there are enough native species (or desirable non-natives such as within lawns in administrative sites) in the immediate vicinity to colonize once the weeds are killed. Site types include vegetated road shoulders and small areas in forested sites.
3. **Seed and Mulch**. This is the prescription for use where there are not enough native species in the immediate vicinity to colonize once the weeds are killed but planting is not prescribed. Examples include areas targeted for broadcast treatment. Use local native seed mix if possible, otherwise use MBS non-invasive non-native species (per Potash and Aubry 1999, as amended in 2003).
4. **Plant Rooted Stock**. For specific restoration projects or where the weed has to be excavated in order to control it (i.e. first-choice/ first-year treatment is dig or where large areas of shrub-like weeds occur).
5. **Planted in the Past**. Some examples include portions of Marblemount Boat Launch, Ovenell Property, Kaaland Acquisition, Skiyou Island.

Please see FEIS Appendix B for a list of treatment sites and proposed restoration activities.

## Management Requirements and Mitigation Measures (MR/MM)

The Proposed Action would include the Management Requirements and Mitigation Measures (MR/MM) listed in Table 1- 2.

**Table 1- 2. Management Requirements and Mitigation Measures**

| MR/MM ID | Management Requirements and Mitigation Measures | Objective |
|---|---|---|
| | **General** | |
| 1 | Coordinate herbicide use within 1000 feet (slope distance) of known water intakes with the water user or manager. | To ensure that water users are informed about nearby herbicide use. |
| 2 | Coordinate herbicide use with Municipal Water boards. Herbicide use or application method may be excluded or limited in some areas. | To ensure that water users are informed about nearby herbicide use and standards for municipal watersheds are met. |
| 3 | Pretreatment briefings would be conducted with all herbicide applicators to emphasize safety requirements, clarify treatment objectives and all mitigation measures, and to clarify identification of both target and non-target species. | To ensure applicators are aware of project requirements. |

| MR/MM ID | Management Requirements and Mitigation Measures | Objective |
|---|---|---|
| 4 | Lowest effective herbicide use rates would be used for each treatment situation. Nonylphenol ethoxylate-based non-ionic (NPE) and POEA surfactants would not be used. Vegetable oils and silicone blends that contain alkylphenol ethoxylate ingredients may be used. | To minimize possible herbicide or surfactant exposures of concern to human health. |
| 5 | After working in invasive plant sites, all tools, equipment, and gear must be cleaned (power wash or high pressure spraying) before leaving the area. Any mulch used must be approved as invasive plant free. Non-invasive plants (preferably native plants) would be used for restoration where needed. | To prevent the spread of invasive plants during treatment operations. |
| 6 | Herbicide mixture would be colored with a bright, non-toxic vegetable dye before application. | To (a) minimize the possibility of accidentally applying herbicide to non-target species; (b) minimize the amount of herbicide used, by avoiding re-application to plants that have already been treated; and (c) assist anyone who might be gathering forest products or near a treatment area (public or Tribe) in identifying plants and areas that should be temporarily avoided. |
| 7 | Do not apply herbicides when local weather forecast calls for a ≥ 80% chance of rain. Do not broadcast spray when wind speed at the site is in excess of 5 mph. Weather conditions would be monitored periodically during operations. To minimize herbicide application drift during broadcast operations, use low nozzle pressure; apply as a coarse spray, and use nozzles designed for herbicide application that do not produce a fine droplet spray, e.g., nozzle diameter to produce a median droplet diameter of 500-800 microns. | To reduce potential for off-site herbicide drift and run off. |

| MR/MM ID | Management Requirements and Mitigation Measures | Objective |
|---|---|---|
| 8 | **Herbicide Transportation and Handling Safety/Spill Prevention and Containment**<br>An Herbicide Transportation and Handling Safety/Spill Response Plan would be the responsibility of the herbicide applicator. At a minimum the plan would:<br>ü Address spill prevention and containment.<br>ü Require that impervious material be placed beneath mixing areas in such a manner as to contain small spills associated with mixing/refilling.<br>ü Require a spill cleanup kit be readily available for herbicide transportation, storage and application (minimum FOSS Spill Tote Universal or equivalent).<br>ü Outline reporting procedures, including reporting spills to the appropriate regulatory agency.<br>ü Ensure applicators are trained in safe handling and transportation procedures and spill cleanup.<br>ü Require that equipment used in herbicide storage, transportation and handling are maintained in a leak proof condition.<br>ü Address transportation routes so that traffic, domestic water sources, and blind curves are avoided to the extent possible.<br>ü Specify conditions under which guide vehicles would be required.<br>ü Ensure safe disposal of herbicide containers.<br>ü Identify sites that may only be reached by water travel and limit the amount of herbicide that may be transported by watercraft.<br>ü Workers would carry only enough herbicide daily to cover the proposed treatment for that day.<br>ü See soil, water and fisheries MR/MMs for additional measures | To reduce likelihood of spills and contain any spills. |
| | **Botanical** | |
| 9 | Surveys would be conducted for botanical species of conservation concern prior to invasive plant treatments **if**: (1) the area has not already been surveyed for these species, (2) if the area contains likely habitat for any of these species, **and** (3) if the proposed treatments are likely to have a negative impact to individual plants. Surveys would be conducted in the area within 30 feet from where use of herbicides is planned. If species of concern are located, then mitigation measures for that species and that herbicide will be applied. | To ensure surveys are conducted for botanical species of conservation concern when circumstances warrant. |
| 10 | Follow mitigation measures for botanical species of conservation concern known to be within 30 feet of invasive plant treatment sites (see Table 31 in Chapter 3.3). Site-specific mitigation measures would be developed for unknown newly discovered botanical species of conservation concern within 30 feet of treatment sites. | To ensure appropriate steps are taken to protect botanical species of conservation concern when herbicide is being used to treat invasive plants. |
| 11 | A botany specialist will coordinate with applicators to ensure botanical species of conservation concern are protected. Treatments will be monitored for efficacy and refined as needed. | Ensure that botanical species of conservation concern are not adversely affected by treatments. |
| 12 | For herbicide treatment, use protective measures such as low-pressure spot-spray, directed spray applications, backpack applications, and/or protective barrier for botanical species of conservation concern. If buffers are needed to protect botanical species of conservation concern, the following guidance will be | Minimize likelihood of herbicides inadvertently reaching botanical species of conservation concern. |

| MR/MM ID | Management Requirements and Mitigation Measures | Objective |
|---|---|---|
| | followed:<br>· Greater than 30 feet: All application methods permitted. All herbicides are permitted.<br>· Between 30 and 0 feet: No use of chlorsulfuron, imazapic, metsulfuron methyl, sulfometuron methyl, or picloram permitted. Clopyralid, aminopyralid, and triclopyr may be used if plant is not susceptible to these selective herbicides. Spot spray of glyphosate may be used if the rare plant is shielded or covered and botanist is on site. | |
| 13 | Do not apply imazapic to areas treated within the previous 18 months with chlorsulfuron, metsulfuron methyl, sulfometuron methyl, or imazapyr in areas where reseeding of susceptible species is to occur. | To avoid damage to non-target plants. Label caution states “for the previous year”. 18 months provides higher level of protection. |
| 14 | In order to protect botanical species of conservation concern in saturated or wet soils at the time of application, do not use picloram or imazapyr due to their mobility.<br>Under saturated or wet soil conditions present at the time of treatment, only hand application of herbicide is permitted within 10 feet of botanical species of conservation concern. | Protect botanical species of conservation concern from impacts of certain herbicides. |
| 15 | Do not broadcast sulfonylurea herbicides within 50 feet of botanical species of conservation concern. | Protect botanical species of conservation concern from impacts from sulfonylurea herbicides through air (drift). |
| | **Soils, Water and Fisheries (includes Water Quality Best Management Practices)** | |
| 16 | The following treatment methods are shown in order of preference (if effective and practical), within roads that have higher risk of herbicide delivery to fish habitat and adjacent alluvial floodplains:<br>(1) Non-herbicide (e.g., hand pulling).<br>(2) Application of aminopyralid, clopyralid, imazapic, and metsulfuron methyl, aquatic glyphosate, aquatic triclopyr, aquatic imazapyr.<br>(3) Application of chlorsulfuron, imazapyr, sulfometuron methyl.<br>(4) Application of non-aquatic glyphosate.<br>No picloram or non-aquatic triclopyr BEE would be used on roads that have a higher risk of herbicide delivery to fish habitat. | To protect aquatic organisms by favoring lower risk methods where effective on roads that have a higher risk of herbicide delivery to fish habitat. Appendix D displays a list and maps of roads considered higher risk. Roads are considered higher risk for herbicide delivery to fish bearing streams if any portion of the road segment comes within 200 feet of a fish bearing stream. |
| 17 | Only aquatic glyphosate, aquatic imazapyr, aminopyralid, clopyralid, imazapic, and metsulfuron methyl may be applied with a broadcast method on roads that have a higher risk of herbicide delivery to fish bearing streams. Portions of high risk roads may be cleared for use of picloram or non-aquatic triclopyr or broadcast spraying of chlorsulfuron, imazapyr, sulfometuron methyl based on a site review by an aquatics specialist to ensure the roadside ditches are not hydrologically connected to streams. | To ensure herbicide is not delivered to streams in concentrations that exceed levels of concern. |

| MR/MM ID | Management Requirements and Mitigation Measures | Objective |
|---|---|---|
| 18 | The following herbicides may be spot or hand/selectively applied within 15 feet of any wet roadside ditch: Aquatic labeled glyphosate, aquatic labeled imazapyr, aquatic labeled triclopyr, aminopyralid, imazapic, clopyralid and metsulfuron methyl. No use of chlorsulfuron, picloram or sulfometuron methyl would occur within 15 feet of a wet roadside ditch. | To ensure herbicide is not delivered to streams in concentrations that exceed levels of concern. |
| 19 | Total treatment area would not exceed 10% of Riparian Reserves within a 6th field sub-watershed in any given year. | Limits the extent of treatment near water so that effects are within the scope of analysis. |
| 20 | Lakes and Ponds – No more than half the perimeter or 50 percent of the vegetative cover or 10 contiguous acres around a lake or pond would be treated with herbicides in any 30-day period. | To reduce exposure to herbicides and uncertainty regarding effects to reptiles and amphibians by providing some untreated areas for some organisms to use. |
| 21 | Equipment fueling sites would be at least 150 feet from lakes, wetlands, or stream channels. | To minimize risk of fuel entering water. Width incorporates aquatic influence zone. |
| 22 | All herbicide storage, chemical mixing, refilling and post-application equipment cleaning would be performed at least 300 feet from live water, domestic wells, or domestic spring boxes, and in such a manner as to prevent the potential contamination of any riparian area, perennial or intermittent waterway, ephemeral waterway, wetland, or drinking water. | Reduce potential for adverse effects from accidental spills. 300 feet includes largest Riparian Reserve. Incorporates Washington State wellhead protection protocol. |
| 23 | POEA would not be used. Select from the list of surfactants approved by the Dept. of Ecology for use in aquatic environments for treatments within 100 feet of streams (see Appendix E). | Eliminates use of higher risk surfactant. |
| 24 | Avoid using picloram, imazapyr and/or metsulfuron methyl sulfometuron methyl on bare or compact soils that are highly disturbed. | To preserve site recovery after disturbance, lessen offsite runoff and leaching. Poor soils will have longer residence times with these persistent herbicides. |
| 25 | For soils with seasonally high water tables, do not use picloram or triclopyr BEE and limit glyphosate use to aquatic label only. | Reduce the risk for contamination of groundwater and offsite runoff to aquatic habitat and fish. |
| 26 | Do not use more than one application of imazapyr, metsulfuron methyl, or picloram on a given area in any two calendar years, except to treat areas missed during the initial application. Aminopyralid would not be broadcast in any area more than once per year. Avoid application of persistent herbicides on anaerobic soils or saturated duff layers within 100 feet of streams. | Reduce potential for herbicide accumulation in soil. |
| 27 | Limit herbicide offsite transport on sites with high runoff potential including sites with:<br>· shallow seasonal water tables,<br>· saturated soils (wet muck and peat soils),<br>· steep erosive slopes with shallow soils and rock outcrop, or<br>· bare compacted and disturbed soils.<br>Limit runoff by applying herbicide:<br>· during the dry season with the lowest soil moisture conditions | Reduce potential offsite runoff transport of herbicides. |

| MR/MM ID | Management Requirements and Mitigation Measures | Objective |
|---|---|---|
| | · where > 50% groundcover exists on shallow slope sites and > 70% on steep slope sites, and/or<br>· at reduced rates. | |
| 28 | Areas of gouging or soil displacement resulting from manual treatment methods (digging or pulling) within 35 feet of water courses with surface water present will be treated to prevent rill and gully erosion and possible sediment delivery to steam courses. Erosion control treatment will include scattering seed and mulch (straw) to create flow disruption and surface soil stability. | Minimize short- and long-term soil, hydrologic and water quality impacts. |
| 29 | Herbicide use buffers have been established for perennial and wet intermittent steams; dry streams; and lakes and wetlands. Buffers vary by herbicide ingredient and application method.<br><br>Tank mixtures would apply the largest buffer as indicated for any of the herbicides in the mixture. | To reduce likelihood that herbicides would enter surface waters in concentrations of concern. Comply with R6 2005 ROD Standards 19 and 20. |
| 30 | Apply erosion control measures (e.g. silt fences or shut down periods) and native re-vegetation (e.g., mulching, native grass seeding, planting) for manual treatment where soil disturbance or de-vegetation may result in the delivery of measurable levels of fine sediment to federally listed fish species' critical habitat. | Minimize short- and long-term soil, hydrologic and water quality impacts. |
| | **Wildlife** | |
| 31 | Treatment of areas within 0.25 mile, or 0.5 mile line-of-site of bald eagle nests would be timed to occur outside the nesting season of January 1 – August 15 unless treatment activity is within ambient levels of noise and human presence (as determined by a local specialist). This seasonal restriction may be waived if a biologist determines by appropriate surveys that nest sites are not active that year. | To minimize disturbance to nesting bald eagles and protect eggs and nestlings |
| 32 | Noise-producing activity above ambient levels would not occur between October 31 and March 1 within 0.25 mile, or 0.50 mile line-of-sight, of known bald eagle winter roosts and concentrated foraging areas. Disturbance to daytime winter foraging areas would be avoided. | To minimize disturbance and reduce energy demands during stressful winter season. |
| 33 | Treatment of areas within 1.0 mile line-of-site of known grizzly bear dens would be timed to occur outside the denning season of October 30 – April 30. | To minimize disturbance and reduce energy demands to denning grizzly bear. |
| 34 | Treatment of areas within 1.0 mile line-of-site of known wolf dens would be timed to occur outside the denning season of April 1 – June 30. | To minimize disturbance and reduce energy demands to denning wolves. |
| 35 | Treatment of areas within 0.5 mile line-of-site of occupied rendezvous site would be timed to occur outside the season of April 1 – August 31, unless treatment activity is within acceptable ambient noise levels and human presence would not cause wolves to abandon the site (as determined by local specialist) . | To minimize disturbance and reduce energy demands to gray wolves. |
| 36 | Seasonal restrictions would apply during the periods listed below based on the following elevations within 0.5 miles of peregrine nest sites (primary nest zone):<br>· Low elevation sites (1000-2000 ft.) 01 Jan - 01 July<br>· Medium elevation sites (2001-4000 ft.) 15 Jan - 31 July<br>· Upper elevation sites (4001+ ft.) 01 Feb - 15 Aug<br>Seasonal restrictions would be waived within primary and secondary nest zones if the site is unoccupied or if nesting efforts | To reduce disturbance to nesting falcons and protect eggs and nestlings. |

| MR/MM ID | Management Requirements and Mitigation Measures | Objective |
|---|---|---|
| | fail and monitoring indicates no further nesting behavior.<br>Seasonal restrictions would be extended if monitoring indicates late season nesting, asynchronous hatching leading to late fledging, or recycle behavior which indicates that late nesting and fledging would occur. | |
| 37 | Invasive plant treatments involving motorized equipment and/or vehicles would be seasonally prohibited within 1.5 miles of known nest sites (secondary nest zones). This may include activities such as mulching, chainsaws, vehicles (with or without boom spray equipment) or other mechanically based invasive plant treatment.<br>Non-mechanized or low disturbance invasive plant activities (such as spot spray, hand pull, etc.) may occur within the secondary nest zone, but would be coordinated with the wildlife biologist on a case-by-case basis to determine potential disturbance to nesting falcons and identify mitigating measures, if necessary.<br>Seasonal restrictions would be waived within primary and secondary nest zones if the site is unoccupied or if nesting efforts fail and monitoring indicates no further nesting behavior.<br>Seasonal restrictions would be extended if monitoring indicates late season nesting, asynchronous hatching leading to late fledging, or recycle behavior which indicates that late nesting and fledging would occur. | To reduce disturbance to nesting falcons and protect eggs and nestlings. |
| 38 | Clopyralid would not be used within 1.5 miles of peregrine nest more than once per year.<br>Picloram would not be used more than once every 2 years. | To reduce exposure to hexachlorobenzene (HCB). |
| 39 | Active nest sites should be protected from disturbance above ambient levels during the dates specified. Local biologist will determine appropriate distances for planned operations prior to implementation. | To minimize or eliminate disturbance to nesting raptors. |
| 40 | Avoid broadcast spraying of herbicide in talus or rocky outcrops, springs, seeps or stream margins to protect Van Dyke's and Larch Mountain salamanders. Utilize aquatic design features for suitable habitat in riparian areas, streams, and rivers. | To reduce likelihood of exposure to herbicides or additives from contaminated soil or water. |
| 41 | Avoid broadcast spraying of herbicide in known sites or high potential suitable mollusk habitat outside of roadside treatment locations when soil moisture is high (generally late fall to early spring). | To reduce likelihood of trampling and herbicide exposure. |
| 42 | Mower or motorized equipment use within 65 yards, of any nest site, activity center, or un-surveyed suitable habitat will be timed to occur outside the early nesting season of March 1 to July 15, if the project will last more than 1 day at a single location. Short duration projects using mowing or motorized equipment for less than 1 day or transient mowing equipment (such as road brushing) may occur in the early season. There is no seasonal restriction on the use of roadside broadcast sprayers. | To minimize disturbance to nesting spotted owls and protect eggs and nestlings. |

| MR/MM ID | Management Requirements and Mitigation Measures | Objective |
|---|---|---|
| 43 | Mower or motorized equipment use within 110 yards, of any known occupied site or un-surveyed suitable habitat will be timed to occur outside the nesting season of April 1 to September 23, if the project will last more than 1 day at a single location. Short duration projects using mowing or motorized equipment for less than 1 day or transient mowing equipment (such as road brushing) may occur in the early season. There is no seasonal restriction on the use of roadside broadcast sprayers. | To minimize disturbance to nesting marbled murrelets and protect eggs and nestlings |
| 44 | After April 1 and before September 24, activities generating noise above 92 dB may occur within the disturbance distances listed above, but must still be conducted between 2 hours after sunrise and 2 hours before sunset. | To minimize disturbance to marbled murrelets returning to nest tree during the breeding season. |
| | **Recreation** | |
| 45 | Administrative Sites**:** Notify Forest employees of upcoming herbicide treatment in advance through e-mail. At the site, post specific treatment methods, herbicide ingredients to be used, and precise treatment location 1 day prior to treatment. Posting to remain on site for 1 week following treatment. | To avoid exposing people to herbicides in administrative sites. |
| 46 | Recreation Residence Permit Holders: Notify permit holders of upcoming herbicide treatment in advance through the mail. At the entrance to the recreation residential area, post specific treatment methods, herbicide ingredients to be used, and precise location 1 day prior to treatment. Posting to remain on site for 1 week following treatment. | To avoid exposing recreation residence permit holders to herbicides. |
| 47 | Campgrounds: Provide information about upcoming herbicide treatment in advance through the campground reservation system. At the campground, post specific treatment methods, herbicide ingredients to be used, and precise location 1 day prior to treatment. Posting to remain on site for 1 week following treatment. To the extent possible, treat campgrounds early part of the work week. | To avoid exposing campground users to herbicides |
| 48 | Trailheads, Picnic Areas and Viewpoints: Alert the public about upcoming herbicide treatments on the Forest website. At the picnic area, viewpoint or trailhead, post specific treatment methods, herbicide ingredients to be used, and precise location at the time of treatment. Posting to remain on site for 1 week following treatment. | To avoid exposing trailhead/picnic area/viewpoint users to herbicides. |
| 49 | Boat Launches not associated with picnic areas or campgrounds: Alert the public about upcoming herbicide treatments on the Forest website. At the boat launch, post specific treatment methods, herbicide ingredients to be used, and precise location at the time of treatment. Posting to remain on site for 1 week following treatment. | To avoid exposing boaters to herbicides. |
| 50 | Other treatment areas not listed (including wilderness): Alert the public about upcoming herbicide treatments on the Forest website. At logical locations (for instance, on roadside entry points to treatment areas) post specific treatment methods, herbicide ingredients to be used, and precise location at the time of treatment. | To avoid exposing Forest users to herbicides. |
| 51 | Do not apply triclopyr to edible target plants (berries) when fruit is present. | To avoid exposing Forest users to triclopyr. |

| MR/MM ID | Management Requirements and Mitigation Measures | Objective |
|---|---|---|
| | **Heritage Resources** | |
| 52 | If a heritage resource is discovered during implementation, or if an identified resource is affected in an unanticipated way, stop work and secure find; notify Forest Service Heritage Specialist and adhere to Programmatic Agreement (PA). Redesign the project to ensure that resources are avoided as determined by the Heritage Specialist, until the discovery is adequately considered pursuant to the PA. | Protect historic properties |
| 53 | If Indian human remains or specified cultural items are discovered, stop work, secure find. Make appropriate notification & adhere to regulatory process. | Protect American Indian burials and cultural items. |
| 54 | Tribal Government to Government notification will occur annually. EDRR notification will occur on a case by case basis. | Allow tribal members to provide input and/or be notified prior treatment. |
| 55 | Provide an information packet “Guide to Protecting Heritage Resources” to all personnel involved in the invasive plant treatment prior to project implementation. The packet will contain information on heritage resource identification (e.g. railroad grades, prehistoric artifacts, etc.) and instructions for any historic or prehistoric resources that may be found. | Protect historic properties |
| 56 | Ensure that a heritage specialist reviews treatment and restoration proposals for new invasive plant sites not identified in this EIS prior to implementation. | Protect historic properties |
| 57 | Provide Invasive Plant prescriber(s) with a list of invasive sites at which treatment / restoration may proceed; and a second list of invasive sites at which treatments may proceed, but require further consideration prior to hand planting restoration. All other treatment and or restoration sites not on these lists require a Heritage Specialist to determine if protection, survey, monitoring, or further mitigation is warranted. | Protect historic properties |
| 58 | If the treatment differs from the “first year/first choice” or the restoration differs from what has been analyzed, the heritage specialist will be contacted to review the changes and determine if additional survey, monitoring or mitigation is warranted. | Protect historic properties |

**Table 1- 3. Herbicide Use Buffers**

| Herbicide | Perennial Streams and Wetlands, and Intermittent Streams and Roadside Ditches with flowing or standing water present | | | Dry Intermittent Streams and Wetlands | | |
|---|---|---|---|---|---|---|
| | Broadcast Spraying | Spot Spraying | Hand Selective | Broadcast Spraying | Spot Spraying | Hand Selective |
| **Labeled for Aquatic Use** | | | | | | |
| Aquatic Glyphosate | 60 | waterline | waterline | 60 | 0 | 0 |
| Aquatic Imazapyr | 60 | waterline | waterline | 60 | 0 | 0 |
| Aquatic triclopyr-TEA (acid) | Not Allowed | 15 | waterline | Not Allowed | 0 | 0 |
| **Low Risk to Aquatic Organisms** | | | | | | |
| Aminopyralid | waterline | waterline | waterline | 0 | 0 | 0 |
| Imazapic | 100 | 15 | bankfull | 60 | 0 | 0 |
| Clopyralid | 100 | 15 | bankfull | 60 | 0 | 0 |
| Metsulfuron methyl | 100 | 15 | bankfull | 60 | 0 | 0 |
| **Moderate Risk to Aquatic Organisms** | | | | | | |
| Imazapyr | 100 | 50 | bankfull | 60 | 15 | bankfull |
| Sulfometuron methyl | 100 | 50 | 5 | 60 | 15 | bankfull |
| Chlorsulfuron | 100 | 50 | bankfull | 60 | 15 | bankfull |
| **Higher Risk to Aquatic Organisms** | | | | | | |
| Picloram | 100 | 50 | 50 | 100 | 50 | 50 |
| Glyphosate that is not labeled for aquatic use | 100 | 50 | 50 | 100 | 50 | 50 |
| Triclopyr (BEE) (ester) | Not Allowed | 50 | 50 | Not Allowed | 50 | 50 |

## Early Detection Rapid Response

Early Detection/Rapid Response (EDRR) is aimed at treating new infestations that are small in size thus decreasing cost and the need for repeated herbicide applications. The existing "new invader" strategy would be modified to:

- Increase the treatment methods available for selection to be those included in the Record Decision for this EIS, along with all Management Requirements and Mitigation Measures.
- Facilitated treatment as soon as possible after detection.
- Add an annual herbicide application cap of 5,000 acres and an EDRR herbicide application cap at 13,500 acres.
- Add an implementation planning process.

Before treating new or existing sites, treatments would be prescribed based on the biology of the target species and size of the infestation. Relevant Management Requirements and Mitigation Measures (MR/MM) and herbicide use buffers would be integrated into the implementation prescription based on site conditions. Pre-treatment surveys would occur as per the MR/MM.

Treatment would occur as soon as possible after finding new sites. This process would also apply to existing sites that have changed either because they have grown larger or because they have

been reduced in size due to treatment. Coordination with adjacent landowners, water users, agencies, and partners would also occur prior to treatment. Government to government consultation with tribes would occur. Public notification would occur according to the MR/MM. Reporting items would be implemented as part of Section 7 ESA Consultation.

## Implementation Planning Process

This section outlines the process that would be used to ensure that the selected alternative is properly implemented. The methodology follows integrated weed management principles (R6 2005 FEIS, 3-3) and satisfies pesticide use planning requirements at FSH 2109.14. It applies to currently known infestations and new sites found within or outside treatment analysis areas during ongoing inventory. Treatment prescriptions would be developed to ensure that MR/MM and herbicide use buffers are appropriately incorporated.

New detections and changes to known invasive plant sites are likely to be found during the course of implementing this project. Known sites could spread and become larger, or become smaller from effective treatment. Changes to site conditions over time would be considered in the context of Forest Service NEPA Handbook: FSH 1909.15 Chapter 18.1, which provides guidance on the "Review and Documentation of New Information Received After A Decision Has Been Made." Treatments that are not specifically excluded (for instance: aerial spray, treatment of submerged or floating invasive plants, treatment of native plants) and that incorporate appropriate MR/MM, herbicide use buffers and treatment caps would be within the scope of the project and supplemental effects analysis would not be necessary.

**1. Characterize invasive plant infestations to be treated**

- Identify target species, location, density, and extent.
- Identify adjacent land uses and vectors for invasive plant spread
- Determine treatment objective and priority.

**2. Develop site-specific prescriptions**

- Identify effective integrated treatment method (Table 1- 1). Determine whether herbicides are needed and which application method is needed based on the herbicide use decision criteria shown below.
- Apply appropriate MR/MM based on:
  - Past treatment history and response to past treatment
  - Proximity to species of local interest or their habitats
  - Proximity to streams, lakes, wetlands
  - Proximity to vectors and potential for persistent disturbance;
  - Surrounding National Forest land uses and activities
  - Soil conditions
  - Municipal watersheds and/or domestic water intakes
  - Recreation areas, special forest product and special use areas
  - First-choice or other effective herbicide
  - Application rate and method
- Once the treatment prescription has been refined:

- Complete Form FS-2100-2 Pesticide Use Proposal. This form lists treatment objectives, specific herbicide(s) that would be used, the rate and method of application, and MR/MM that apply.
- Determine need for pre-project surveys for species of local interest and/or their habitats.
- Coordinate with adjacent landowners, water users, agencies, partners, and tribal governments.
- Initiate public notification.
- Obtain EPA National Pollution Discharge Elimination System (NPDES) permit for herbicide use on stream banks; on invasive plants that hang over streams; or treatments within 3-5 feet of live streams or other water bodies.

**3. Accomplishment and Compliance Monitoring**

- Develop a project work plan for herbicide use as per FSH 2109.14.3. This work plan presents organizational and operational details including the precise treatment objectives, equipment, materials, and supplies needed; the herbicide application method and rate; field crew organization and lines of responsibility; and interagency coordination.
- Ensure that contracts and agreements include the appropriate integrated prescriptions that are consistent with MR/MM and the herbicide use buffers.
- Document and report herbicide use and certified applicator information in the National pesticide use database, via the Forest Service Activity Tracking System (FACTS). The national pesticide use report extracts data from FACTS.

**4. Post-treatment Monitoring and Recurring Treatments**

- Monitoring would occur during implementation to ensure project MR/MM are implemented as planned. Post-treatment reviews would occur to determine whether treatments are effective and whether or not passive/active restoration is occurring as expected. Not all sites would be visited annually, but most would be visited at some time during or after treatment.
- Contract administration and other existing mechanisms would be used to correct deficiencies. Herbicide use would be reported as required by the FSH 2109.14 and FACTS.
- A sample of sites would be evaluated after treatment to determine whether MR/MM were appropriately applied, and whether non-target vegetation impacts were within tolerable levels.
- Prescriptions would be refined over time based on post-treatment results as long as treatments remain within the scope of the EIS. For instance, an invasive plant population treated with a broadcast herbicide may be retreated with a spot spray, or later manually pulled, once the size of the infestation is sufficiently reduced following the initial treatment. Another example would be the use of another herbicide if the first choice is not effective.
- Treatment buffers would be expanded if damage was found outside herbicide-use buffers as indicated by a decrease in the size of any non-target plant population, leaf discoloration or chlorophyll change, or mortality to individual species of local interest or non-target vegetation. The findings would be applied to herbicide-use buffers for water bodies. Herbicide-use buffers may be adjusted for certain herbicides/application methods and not others, depending on results.

## Monitoring

Monitoring for the Proposed Action includes assessment before, during and after implementation (see implementation planning process). Before implementation, a project work plan for herbicide use would be developed as described in FSH 2109.14.3. This plan presents organizational and operational details including treatment objectives, the equipment, materials, and supplies needed; the herbicide application method and rate; field crew organization and lines of responsibility, and a description of interagency coordination. The plan would also include a job hazard analysis to assure applicator safety. Before treatment, relevant MR/MM would be identified.

During implementation, a sample of treatment sites would be inspected to ensure that MR/MM were properly implemented. The MR/MM for soils, water and fish include Best Management Practices for water quality. These would be monitored using national protocols during (and after implementation). Deficiencies would be corrected immediately.

Herbicide use would be documented and reported in the National Pesticide Use Database, via the Forest Service Activity Tracking System (FACTS) and Natural Resource Information System (NRIS) databases annually. Applicator information would be tracked through the Washington Department of Agriculture Pesticide licensing database. Records would be maintained to track treatment extent within the annual and life of the project caps.

Post-treatment reviews would be conducted over time to determine whether treatments were effective and what additional treatments, including active restoration, are needed. Most sites would be revisited to determine whether treatment objectives have been met. The process described under EDRR above would be followed for re-treatment of existing sites. Treatment prescriptions would be adapted to site conditions that change over time.

A sample of sites would also be reviewed to determine whether damage to botanical species of conservation concern is occurring. MR/MM would be adjusted if unexpected impacts to botanical species of conservation concern are found. Additional monitoring may be done as part of the R6 2005 ROD Monitoring Framework or implementation of BMP monitoring protocols.

**Mount Baker Snoqualimie Invasive Plant Treatment Project**
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