



United States Department of Agriculture

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# Lassen National Forest Over-snow Vehicle Use Designation

## Revised Draft Environmental Impact Statement

Volume I. Part 1. Chapters 1 through 3 (to page  
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Forest Service

Lassen National Forest

September 2017

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# Lassen National Forest Over-snow Vehicle Use Designation

## Revised Draft Environmental Impact Statement

### Lassen National Forest

Lassen, Shasta, Tehama, Butte, Plumas, Siskiyou, and Modoc Counties,  
California

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**Abstract:** The Forest Service proposes to designate snow trails and areas for public over-snow vehicle (OSV) use on the Lassen National Forest. These designations would occur on National Forest System (NFS) snow trails and areas on NFS lands within the Lassen National Forest. The Forest Service would also identify snow trails where grooming for public OSV use would occur within the Lassen National Forest.

Consistent with the Forest Service's Travel Management Regulations at 36 CFR Part 212 Subpart C, trails and areas designated for public over-snow vehicle use would be displayed on a publicly available over-snow vehicle use map (OSVUM). Public OSV use that is inconsistent with the OSVUM would be prohibited under Federal regulations at 36 CFR §261.14.

This environmental impact statement (EIS) discloses the comparative analysis of the options being considered in designating snow trails and areas of the Lassen National Forest for OSV use. We consider the environmental impacts of a proposed action, a no-action alternative, and three additional action alternatives developed in response to issues. A Notice of Intent to prepare an EIS was published in the Federal Register on June 26, 2015. A final EIS and draft record of decision were released in August of 2016 and "Legal Notice Notice of Opportunity to Object" was published in the Lassen County Times on August 23, 2016. That legal notice signified the beginning of a 45-day objection period which began on August 24, 2016. After considering the objections received, the Forest Service determined it would be necessary to revise the analysis, starting with this Revised Draft Environmental Impact Statement (RDEIS). We prepared this RDEIS using public comments received during the scoping period, comment period, and objection period on the first final EIS; multiple interdisciplinary team discussions; coordination with project stakeholders; literature review; and analyses of effects on resources.

We encourage your review of this document. It is important that reviewers provide their comments at such times and in such a way that they are useful to our preparation of a second final EIS. Therefore, comments should be provided prior to the close of the comment period and should clearly articulate the reviewer's concerns and contentions. Comments must be received within 45 days from the date of the Notice of Availability in the Federal Register. Failing to submit timely and specific comments can affect a reviewer's ability to participate in subsequent administrative review or judicial review. Comments received in response to this solicitation, including names and addresses of those who comment, will be part of the public record for this proposed action. Comments submitted anonymously will be accepted and considered; however, anonymous comments will not provide the respondent with standing to participate in subsequent administrative or judicial review.

Send Comments to: Christopher O'Brien, Ecosystem Staff Officer, on behalf of David Hays, Forest Supervisor, Lassen National Forest, 2550 Riverside Drive, Susanville, CA 96130; (530) 257-2151, or by email to [comments-pacificsouthwest-lassen@fs.fed.us](mailto:comments-pacificsouthwest-lassen@fs.fed.us). Comments may also be sent via facsimile to (530) 252-6463.

Date Comments Must Be Received By: November 20, 2017

Comments received on this RDEIS will be considered and used to inform the development of the second final EIS. Once the second final EIS is prepared, it and the associated draft decision document (Record of Decision) would be subject to the pre-decisional administrative review process (objection process) pursuant to 36 CFR 218, Subparts A and B. Objections will only be accepted from those who have previously submitted specific written comments regarding this proposed project during scoping or other designated opportunity for public comment in accordance with §218.5(a). Issues raised in objections must be based on previously submitted, timely, specifically written comments regarding this proposed project unless based on new information arising after the designated comment opportunities.

# Summary

## Modified Proposed Action

The proposed action has been modified based on concerns expressed in the public comment period on the original Lassen National Forest Over-snow Vehicle Use Designation Draft Environmental Impact Statement (DEIS) and in the pre-decisional objection review period on the final environmental impact statement (FEIS) and Draft Record of Decision. These modifications are described in chapter 2 of this analysis.

The Forest Service proposes to designate NFS snow trails and areas on NFS land for public over-snow vehicle (OSV) use. These designations would occur on administrative units, or parts of administrative units or Ranger Districts of the Lassen National Forest where snowfall is adequate for that use to occur. These designations would be consistent with the requirements of Subpart C of the Forest Service's Travel Management Regulation at Title 36 of the Code of Federal Regulations, Part 212 (36 CFR 212). The Forest Service would also identify snow trails to be groomed for public OSV use under the Lassen National Forest OSV trail grooming program.

The Forest Service proposes the following actions on the Lassen National Forest:

1. To designate 8 discrete, specifically delineated areas for cross-country OSV use. There would be a total of 921,180 acres of NFS lands within the Lassen National Forest designated as areas where public, cross-country OSV use would be allowed. These areas would encompass approximately 80 percent of the NFS land on the Lassen National Forest. All existing OSV closures applying to areas and trails on the forest where public motorized use is not allowed would continue.
2. To designate approximately 334 miles of NFS snow trails on NFS lands within the Lassen National Forest as trails where public OSV use would be allowed. All existing OSV closures applying to trails where public motorized use is not allowed would continue.
3. To identify approximately 350 miles of snow trails that would be groomed for public OSV use by the Lassen National Forest Grooming Program. We would designate approximately 11.8 miles of snow trails for OSV use that would not be groomed. We would groom approximately 27.0 miles of snow trails for OSV use that would not be designated for OSV use because we do not have jurisdiction over these trails.
4. To groom snow trails for OSV use according to the California State Parks' snow grooming standards when there is a minimum of 12 inches of snow on trails.
5. To implement forest-wide snow depth requirements for public OSV use that would provide for public safety and natural and cultural resource protection by:
  - a. Allowing public, cross-country OSV use in designated areas only when there are 12 or more inches of snow or ice covering the landscape based on weather and observations by Forest Service personnel and the public, to minimize potential for impacts to surface and subsurface resources; and
  - b. Allowing public OSV use on designated snow trails when there are 6 or more inches of snow covering the trail. Except for approximately 0.1 mile of OSV trail (which would

require a minimum of 12 or more inches of snow for OSV use)<sup>1</sup>, all snow trails to be designated for public OSV use or identified for OSV grooming in all alternatives would overlie an existing paved, gravel, or native surface travel route. These travel routes are trails and roads used by wheeled, motorized vehicles when such use is allowed, or for non-motorized recreation.

6. Designate no areas for public cross-country OSV use that would be located within 500 feet of the Pacific Crest National Scenic Trail on the Lassen National Forest.
7. To designate up to 28 possible OSV crossing points of the Pacific Crest National Scenic Trail. All crossing points would overlie NFS routes currently designated for wheeled motorized vehicle use in the Lassen National Forest's Motor Vehicle Use Map that cross the Pacific Crest National Scenic Trail. Approximate locations of these crossing points have been identified, but they may be relocated to ensure greater safety in winter conditions and to facilitate the least difficult and most expedient access for OSV use between areas designated for OSV use. All crossing points would be located consistent with the guidelines in the Comprehensive Management Plan for the Pacific Crest National Scenic Trail (USDA Forest Service 1982). No designated crossing point would be within 0.5 mile of another designated crossing point along the Pacific Crest National Scenic Trail.

Included in the number of miles of snow trails to be designated for OSV use under this alternative are up to 28 possible snow trails that would be designated for OSV use to access the designated crossing points through areas not designated for cross-country OSV use. These crossing trails would mostly overlie routes designated for wheeled motorized vehicle use and follow the most direct approach across the Pacific Crest National Scenic Trail. Currently, we estimate that as many as 26 crossing trails would be designated. Following this estimation, total designated mileage of Pacific Crest National Scenic Trail crossing trails would be 8.1 miles, with all but 0.1 mile overlying a designated wheeled motorized vehicle travel route. Two of the possible 28 crossing points would be surrounded by non-Forest Service land so trails accessing these two crossing points would not be designated due to lack of NFS jurisdiction on surrounding land.

The decision would only apply to the public use of over-snow vehicles as defined in the Forest Service's Travel Management Regulations (36 CFR §212.1). Public OSV use that is inconsistent with the designations made under this decision would be prohibited under 36 CFR Part 261. No trails that are currently closed to OSV use would be designated for OSV use under this alternative.

## Significant Issues

Public participation and analysis identified the following significant issues and these issues were used to develop the action alternatives. The significant issues include the following:

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<sup>1</sup> This 0.1 mile of designated OSV trail crosses an area not designated for cross-country OSV use along the Pacific Crest National Scenic Trail, and is the most direct way to cross the Pacific Crest National Scenic Trail while allowing OSVs to remain on National Forest System land.

**Table S-1. List of significant issues**

Issue Topic	Cause and Effect
Availability of Motorized Over-snow Recreation Opportunities	<p>The decision has the potential to impact the opportunities for public access and use of National Forest System (NFS) lands by OSV-equipped winter recreation enthusiasts seeking enjoyable and challenging motorized experiences. The designation of snow trails and areas for public OSV use has the potential to impact the opportunities these enthusiasts seek by:</p> <ul style="list-style-type: none"> <li>a) Changing the location of and/or reducing the amount of high quality and desirable areas designated for public, cross-country OSV use on the forest;</li> <li>b) Designating an insufficient number of opportunities for public OSV use of snow trails on the forest; and</li> <li>c) Providing an insufficient number of opportunities for public OSV use of groomed snow trails on the forest. These opportunities are subject to an external constraint due to limits on the amount of funding from the State of California for grooming snow trails for public OSV use. Snow trail grooming for OSV use on NFS land is 100 percent State-funded. The State's financial support of snow trail grooming for OSV use is not expected to increase.</li> </ul>
Availability of Non-motorized Recreation Opportunities	<p>The decision has the potential to impact the opportunities for public access and use of NFS lands by non-motorized winter recreation enthusiasts seeking solitude and challenging physical experiences. The designation of snow trails and areas for public OSV use and grooming of snow trails for OSV use has the potential to impact the opportunities these enthusiasts seek by:</p> <ul style="list-style-type: none"> <li>a) Displacing non-motorized winter recreation enthusiasts, or requiring them to travel longer distances through motorized snow trails and areas than they are physically able to traverse to access their desired quiet, non-motorized experiences;</li> <li>b) Consuming untracked powder desired by backcountry skiers;</li> <li>c) Making the snow surface difficult to ski on;</li> <li>d) Creating concerns for their safety when non-motorized winter recreationists share winter recreation trails and areas with OSVs;</li> <li>e) Creating noise impacts that intrude on the solitude these enthusiasts seek;</li> <li>f) Creating local air quality impacts that intrude on the unpolluted air and solitude these enthusiasts seek; and</li> <li>g) Creating visual impacts that intrude on the unaltered scenery these enthusiasts seek.</li> </ul>

## Alternatives Considered in Detail

The Forest Service developed five alternatives: No action, the modified proposed action, and three additional action alternatives generated in response to the significant issues listed above. The no-action alternative and four action alternatives considered in detail for this analysis are listed in table S-2. Complete details of the alternatives, including project design criteria, are found in chapter 2 of this document.

**Table S-2. Alternatives considered in detail**

Alternative	Description of Alternative
1	<p>No-action alternative. There would be no change to the way the Forest Service currently manages public OSV use on the Lassen National Forest.</p> <ul style="list-style-type: none"> <li>• There are approximately 964,030 acres that are open to public OSV use. This land area would represent approximately 84 percent of the NFS land within the Lassen National Forest.</li> <li>• There are approximately 98.4 miles of the Pacific Crest National Scenic Trail within 500 feet of areas open to public OSV use on the Lassen National Forest.</li> <li>• There are no identified crossings for OSVs to cross the Pacific Crest National Scenic Trail.</li> <li>• There are 2,952 miles of currently groomed, ungroomed, marked, and unmarked snow trail open to public OSV and non-motorized use as shown on the 2005 Lassen National Forest Winter Recreation Guide (project record). These trails overlie roads and trails designated for wheeled vehicle use and are within areas currently open to OSV use. Approximately 406 miles of these trails are maintained for OSV use through signage, snow trail grooming, or both;</li> <li>• There are 349 miles of snow trails groomed for public OSV use. This includes 27 miles of snow trail not under Forest Service jurisdiction.</li> <li>• The minimum snow depth for snow trail grooming to occur is 12 inches.</li> </ul>
2	<p>Modified proposed action.</p> <ul style="list-style-type: none"> <li>• Designate 8 discrete, specifically delineated areas for cross-country OSV use. These areas would encompass 921,180 acres. This land area would represent approximately 80 percent of the NFS land within the Lassen National Forest.</li> <li>• Designate no areas for public cross-country OSV use that would be within 500 feet of the Pacific Crest National Scenic Trail.</li> <li>• Designate up to 28 OSV crossing points of the Pacific Crest National Scenic Trail and up to 28 snow trails for OSV use to access these crossing points through areas along the Pacific Crest National Scenic Trail that would not be designated for cross-country OSV use.</li> <li>• Designate 334 miles of snow trails for public OSV use.</li> <li>• 2,519 miles of trail would be open to OSV use in areas designated for cross-country OSV use, but would not be designated.</li> <li>• Mechanically groom 350 miles of snow trails for public OSV use.</li> <li>• The minimum snow depth for snow trail grooming to occur would be 12 inches.</li> <li>• The minimum snow depth for public OSV use on designated snow trails overlying roads and trails would be 6 inches.</li> <li>• The minimum snow depth for public OSV use on designated snow trails not overlying roads and trails would be 12 inches.</li> <li>• The minimum snow depth for OSV use in areas designated for public, cross-country OSV use would be 12 inches.</li> </ul>

Alternative	Description of Alternative
3	<ul style="list-style-type: none"> <li>• Designate 8 discrete, specifically delineated areas for cross-country OSV use. These areas would encompass 833,990 acres. This land area would represent approximately 73 percent of the NFS land within the Lassen National Forest.</li> <li>• Designate portions of 5 of the 8 areas designated for public OSV use that would be located within 500 feet of the Pacific Crest National Scenic Trail. <ul style="list-style-type: none"> <li>○ Approximately 85.4 miles of the Pacific Crest National Scenic Trail would be located within 500 feet of an area designated for public OSV use on the Lassen National Forest.</li> </ul> </li> <li>• Designate no Pacific Crest National Scenic Trail crossings.</li> <li>• Designate approximately 383 miles of snow trails for public OSV use.</li> <li>• 2,210 miles of trail would be open to OSV use in areas designated for cross-country OSV use, but would not be designated.</li> <li>• Mechanically groom 349 miles of snow trails for public OSV use.</li> <li>• The minimum snow depth for snow trail grooming would be 18 inches.</li> <li>• The minimum snow depth for public OSV use on designated snow trails would be 6 inches.</li> <li>• The minimum snow depth for OSV use in areas designated for public, cross-country OSV use would be 12 inches.</li> </ul>
4	<ul style="list-style-type: none"> <li>• Designate 8 discrete, specifically delineated areas for cross-country OSV use. These areas would encompass 954,450 acres. This land area would represent approximately 83 percent of the NFS land within the Lassen National Forest.</li> <li>• Designate portions of 5 of the 8 areas designated for public OSV use that would be located within 500 feet of the Pacific Crest National Scenic Trail. <ul style="list-style-type: none"> <li>○ Approximately 97.7 miles of the Pacific Crest National Scenic Trail would be located within 500 feet of an area designated for public OSV use on the Lassen National Forest.</li> </ul> </li> <li>• Designate no Pacific Crest National Scenic Trail crossings.</li> <li>• Designate 380 miles of snow trails for public OSV use.</li> <li>• 2,545 miles of trail would be open to OSV use in areas designated for cross-country OSV use, but would not be designated.</li> <li>• Mechanically groom 349 miles of snow trails for public OSV use.</li> <li>• The minimum snow depth for snow trail grooming would be 12 inches.</li> <li>• The minimum snow depth for public OSV use on designated snow trails would be the depth necessary to avoid underlying resource damage.</li> <li>• The minimum snow depth for OSV use in areas designated for public, cross-country OSV use would be the depth necessary to avoid underlying resource damage.</li> </ul>

Alternative	Description of Alternative
5	<ul style="list-style-type: none"> <li>• Designate 6 discrete, specifically delineated areas for cross-country OSV use. These areas would encompass 633,360 acres. This land area would represent approximately 55 percent of the NFS land within the Lassen National Forest.</li> <li>• Designate no areas for public cross-country OSV use that would be within 500 feet of the Pacific Crest National Scenic Trail.</li> <li>• Designate up to 12 OSV crossing points of the Pacific Crest National Scenic Trail and up to 12 snow trails for OSV use to access these crossing points through areas along the Pacific Crest National Scenic Trail that would not be designated for cross-country OSV use.</li> <li>• Designate 393 miles of snow trails for public OSV use.</li> <li>• 544 miles of trail would be open to OSV use in areas designated for cross-country OSV use, but would not be designated.</li> <li>• Mechanically groom 350 miles of snow trails public OSV use.</li> <li>• The minimum snow depth for snow trail grooming would be 12 inches.</li> <li>• The minimum snow depth for public OSV use on designated snow trails would be 12 inches.</li> <li>• The minimum snow depth for OSV use in areas designated for public, cross-country OSV use would be 12 inches.</li> </ul>

## Summary of Environmental Impacts

**Table S-3 Summary of environmental impacts**

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<b>Recreation</b>						
Motorized Recreation Opportunities – cross-country	Opportunities for motorized winter uses/total area (acres) and percent change	964,030 acres open to public, cross-country OSV use, subject to snow depth restrictions  No minimum snow depth requirement	921,180 acres open to public cross-country OSV use, subject to snow depth restrictions, a 4.4 percent decrease from existing conditions.  12 inch snow depth requirement	833,990 acres open to public cross-country OSV use, subject to snow depth restrictions, a 13.5 percent decrease from existing conditions.  12 inch snow depth requirement	954,450 acres open to public cross-country OSV use, subject to snow depth restrictions, a 1 percent decrease from existing conditions.  Depth necessary to avoid resource damage	633,360 acres open to public cross-country OSV use, subject to snow depth restrictions, a 33 percent decrease from existing conditions.  12 inch snow depth requirement
Motorized Recreation Opportunities – designated snow trails	OSV trail designations, length of trails (miles) and percent change	406 miles of groomed, ungroomed, marked and un-marked OSV trails open for OSV use, subject to snow depth restrictions  No minimum snow depth requirement	334 miles of designated OSV snow trails, subject to snow depth restrictions, 17.7 percent decrease from existing conditions (however a majority of the current trail system is designated or in OSV open areas).  6 inch or more snow depth on snow trails overlaying roads and trails;  12 inch snow depth on 0.1 mile of trail	383 miles of designated OSV snow trails, subject to snow depth restrictions. 5.6 percent decrease from existing conditions (however a majority of the current trail system is designated or in OSV open areas).  6 inches where site review determines there would be no damage to underlying resources	380 miles of designated OSV snow trails, subject to snow depth restrictions. 6.4 percent decrease from existing conditions (however a majority of the current trail system is designated or in OSV open areas)  Depth necessary to avoid resource damage	390 miles of OSV snow trails, subject to snow depth restrictions. 3.9 percent decrease from existing conditions (however a majority of the current trail system is designated or in OSV open areas)  12 inch snow depth requirement

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
			not overlaying roads or trails.			
Motorized Recreation Opportunities – groomed snow trails	OSV trail grooming, length of trails (miles), percent change	349 miles  12 inch snow depth requirement for grooming	349 miles, no change 12 inch snow depth requirement for grooming	349 miles, no change 18 inch snow depth requirement for grooming	349 miles, no change 12 inch snow depth requirement for grooming	349 miles, no change 12 inch snow depth requirement for grooming
Non-motorized Recreation Opportunities - displacement	Access to desired non-motorized recreation settings and opportunities Total area (acres) and length of trails (miles) available to non-motorized recreation enthusiasts within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non-motorized winter use, 75,169 acres available for non-motorized recreation within 10 miles of plowed trailheads 44 miles of cross-country ski trails and other non-motorized routes available for non-motorized recreation within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non-motorized winter use, 85,706 acres available for non-motorized recreation within 10 miles of plowed trailheads 44 miles of cross-country ski trails and other non-motorized trails available within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non-motorized winter use, 122,774 acres available for non-motorized recreation within 10 miles of plowed trailheads 44 miles of cross-country ski trails and other non-motorized trails available within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non-motorized winter use, 81,259 acres available for non-motorized recreation within 10 miles of plowed trailheads 44 miles of cross-country ski trails and other non-motorized trails available within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non-motorized winter use,  166,463 acres available for non-motorized recreation within 10 miles of plowed trailheads  44 miles of cross-country ski trails and other non-motorized trails available within 10 miles of plowed trailheads
	Recreation Opportunity Spectrum/Consistency with ROS class	Consistent	Consistent	Consistent – with enhanced opportunities for non-motorized recreation experiences	Consistent – with enhanced opportunities for motorized recreation experiences	Consistent – with substantially enhanced opportunities for non-motorized recreation experiences
Non-motorized Recreation Conflicts – Public Safety	Total area (acres) and length of trails (miles) available to non-motorized recreation	185,983 acres closed to OSV use, a total of 148 miles	228,847 acres, a 23 percent increase/ six non-motorized trails with	316,048 acres, a 41.2 percent increase/ six non-motorized trails with	195,580 acres, 4.9 percent increase/ six non-motorized trails with	510,540 acres, 63.6 percent increase/ six non-motorized trails with

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	enthusiasts for quality non-motorized recreation experiences	for non-motorized use.	a total of 148 miles for non-motorized use.	a total of 148 miles for non-motorized use.	a total of 148 miles for non-motorized use.	a total of 148 miles for non-motorized use.
Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas	Proximity and frequency of OSV designations in relation to designated non-motorized areas Distance of groomed public OSV snow trails from areas designated as non-motorized under existing law or policy, or number of crossings of linear areas designated as non-motorized under existing law or policy	A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries. Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park's southeast corner, and 1 1/2 miles north of the park's northwest corner.  No designated PCT crossing points. 98.42 miles of the PCT are within 500 feet of an area designated for OSV use.  No known conflicts with tribal/spiritual areas, historic	A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries.  Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park's southeast corner, and 1 1/2 miles north of the park's northwest corner.  28 designated PCT crossing points. No areas designated for OSV use within 500 feet of the PCT.  No known conflicts with tribal/spiritual areas, historic	A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park's southeast corner, and 1 1/2 miles north of the park's northwest corner.  No designated PCT crossing points. 85.42 miles of the PCT are within 500 feet of an area designated for OSV use.  No known conflicts with tribal/spiritual areas, historic	A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park's southeast corner, and 1 1/2 miles north of the park's northwest corner.  No designated PCT crossing points. 97.68 miles of the PCT are within 500 feet of an area designated for OSV use.  No known conflicts with tribal/spiritual areas, historic areas or populated areas.	A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park's southeast corner, and 1 1/2 miles north of the park's northwest corner.  28 designated PCT crossing points. No areas designated for OSV use within 500 feet of the PCT.  No known conflicts with tribal/spiritual areas, historic

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
		areas or populated areas.	areas or populated areas.	areas or populated areas.		areas or populated areas.
	Noise Total area (acres) potentially affected by noise/total area (acres) closed to winter motorized use	964,030 acres open to OSV use, potentially affected by noise; 185,983 acres closed to OSV use, available for quiet recreation.	921,180 acres open to OSV use, potentially affected by noise; 228,847 acres closed to OSV use, available for quiet recreation.	833,990 acres open to OSV use, potentially affected by noise; 316,048 acres closed to OSV use, available for quiet recreation.	954,450 acres open to OSV use, potentially affected by noise; 195,580 acres closed to OSV use, available for quiet recreation.	633,360 acres open to OSV use, potentially affected by noise; 510,540 acres closed to OSV use, available for quiet recreation
Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas (continued)	Air Quality Qualitative/narrative description of potential impacts (with reference to air quality analysis)	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions (see air quality report).	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions. Slightly fewer acres open to OSV use than in existing conditions (see air quality report).	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions. Fewer acres open to OSV use than in existing conditions and alternative 2 (see air quality report).	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions. Slightly fewer acres open to OSV use than in existing conditions (see air quality report).	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions. Substantially fewer acres open to OSV use than in existing conditions (see air quality report).
	Scenery Qualitative/narrative description of potential visual impacts	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. The visual evidence of snowmobile use decreases as fresh snow covers the tracks and/or when the snow melts at the end of the season.	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. Fewer acres open to cross-country OSV use, and associated visual impacts than in existing conditions. The visual evidence of snowmobile use decreases as fresh snow covers the tracks and/or when	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. Fewer acres open to cross-country OSV use, and associated visual impacts than in existing conditions or alternative 2. The visual evidence of snowmobile use decreases as fresh snow covers the	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. Slightly fewer acres open to cross-country OSV use, and associated visual impacts than in existing conditions. The visual evidence of snowmobile use decreases as fresh snow covers the tracks and/or when	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. Substantially fewer acres open to cross-country OSV use, and associated visual impacts than in existing conditions. The visual evidence of snowmobile use decreases as fresh snow covers the

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
			the snow melts at the end of the season	tracks and/or when the snow melts at the end of the season	the snow melts at the end of the season	tracks and/or when the snow melts at the end of the season
Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas (continued)	Wilderness Attributes Total area (acres) affected and duration of impact. Qualitative description for wilderness attributes	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries. There are approximately 27,108 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries, The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries. There are approximately 21,266 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries, The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries. There are approximately 19,173 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries, The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries. There are approximately 25,575 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries, The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries. There are approximately 17,257 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries, The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.
	Roadless Characteristics Total area (acres) affected and duration of impact. Qualitative description for roadless characteristics	Approximately 72,969 IRA acres open to OSV use. Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of	Approximately 59,746 IRA acres open to OSV use. Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of	Approximately 58,291 IRA acres open to OSV use. Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of	Approximately 72,681 IRA acres open to OSV use. Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of	Approximately 83,411 IRA acres open to OSV use. Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
		expected high to moderate OSV use.	expected high to moderate OSV use.	expected high to moderate OSV use.	expected high to moderate OSV use.	expected high to moderate OSV use.
<b>Transportation and Engineering</b>						
Safety	Public Safety & Traffic	The current Lassen National Forest Winter Recreation Guide map provides adequate information to maintain a reasonable level of public safety and avoid traffic conflicts	The over-snow vehicle use map would provide adequate information to maintain a reasonable level of public safety and avoid traffic conflicts; this would also improve understanding of allowed uses and prohibitions.	The over-snow vehicle use map would provide adequate information to maintain a reasonable level of public safety and avoid traffic conflicts; this would also improve understanding of allowed uses and prohibitions.	The over-snow vehicle use map would provide adequate information to maintain a reasonable level of public safety and avoid traffic conflicts; this would also improve understanding of allowed uses and prohibitions.	The over-snow vehicle use map would provide adequate information to maintain a reasonable level of public safety and avoid traffic conflicts; this would also improve understanding of allowed uses and prohibitions.
Cost	Affordability	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.
Transportation property	Effects to underlying NFS roads and trails	12 or more inches of snow for grooming and 12 inches or more for general cross-country OSV use areas and on trails or roads requirement provides more than adequate protection of underlying roads and trails.	12 inches minimum snow depth for grooming and general cross-country OSV use, and 6 inches minimum snow depth for OSV use on underlying routes requirement would provide adequate protection of underlying roads and trails.	18 inches minimum snow depth for grooming, 6 inch minimum snow depth for use on underlying roads and trails and 12 inch minimum snow depth for OSV cross-country use area requirement would provide adequate protection of underlying roads and trails.	12 inches minimum snow depth for grooming. The minimum snow depth necessary to avoid underlying resource damage requirements on roads, trails and cross-country OSV use areas would provide protection of underlying roads and trails.	12 inches minimum snow depth requirement for grooming, designated public cross-country OSV use areas and on designated trails would provide protection of underlying roads and trails.
<b>Noise</b>						

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	Opportunities for motorized winter uses Size of areas (acres) open to public, cross-country OSV use; percentage change compared to current management	964,030 acres open to OSV use and potentially affected by noise 185,983 acres closed to OSV use and available for quiet recreation	921,180 acres open to OSV use and potentially affected by noise, a 4.5 percent decrease from existing conditions 228,847 acres closed to OSV use and available for quiet recreation, a 23 percent increase from existing conditions	833,990 acres open to OSV use and potentially affected by noise, a 13.4 percent decrease from existing conditions 316,048 acres closed to OSV use and available for quiet recreation, a 41.2 percent increase from existing conditions	954,450 acres open to OSV use and potentially affected by noise, a 0.5 percent decrease from existing conditions 195,580 acres closed to OSV use and available for quiet recreation, a 4.9 percent increase from existing conditions	639,480 acres open to public cross-country OSV use, subject to snow depth restrictions, a 34 percent decrease from existing conditions.  510,540 acres closed to OSV use and available for quiet recreation, a 63.6 percent increase from existing conditions
	OSV designations Length of snow trails (miles), groomed and ungroomed, designated and identified for public OSV use	405 miles designated /349 miles groomed	334 miles designated /349 miles groomed	383 miles designated /349 miles groomed	380 miles designated /349 miles groomed	390 miles designated/ 349 miles groomed
	Opportunities for motorized winter uses Size of areas (acres) open to public, cross-country OSV use; percentage change compared to current management	964,030 acres open to OSV use and potentially affected by noise 185,983 acres closed to OSV use and available for quiet recreation	921,180 acres open to OSV use and potentially affected by noise, a 4.5 percent decrease from existing conditions 228,847 acres closed to OSV use and available for quiet recreation, a 23 percent increase from existing conditions	833,990 acres open to OSV use and potentially affected by noise, a 13.4 percent decrease from existing conditions 316,048 acres closed to OSV use and available for quiet recreation, a 41.2 percent increase from existing conditions	954,450 acres open to OSV use and potentially affected by noise, a 0.5 percent decrease from existing conditions 195,580 acres closed to OSV use and available for quiet recreation, a 4.9 percent increase from existing conditions	639,480 acres open to public cross-country OSV use, subject to snow depth restrictions, a 34 percent decrease from existing conditions.  510,540 acres closed to OSV use and available for quiet recreation, a 63.6 percent increase from existing conditions

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<b>Soil Resources</b>						
Soil Productivity and Soil Stability	OSV acres open to cross-country travel on sensitive soils (including wet meadows, areas with potential low stability, and areas with potential erosion hazards).	There would be no change in acreage of area currently open to cross-country OSV travel on sensitive soils. Approximately 53,902 acres with mapped sensitive soil types are open to cross-country travel. The no action alternative has the most acres of sensitive soils open to OSV use.	Approximately 52,964 acres of sensitive soils would be open to cross-country OSV travel within the forest. This is slightly less acres than the no-action alternative and alternative 4, but more acres than alternative 3 and alternative 5.	Approximately 40,590 acres of sensitive soils will be open to cross-country OSV travel. This is less acres open to OSV use than any other alternative other than alternative 5.	Approximately 53,507 acres of sensitive soils will be open to cross-country OSV travel. Under this alternative, there would be more acres of sensitive soils open to cross-country OSV travel than any other action alternative, but there would less acres of sensitive soils open to OSV use than under the no-action alternative.	Approximately 33,221 acres of sensitive soils will be open to cross-country OSV travel. Under this alternative, the least amount of sensitive soils will be open to OSV cross-country travel.
Soil Stability	Minimum snow depths on trails (inches)	No enforced minimum snow depth prior to any OSV travel over existing roads and trails. Without a minimum snow depth, soil resource damage is more likely to occur as OSV use could occur when bare soil is exposed on trails, leading to potential erosion.	Minimum snow depth is 6 inches of snow prior to any OSV travel over existing roads and trails. This minimum snow depth may potentially create conditions in which the road surface is exposed to OSVs and there is potential for some soil erosion or rutting of the road surface. Monitoring of this snow depth is will occur to further evaluate the potential effects to soils.	Minimum snow depth is 6 inches of snow prior to any OSV travel over existing roads and trails. This minimum snow depth may potentially create conditions in which the road surface is exposed to OSVs and there is potential for some soil erosion or rutting of the road surface. Monitoring of this snow depth is will occur to further evaluate the potential effects to soils.	No defined snow depth for OSV use on trails. No minimum snow depth may potentially create conditions in which the road surface is exposed to OSVs and there is potential for some soil erosion or rutting of the road surface. Monitoring will occur to further evaluate the potential effects to soils.	Minimum snow depth is 12 inches of unpacked snow prior to any OSV travel over existing roads and trails. This minimum snow depth has been observed to be sufficient to prevent contact of OSVs with the bare soil surface.

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Soil Productivity	Minimum snow depths for cross-country travel (inches)	No minimum snow depth for cross-country OSV travel could lead to greater soil resource damage. If bare soil or forest floor is exposed, soil erosion, soil loss, compaction, rutting and displacement could occur. With no minimum snow depth, the no-action alternative could potentially have the greatest impacts to soil productivity.	Minimum snow depth of 12 inches of unpacked snow for cross-country OSV travel would not change. Potential effects to the soil are unlikely to occur with at least 12 inches of snow covering the soil surface.	Minimum snow depth of 12 inches of unpacked snow for cross-country OSV travel would not change. Potential effects to the soil are unlikely to occur with at least 12 inches of snow covering the soil surface.	No minimum snow depth exists under this alternative. The potential for reduced soil productivity could occur, but Forest staff will monitor use and recommend usage seasons based on monitoring to prevent soil resource damage.	Minimum snow depth of 12 inches of unpacked snow for cross-country OSV travel would not change. Potential effects to the soil are unlikely to occur with at least 12 inches of snow covering the soil surface.
Soil Productivity	Total acres open to OSV use	Approximately 964,030 acres of the forest are open to OSV use. Under the no-action alternative, the most acreage is open to OSV use; therefore, the most potential for soil damage exists under this alternative.	Approximately 921,180 acres of the forest would be open to OSV use. This is less area open to OSV use compared to the no-action alternative and alternative 4, but it is greater than alternative 3 and alternative 5. The proposed action has the potential for more impacts than alternatives 3 and 5, but less than the proposed action and alternative 4.	Approximately 833,990 acres of the forest would be open to OSV use, which is less than all the alternatives except alternative 5.	Approximately 954,450 acres of the forest would be open to OSV use, which is a greater area than under the proposed action, alternative 3 and alternative 5, but less area than the no-action action alternative. Alternative 4 has the potential to have the greatest soil impacts out of the 3 action alternatives.	Approximately 633,360 acres of the forest would be open to OSV use, which is the least amount of land open to OSV use out of all the five alternatives.
<b>Air Quality</b>						

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Air Quality	Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality, miles open to OSV visitor use	2,952 miles of groomed, ungroomed, marked, and unmarked snow trails are open to public OSV use.  No known violations of the CAA as a result of OSV use under the existing condition.	334 miles designated for OSV use. An 88 percent reduction in miles as compared to the existing condition.  No violations of the CAA are anticipated.	383 miles designated for OSV use. An 86 percent reduction in miles as compared to the existing condition.  No violations of the CAA are anticipated.	380 miles designated for OSV use. An 86 percent reduction in miles as compared to the existing condition.  No violations of the CAA are anticipated.	393 miles of trails for OSV use. An 85 percent reduction in miles as compared to the existing condition.  No violations of the CAA are anticipated.
	Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality/ acresl open to OSV visitor use	964,030 acres open to OSV use.  No known violations of the CAA as a result of OSV use under the existing condition	921,180 acres open to OSV use, a 4 percent reduction from existing conditions.  No violations of the CAA are anticipated.	833,990 acres open to OSV use, a 13 percent reduction from existing conditions.  No violations of the CAA are anticipated.	954,450 acres open to OSV use, a less than 1 percent reduction from existing conditions.  No violations of the CAA are anticipated.	633,360 acres open to OSV use, a 34 percent reduction from existing conditions.  No violations of the CAA are anticipated.
	Potential effects of OSV emissions to create adverse impacts to air quality/ Shifts in OSV use in relation to sensitive areas (Class 1 and II areas).	Groomed OSV trails are in close proximity to the Caribou Wilderness, Thousand Lakes Wilderness, and the boundary of Lassen Volcanic National Park.  No known violations of the CAA or impacts to Class 1 areas as a result of OSV use under the existing condition.	Groomed OSV trails are in close proximity to the Caribou Wilderness, Thousand Lakes Wilderness, and the boundary of Lassen Volcanic National Park.  No violations of the CAA or impacts to Class 1 areas are anticipated under this alternative.	Groomed OSV trails are in close proximity to the Caribou Wilderness, Thousand Lakes Wilderness, and the boundary of Lassen Volcanic National Park.  Designation of Butte Lake Backcountry Solitude area minimizes OSV impacts and reduces emissions	Groomed OSV trails are in close proximity to the Caribou Wilderness, Thousand Lakes Wilderness and the boundary of Lassen Volcanic National Park.  No violations of the CAA are anticipated or impacts to Class 1 areas.	Groomed OSV trails are in close proximity to the Caribou Wilderness, Thousand Lakes Wilderness and the boundary of Lassen Volcanic National Park.  No violations of the CAA are anticipated or impacts to Class 1 areas.

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
				near Caribou wilderness and Lassen NP  No violations of the CAA or impact to Class 1 areas are anticipated under this alternative.		
<b>Socioeconomic Conditions</b>						
Economic activity	Employment, income, tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue
Quality of life	Recreation visitation	No change due to management; visitor use expected to increase over time	No change due to management; visitor use expected to increase over time	No change due to management; visitor use expected to increase over time	No change due to management; visitor use expected to increase over time	No change due to management; visitor use expected to increase over time
Quality of life	Values, beliefs, and attitudes	No net change in quality of life relative to current conditions; user conflict may increase due to population growth and increased visitor use	23 percent increase in acres not designated for OSV use would benefit quality of life of non-motorized winter recreation users and may adversely affect quality of life for OSV users; potential for continued user conflict due to trails in proximity to wilderness, national	70 percent increase in acres not designated for OSV use would benefit quality of life of non-motorized winter recreation users and may adversely affect quality of life for OSV users; potential for continued user conflict due to trails in proximity to wilderness, national	No net change in quality of life relative to current conditions; user conflict may increase due to population growth and increased visitor use	175 percent increase in acres not designated for OSV use would benefit quality of life of non-motorized winter recreation users and may adversely affect OSV users; potential for continued user conflict due to trails in proximity to wilderness, national park, and shared trailheads

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
			park, and shared trailheads	park, and shared trailheads		
Environmental Justice	Low-income and minority populations	No change due to management; climate change may increase distances winter recreation users must travel for adequate snow depth	Minor change in travel costs due to fewer areas designated for OSV use and reductions in snow depth requirements; climate change may increase distances winter recreation users must travel for adequate snow depth	Minor change in travel costs due to fewer areas designated for OSV use and reductions in snow depth requirements; climate change may increase distances winter recreation users must travel for adequate snow depth	Minor change due to management, snow depth reductions may decrease the distance that OSV users must travel; climate change may increase distances winter recreation users must travel for adequate snow depth	Minor change due to prohibition on OSV use below 3,500 feet in elevation and reduced open acres; climate change may increase distances winter recreation users must travel for adequate snow depth
<b>Water Resources</b>						
Riparian Conservation Objectives	Consistency with Riparian Conservation Objectives 1, 2, 4, 5, and 6	Complies with RCOs 1,2,4,5,6	Complies with RCOs 1,2,4,5,6	Complies with RCOs 1,2,4,5,6	Complies with RCOs 1,2,4,5,6	Complies with RCOs 1,2,4,5,6
<b>Botanical Resources</b>						
Threatened and Endangered plants	Acres Within 100 feet of OSV Trails	11 out of Total 78 on the Forest	0 out of Total 78 on the Forest	11 out of Total 78 on the Forest	11 out of Total 78 on the Forest	11 out of Total 78 on the Forest
Threatened and Endangered plants	Acres in Areas Open to OSV Use	76 out of Total 78 on the Forest	70 out of Total 78 on the Forest	49 out of Total 78 on the Forest	70 out of Total 78 on the Forest	22 out of Total 78 on the Forest
	<i>Orcuttia tenuis</i> <i>Tuctoria greenei</i>	No effect	No effect	No effect	No effect	No effect
Threatened and Endangered plant Critical Habitats	Acres Within 100 feet of OSV Trails	13 out of Total 23,840 on the Forest	21 out of Total 23,840 on the Forest	13 out of Total 23,840 on the Forest	13 out of Total 23,840 on the Forest	13 out of Total 23,840 on the Forest
Threatened and Endangered plant Critical Habitats	Acres in Areas Open to OSV Use	21,992 out of Total 23,840 on the Forest	21,161 out of Total 23,840 on the Forest	16,664 out of Total 23,840 on the Forest	21,991 out of Total 23,840 on the Forest	22,001 out of Total 23,840 on the Forest
	<i>Chamaesyce hoover</i>	No Effect, because designated critical	No Effect, because designated critical	No Effect, because designated critical	No Effect, because designated critical	No Effect, because designated critical

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
		habitat is not present				
	<i>Limnanthes floccosa</i> <i>ssp. californica</i>	No Effect, because designated critical habitat is not present	No Effect, because designated critical habitat is not present	No Effect, because designated critical habitat is not present	No Effect, because designated critical habitat is not present	No Effect, because designated critical habitat is not present
	<i>Orcuttia tenuis</i>	No Effect, because Primary Constituent Elements would remain unaffected	No Effect, because Primary Constituent Elements would remain unaffected	No Effect, because Primary Constituent Elements would remain unaffected	No Effect, because Primary Constituent Elements would remain unaffected	No Effect, because Primary Constituent Elements would remain unaffected
	<i>Tuctoria greenei</i>	No Effect, because Primary Constituent Elements would remain unaffected	No Effect, because Primary Constituent Elements would remain unaffected	No Effect, because Primary Constituent Elements would remain unaffected	No Effect, because Primary Constituent Elements would remain unaffected	No Effect, because Primary Constituent Elements would remain unaffected
Sensitive plants	Acres Within 100 feet of OSV Trails	123 out of Total 2,543 on the Forest	86 out of Total 2,543 on the Forest	123 out of Total 2,543 on the Forest	123 out of Total 2,543 on the Forest	126 out of Total 2,543 on the Forest
Sensitive plants	Acres in Areas Open to OSV Use	1,756 out of Total 2,543 on the Forest	1,626 out of Total 2,543 on the Forest	1,535 out of Total 2,543 on the Forest	1,720 out of Total 2,543 on the Forest	1,358 out of Total 2,543 on the Forest
	<i>Astragalus pulsiferae</i> <i>var. suksdorfii</i> <i>Boechera constancei</i> <i>Botrychium ascendens</i> <i>Botrychium crenulatum</i> <i>Botrychium minganense</i> <i>Botrychium montanum</i> <i>Botrychium pinnatum</i> <i>Cypripedium fasciculatum</i> <i>Eremogone cliftonii</i> <i>Eriogonum spectabile</i> <i>Fragula purshiana</i> <i>ssp. ultramafica</i> <i>Lewisia kelloggii</i> <i>ssp.</i> <i>hutchisonii</i>	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<i>Lomatium roseanum</i> <i>Meesia uliginosa</i> <i>Monardella follettii</i> <i>Packera eurycephala</i> var. <i>lewisrosei</i> <i>Peltigera gowardii</i> <i>Penstemon personatus</i> <i>Penstemon sudans</i> <i>Pinus albicaulis</i> <i>Pyrrocoma lucida</i> <i>Rorippa columbiae</i> <i>Rupertia hallii</i> <i>Scheuchzeria palustris</i> <i>Sedum albomarginatum</i> , <i>Silene occidentalis</i> ssp. <i>longistipitata</i>					
	<i>Calochortus longebarbatus</i> var. <i>longebarbatus</i> <i>Cypripedium montanum</i> <i>Eriogonum prociuum</i> <i>Juncus leiospermus</i> var. <i>leiospermus</i>	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	No Impact
	<i>Fritillaria eastwoodiae</i>	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	No Impact	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	No Impact
	<i>Clarkia gracilis</i> ssp. <i>albicaulis</i>	No Impact	No Impact	No Impact	No Impact	No Impact

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<i>Clarkia mildrediae</i> ssp. <i>mildrediae</i> <i>Cryptantha crinita</i> <i>Eriastrum tracyi</i> <i>Limnanthes floccosa</i> ssp. <i>bellingiana</i> <i>Mimulus</i> <i>evanescens</i> <i>Phacelia inundata</i>					
Survey and Manage Plants	<i>Botrychium</i> <i>minganense</i> <i>Botrychium montanum</i> <i>Buxbaumia viridis</i> <i>Cypripedium</i> <i>fasciculatum</i> <i>Cypripedium</i> <i>montanum</i> <i>Ptilidium californicum</i> <i>Alpova olivaceotinctus</i> <i>Bondarzewia</i> <i>mesenterica</i> <i>Clavariadelphus</i> <i>truncatus</i> <i>Mythicomycetes</i> <i>comeipes</i> <i>Ramaria</i> <i>rubrievanescens</i> <i>Rhizopogon truncatus</i> <i>Spathularia flavida</i>	No Impacts				
Special Interest Plants						
	<i>Allium sanbornii</i> var. <i>sanbornii</i>	Not affected				
	<i>Anthoxanthum nitens</i> ssp. <i>Nitens</i>	Not affected				
	<i>Arnica fulgens</i>	Not affected				

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<i>Artemisia tripartita</i> <i>ssp. tripartita</i>	May be affected, not contributing to a downward trend				
	<i>Asplenium</i> <i>septentrionale</i>	Not affected				
	<i>Astragalus inversus</i>	May be affected, not contributing to a downward trend				
	<i>Astragalus</i> <i>pauperculus</i>	Not affected				
	<i>Betula glandulosa</i>	May be affected, not contributing to a downward trend				
	<i>Botrychium simplex</i>	Not affected				
	<i>Brasenia schreberi</i>	Not affected				
	<i>Calystegia atriplicifolia</i> <i>ssp. Buttensis</i>	Not affected				
	<i>Cardamine bellidifolia</i> <i>var. pachyphylla</i>	Not affected				
	<i>Carex davyi</i>	May be affected, not contributing to a downward trend				
	<i>Carex geyeri</i>	Not affected				
	<i>Carex lasiocarpa</i>	Not affected				
	<i>Carex limosa</i>	Not affected				
	<i>Carex petasata</i>	May be affected, not contributing to a downward trend				
	<i>Caulanthus major</i> var. <i>nevadensis</i>	Not affected				
	<i>Claytonia palustris</i>	May be affected, not contributing to a downward trend				

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<i>Crataegus castlegarensis</i>	Not Affected	May be affected, not contributing to a downward trend	Not Affected	May be affected, not contributing to a downward trend	Not Affected
	<i>Dimeresia howellii</i>	Not affected				
	<i>Drosera anglica</i>	Not affected				
	<i>Erigeron inornatus</i> var. <i>calidipetris</i>	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend
	<i>Erigeron nivalis</i>	Not affected				
	<i>Erigeron petrophilus</i> var. <i>sierrensis</i>	Not affected				
	<i>Eriogonum ovalifolium</i> var. <i>depressum</i>	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend
	<i>Eriogonum pyrolifolium</i> var. <i>pyrolifolium</i>	Not Affected				
	<i>Eriogonum tripodum</i>	May be affected, not contributing to a downward trend	Not Affected	Not Affected	May be affected, not contributing to a downward trend	Not Affected
	<i>Eriogonum umbellatum</i> var. <i>ahartii</i>	Not affected				
	<i>Eriophorum gracile</i>	Not affected				
	<i>Gratiola heterosepala</i>	Not affected				
	<i>Hackelia amethystina</i>	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend
	<i>Hackelia cusickii</i>	Not affected				
	<i>Hesperocyparis bakeri</i>	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend
	<i>Hulsea nana</i>	Not affected				
	<i>Iliamna bakeri</i>	Not affected				

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<i>Juncus hemiendytus</i> var. <i>abjectus</i>	May be affected, not contributing to a downward trend				
	<i>Lilium humboldtii</i> ssp. <i>Humboldtii</i>	Not affected				
	<i>Limnanthes floccosa</i> ssp. <i>Floccosa</i>	Not affected				
	<i>Lupinus dalesiae</i>	Not affected				
	<i>Lycopus uniflorus</i>	Not affected				
	<i>Lysimachia thyrsoiflora</i>	Not affected				
	<i>Meesia triquetra</i>	Not affected				
	<i>Mimulus glaucescens</i>	Not affected				
	<i>Mimulus pygmaeus</i>	May be affected, not contributing to a downward trend				
	<i>Muhlenbergia jonesii</i>	May be affected, not contributing to a downward trend				
	<i>Navarretia subuligera</i>	Not affected				
	<i>Nemophila breviflora</i>	Not affected				
	<i>Packera indecora</i>	Not affected				
	<i>Penstemon cinicola</i>	May be affected, not contributing to a downward trend				
	<i>Penstemon heterodoxus</i> var. <i>shastensis</i>	May be affected, not contributing to a downward trend				
	<i>Penstemon janishiae</i>	Not affected				
	<i>Phlox muscoides</i>	Not affected				
	<i>Piperia colemanii</i>	May be affected, not contributing to a downward trend				
	<i>Pogogyne floribunda</i>	Not affected				

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<i>Polystenium fremontii</i> var. <i>fremontii</i>	Not affected				
	<i>Polygonum bidwelliae</i>	Not affected				
	<i>Polystichum kruckebergii</i>	Not affected				
	<i>Polystichum lonchitis</i>	Not affected				
	<i>Potamogeton praelongus</i>	Not affected				
	<i>Potamogeton robbinsii</i>	Not affected				
	<i>Potentilla newberryi</i>	Not affected				
	<i>Rhynchospora alba</i>	Not affected				
	<i>Schoenoplectus heterochaetus</i>	Not affected				
	<i>Schoenoplectus subterminalis</i>	Not affected				
	<i>Scutellaria galericulata</i>	Not affected				
	<i>Senecio hydrophiloides</i>	Not affected				
	<i>Silene occidentalis</i> ssp. <i>Occidentalis</i>	Not affected				
	<i>Sparganium natans</i>	Not affected				
	<i>Stellaria longifolia</i>	Not affected				
	<i>Stellaria obtusa</i>	May be affected, not contributing to a downward trend				
	<i>Stenotus lanuginosus</i>	Not affected				
	<i>Streptanthus longisiliquus</i>	Not affected				
	<i>Stuckenia filiformis</i> ssp. <i>Alpina</i>	Not affected				
	<i>Subularia aquatica</i> ssp. <i>Americana</i>	Not affected				

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<i>Thermopsis californica</i> var. <i>argentata</i>	Not affected				
	<i>Trifolium andersonii</i> ssp. <i>Andersonii</i>	Not affected				
	<i>Trillium ovatum</i> ssp. <i>Oettingeri</i>	Not affected				
	<i>Utricularia intermedia</i>	Not affected				
	<i>Utricularia minor</i>	Not affected				
	<i>Utricularia ochroleuca</i>	Not affected				
	Invasive Plants	Very Low Risk				
Special Interest Areas	Montgomery Creek Grove Botanical Area Murken Botanical Area Willow Lake Bog Botanical Area	Compliant with purpose of establishment				
<b>Heritage Resources</b>	Effects to heritage resources	No adverse effect	No adverse effect	No adverse effect	Adverse effect	No adverse effect
<b>Terrestrial Wildlife</b>						
	Giant garter snake ( <i>Thamnophis gigas</i> ) Threatened	No effect				
	Sierra Nevada red fox ( <i>Vulpes vulpes</i> <i>necator</i> ) Candidate/Sensitive	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	Gray wolf ( <i>Canis lupus</i> ) Endangered	May affect, not likely to adversely affect				
	California wolverine ( <i>Gulo gulo luteus</i> ) Proposed/Sensitive	Will not jeopardize				

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	Northern spotted owl ( <i>Strix occidentalis caurina</i> ) Threatened	May affect, not likely to adversely affect	May affect, not likely to adversely affect-Beneficial effect			
	Northern spotted owl Designated critical habitat	No effect				
	Valley elderberry long-horned beetle ( <i>Desmocerus californicus dimorphus</i> ) Threatened	No effect				
	Valley elderberry long-horned beetle Designated critical habitat	No effect				
	Yellow-billed cuckoo ( <i>Coccyzus americanus</i> ) Threatened	No effect				
	Yellow-billed cuckoo Proposed critical habitat	No effect				
	Fisher ( <i>Pekania pennanti</i> ) Sensitive	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	Pacific marten ( <i>Martes caurina</i> ) Sensitive	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	Fringed myotis	May impact individuals, but not				

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	( <i>Myotis thysanodes</i> ) Sensitive	likely to lead to a loss of viability or a trend toward Federal listing	likely to lead to a loss of viability or a trend toward Federal listing	likely to lead to a loss of viability or a trend toward Federal listing	likely to lead to a loss of viability or a trend toward Federal listing	likely to lead to a loss of viability or a trend toward Federal listing
	Pallid bat ( <i>Antrozous pallidus</i> ) Sensitive	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	Townsend's big-eared bat ( <i>Corynorhinus townsendii</i> ) Sensitive	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	Bald eagle ( <i>Haliaeetus leucocephalus</i> ) Sensitive	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	California spotted owl ( <i>Strix occidentalis occidentalis</i> ) Sensitive	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	Great gray owl ( <i>Strix nebulosa</i> ) Sensitive	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	Greater Sandhill crane ( <i>Grus canadensis tabida</i> ) Sensitive	No impact				
	Northern goshawk	May impact individuals, but not				

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<i>(Accipiter gentilis)</i> Sensitive	likely to lead to a loss of viability or a trend toward Federal listing	likely to lead to a loss of viability or a trend toward Federal listing	likely to lead to a loss of viability or a trend toward Federal listing	likely to lead to a loss of viability or a trend toward Federal listing	likely to lead to a loss of viability or a trend toward Federal listing
	Willow flycatcher <i>(Empidonax traillii)</i> Sensitive	No impact				
	Yellow rail <i>(Coturnicops noveboracensis)</i> Sensitive	No impact				
	Shasta Hesperian snail ( <i>Vespericola shasta</i> ) Sensitive	No impact				
	Western bumble bee <i>(Bombus occidentalis)</i> Sensitive	No impact				
<b>Fisheries and Aquatic Resources</b>						
	Chinook salmon, Central Valley Spring Run ESU Threatened	May affect, not likely to adversely affect				
	Chinook salmon, Central Valley Spring Run ESU Critical Habitat	May affect, not likely to adversely affect				
	Central Valley Steelhead Threatened	May affect, not likely to adversely affect				
	Central Valley Steelhead Critical Habitat	May affect, not likely to adversely affect				
	Sierra Nevada Yellow-legged Frog	No effect				

<b>Resource/ Condition</b>	<b>Impacts Considered/ Indicators</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
	Endangered					
	Sierra Nevada Yellow-legged Frog Suitable Habitat	May affect, not likely to adversely affect				
	Cascades frog Forest Service Sensitive	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability in the planning area	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability in the planning area	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability in the planning area	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability in the planning area	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability in the planning area
	Black juga Forest Service Sensitive	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability in the planning area	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability in the planning area	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability in the planning area	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability in the planning area	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability in the planning area

# Lassen National Forest Over-snow Vehicle Use Designation

## Revised Draft Environmental Impact Statement

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## Acronyms

BAT	Best available technology
BMP	Best management practice
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CVC	California Vehicle Code
CWA	Clean Water Act
DEM	Digital Elevation Model
GIS	Geographic Information System
IRA	Inventoried roadless area
LRMP	Land and resource management plan
MVUM	Motor vehicle use map
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NFS	National Forest System
NVUM	National Visitor Use Monitoring
NWFP	Northwest Forest Plan
OHMVR	Off-Highway Motor Vehicle Recreation Division
OHV	Off-highway Vehicle
OSV	Over-snow Vehicle
PCT	Pacific Crest National Scenic Trail
RCA	Riparian conservation area
RNA	Research natural area
RCO	Riparian conservation objectives
RDEIS	Revised draft environmental impact statement
RFA	Recreation Facility Analysis
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
SDWA	Safe Drinking Water Act



# Chapter 1. Purpose of and Need for Action

## Document Structure

The Forest Service has prepared this environmental impact statement (EIS) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This EIS discloses the direct, indirect, and cumulative environmental impacts that would result from the modified proposed action and alternatives to inform a decision on the management of National Forest System (NFS) lands. The document is organized into four chapters:

- **Chapter 1. Purpose and Need for Action:** This chapter briefly describes the modified proposed action, the need for that action, and other purposes to be achieved by the proposal. This section also details how the Forest Service informed the public of the modified proposed action and how the public responded.
- **Chapter 2. Alternatives, including the Modified Proposed Action:** This chapter provides a detailed description of the agency’s modified proposed action as well as alternative actions that were developed in response to comments and objections raised by the public. The end of the chapter includes a summary table comparing the modified proposed action and alternatives with respect to their environmental impacts.
- **Chapter 3. Affected Environment and Environmental Consequences:** This chapter describes the environmental impacts of the modified proposed action and alternatives.
- **Chapter 4. Consultation and Coordination:** This chapter provides a list of preparers and agencies consulted during the development of the EIS.
- **Appendices:** The appendices provide more detailed information to support the analyses presented in the EIS.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Lassen National Forest Supervisor’s Office in Susanville, California.

This document is tiered to the 2010 Over Snow Vehicle Program Final Environmental Impact Report, Program Years 2010 – 2020, by the State of California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation (OHMVR) Division (California Department of Parks and Recreation, Off Highway Motor Vehicle Recreation Division 2010).

## Definitions

Route categories and travel planning definitions applicable to this project (table 1) are based on the definitions in Title 36 of the Code of Federal Regulations (36 CFR) Part 212 – Travel Management.

**Table 1. Road and trail terminology - definitions**

Term	Definition
Administrative use	Motorized vehicle use associated with management activities or projects on National Forest System land administered by the Forest Service or under authorization of the Forest Service. Management activities include but are not limited to: law enforcement, timber harvest, reforestation, cultural treatments, prescribed fire, watershed restoration, wildlife and fish habitat improvement, private land access, allotment management activities, and mineral exploration.
Area	A discrete, specifically delineated space that is smaller, and, except for over-snow vehicle use, in most cases much smaller, than a Ranger District (36 CFR §212.1).
Cross-country over-snow vehicle use	Public over-snow vehicle use that occurs off of snow trails designated for over-snow vehicle use, but within areas designated for public over-snow vehicle use.
Designated over-snow vehicle trail or area	A National Forest System road, National Forest System trail, or an area on National Forest System lands that is designated for public over-snow vehicle use pursuant to 36 CFR §212.51 on an over-snow vehicle use map.*
Designation for over-snow vehicle use	Designation of a National Forest System road, a National Forest System trail, or an area on National Forest System lands where public over-snow vehicle use is allowed pursuant to 36 CFR §212.81.*
Forest road or trail	A road or trail wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources (36 CFR §212.1).
Non-motorized use	A term used in this document to refer to travel other than that defined as motorized. For example, hiking, skiing, riding horses, or mountain biking. Not all of these examples are allowed in all non-motorized areas or trails.
Over-snow vehicle (OSV)	A motor vehicle that is designed for use over snow and that runs on a track or tracks and/or a ski or skis, while in use over snow (36 CFR §212.1).
Over-snow vehicle use map (OSVUM)	A map reflecting roads, trails, and areas designated for over-snow vehicle use on an administrative unit or a Ranger District of the National Forest System (36 CFR §212.1).*
Trail	A route 50 inches wide or less or a route over 50 inches wide that is identified and managed as a trail (36 CFR §212.1).

\*The decision resulting from this analysis would not designate National Forest System roads for public OSV use. Public OSV routes that would overlie existing National Forest System roads would be designated as National Forest System trails where public OSV use is allowed.

## Background

This analysis responds to requirements in the Federal regulations for the management of OSV use on national forests (36 CFR Part 212, Subpart C), as well as a settlement agreement in the case of *Snowlands Network et al. v. U.S. Forest Service* (Case No. 2:11-cv-02921-MCE-DAD, E.D. Cal.) regarding the environmental impacts of the grooming of snow trails for OSV use on five national forests, including the Lassen National Forest.

A final EIS and draft record of decision was released for pre-decisional administrative review in August 2016, and “Legal Notice Notice of Opportunity to Object” was published in the *Lassen County Times* on August 23, 2016. This notice signified the beginning of a 45-day objection period that began on August 24, 2016. After considering the objections received, the Forest Service determined it would be necessary to revise the analysis. This revised DEIS is required by the Council on Environmental Quality’s implementing regulations for NEPA at 40 CFR §1502.9(a).

The following summarizes how the Forest Service currently manages public OSV use on the approximately 1,050,020-acre Lassen National Forest:

- The Lassen National Forest includes approximately 1,050,020 acres of National Forest System (NFS) lands;
- Approximately 964,030 acres of NFS lands are open to public, cross-country OSV use;
- Approximately 185,980 acres of NFS lands are closed to public OSV use;
- Approximately 98.4 miles of the Pacific Crest National Scenic Trail are within 500 feet of areas open to public cross-country OSV use on the Lassen National Forest. There are no identified crossings for OSVs to cross the Pacific Crest National Scenic Trail;
- There are 2,952 miles of currently groomed, ungroomed, marked, and unmarked snow trail open to public OSV and non-motorized use as shown on the 2005 Lassen National Forest Winter Recreation Guide (project record). These trails overlie roads and trails designated for wheeled vehicle use and are within areas currently open to OSV use. Approximately 406 miles of these trails are maintained for OSV use through signage, snow trail grooming, or both;
- The Forest Service grooms approximately 349 miles of snow trails for public OSV use. Approximately 27 miles of these groomed trails are not under NFS jurisdiction;
- Snow trail grooming is allowed when there are 12 or more inches of snow.

### **Scope of this Action**

This action would manage the use of OSVs on NFS land. An OSV is defined in the Forest Service’s Travel Management Regulations as “a motor vehicle that is designed for use over snow and that runs on a track or tracks and/or a ski or skis, while in use over snow” (36 CFR §212.1, see the definitions on page 2).

The Lassen National Forest Over-snow Vehicle Use Designation is not intended to be a comprehensive, holistic winter recreation planning effort. The designations resulting from this analysis would only apply to trails and areas for the public use of OSVs on NFS lands within the Lassen National Forest.

The following uses of OSVs would be exempt from these designations and the prohibition in 36 CFR §261.14:

- a. Limited administrative use by the Forest Service;
- b. Use of any fire, military, emergency, or law enforcement vehicle for emergency purposes;
- c. Authorized use of any combat or combat support vehicle for national defense purposes;
- d. Law enforcement response to violations of law, including pursuit;
- e. Over-snow vehicle use that is specifically authorized under a written authorization issued under Federal law or regulations [such as for managing permitted livestock or for access under a special use permit (36 CFR §212.81(a)); and
- f. Use of a road or trail that is authorized by a legally documented right-of-way held by a State, county, or other local public road authority (36 CFR §261.14).

Not all existing NFS OSV trails and areas on these NFS lands would be designated for public OSV use. With certain limited exceptions, the agency recognizes no need to designate OSV trails in areas that would be designated as open to cross-country OSV use. It would not be necessary to designate an OSV trail where OSV use would not be confined to the trail. However, to address requirements in the

Settlement Agreement with Snowlands Network et al., groomed OSV trails located in areas designated for OSV use will be identified.

With respect to the identification of snow trails groomed for OSV use, there are financial limitations on the miles and frequency of snow trail grooming within the forest's snow trail grooming program. This is because the Forest Service's current snow trail grooming program on the Lassen National Forest is funded by the State of California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation (OHMVR) Division. These funds are not likely to substantially increase in future years. Therefore, additional miles of groomed trails were not identified in this analysis.

Additionally, the Forest Service does not have legal jurisdiction over some of the trails that we groom. Although the agency does not have jurisdiction over such trails, we groom these trails for public use under authorizations from non-Federal landowners. In these cases, OSV trails where we have authorization to groom still cannot be designated for public OSV use under Subpart C of the Forest Service's Travel Regulations because these designations cannot be enforced. Therefore, these non-jurisdictional trails regularly groomed by the Forest Service for OSV use will be shown on the OSVUM for public convenience and the grooming of these trails will be analyzed to satisfy the settlement agreement with Snowlands Network et al.

Managing the use of wheeled, motorized vehicles or bicycles is not within the scope of this action. Other types of motor vehicles that may operate over snow, but that do not meet the definition of an OSV, are managed under Subpart B of the Travel Management Regulations. Routes and areas for these types of vehicles were previously designated and these designations have been published on a motor vehicle use map as the result of a separate environmental analysis and decision.

All existing trails and areas on the Lassen National Forest that are currently closed to OSV use would remain non-motorized in all alternatives analyzed in detail. Some relevant existing non-motorized trails will be identified in this analysis to provide context. Non-motorized winter recreational opportunities and uses will be considered in the analysis in terms of the effects that designating snow trails and areas for public OSV use may have on non-motorized recreational opportunities.

Subpart C of the Travel Management Regulations also specifies that certain requirements of Subpart B of the Travel Management Regulations will continue to apply to the decision designating NFS snow trails and areas for public OSV use [36 CFR §212.81(d)], including:

1. Public involvement as required by the National Environmental Policy Act (36 CFR §212.52);
2. Coordination with Federal, State, county, and other local governmental entities and Tribal governments (36 CFR §212.53);
3. Consideration of the criteria for designation of roads, trails, and areas (36 CFR §212.55);
4. Identification of designated uses on a publicly available use map of roads, trails, and areas (36 CFR §212.56); and
5. Monitoring of effects (36 CFR §212.57).

The trail and area designations made as a result of this analysis would be effective immediately upon the issuance of the record of decision, which is expected in May 2018. The Forest Service would produce an OSV use map (OSVUM) that would be formatted similar to the existing motor vehicle use map (MVUM) for wheeled vehicles on the Lassen National Forest. This map would allow OSV enthusiasts to identify the trails and areas where public OSV use would be allowed on the Lassen National Forest.

## Travel Management Regulations – Subpart C: “Use by Over-snow Vehicles”

The Forest Service published its final rule for Subpart C of the Forest Service’s Travel Management Regulations (TMR) (36 CFR Part 212) in the Federal Register on January 27, 2015 (80 FR 4500). The rule became effective on February 27, 2015, and states, in part:

“Over-snow vehicle use on National Forest System roads, on National Forest System trails, and in areas on National Forest System lands shall be designated by the Responsible Official on administrative units or Ranger Districts, or parts of administrative units or Ranger Districts, of the National Forest System where snowfall is adequate for that use to occur, and, if appropriate, shall be designated by class of vehicle and time of year...” (36 CFR §212.81(a)).

Designations of trails and areas for public over-snow vehicle use made as a result of the analysis in this EIS would conform to Subpart C of the Travel Management Regulations.

Consistent with the Travel Management Regulations at 36 CFR Part 212 Subpart C, snow trails and areas designated for public over-snow vehicle use would be displayed on a publicly available over-snow vehicle use map (OSVUM). Once issued, these designations would be made enforceable with the provisions of 36 CFR §261.14, which prohibits the possession or operation of an OSV on NFS lands other than in accordance with the Subpart C designations.

### Designation Criteria

#### *Background*

The Travel Management Regulations set forth designation criteria that are to guide the responsible official’s designation of trails and areas for OSV use (see 36 CFR §212.55(a)-(e))<sup>2</sup>. These criteria delineate certain elements and resources, the effects on which the responsible official must consider. The Travel Management Regulations at 36 CFR §212.55(a) and (b) require consideration of enumerated “general” and “specific” designation criteria,<sup>3</sup> whereas 36 CFR §212.55(d) and (e) require the responsible official to consider rights of access and wilderness areas and primitive areas in designating trails and areas for OSV use.

The Travel Management Regulations describe the general designation criteria (36 CFR §212.55(a)) as follows:

In designating National Forest System roads, National Forest System trails, and areas on National Forest System lands for motor vehicle use, the responsible official shall consider effects on National Forest System natural and cultural resources, public safety, provision of recreational opportunities, access needs, conflicts among uses of National Forest System lands, the need for maintenance and administration of roads, trails, and areas that would arise if the uses under consideration are designated; and the availability of resources for that maintenance and administration.

The Travel Management Regulations describe the specific designation criteria (36 CFR §212.55(b)) as follows:

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<sup>2</sup> Subpart C of the Travel Management Regulations incorporates the designation criteria found at 36 CFR §212.55 along with certain other requirements found in Subpart B. Specifically, 36 CFR §212.81(d) provides that: “the requirements governing designation of National Forest System roads, National Forest System trails, and areas on National Forest System lands in §§212.52 (public involvement), 212.53 (coordination), 212.54 (revision), 212.55 (designation criteria (including minimization)), and 212.57 (monitoring), shall apply to decisions made under [Subpart C].”

<sup>3</sup> 36 CFR §212.55(c) sets forth specific criteria for designation of roads, but because roads are not being designated as part of the OSV planning process, the §212.55(c) factors will not be addressed in detail in the EIS.

In addition to the criteria in paragraph (a) of this section, in designating National Forest System trails and areas on National Forest System lands, the responsible official shall consider effects on the following, with the objective of minimizing:

- 1) Damage to soil, watershed, vegetation, and other forest resources;
- 2) Harassment of wildlife and significant disruption of wildlife habitats;
- 3) Conflicts between motor vehicle use and existing or proposed recreational uses of National Forest System lands or neighboring Federal lands; and
- 4) Conflicts among different classes of motor vehicle uses of National Forest System lands or neighboring Federal lands.

In addition, the responsible official shall consider:

- 5) Compatibility of motor vehicle use with existing conditions in populated areas, taking into account sound, emissions, and other factors.

Additionally, 36 CFR §212.55(d) requires the responsible official to recognize valid existing rights of access in designating trails and areas for OSV use and 36 CFR §212.55(e) provides that OSV trails and areas shall not be designated in wilderness areas or primitive areas, “unless, in the case of wilderness areas, motor vehicle use is authorized by the applicable enabling legislation for those areas.”

#### *Minimization Criteria*

The term “minimization criteria,” as used throughout this document, refers to the subset of the specific criteria which the responsible official is to consider “with the objective of minimizing” the four categories of impacts set forth in 36 CFR §212.55(b)(1)-(4) when designating trails and areas for motorized use.

The term “*granular*,”<sup>4</sup> as used throughout this document, refers to the degree of specificity with which the minimization criteria are applied. The Travel Management Regulations implement Executive Order (E.O.) 11644, as amended by E.O. 11989, from which the minimization criteria originate. E.O. 11644 states that “each respective agency head shall develop and issue regulations and administrative instructions... to provide for administrative designation of the *specific areas and trails* on public lands on which the use of off-road vehicles may be permitted...” (emphasis added). This supports the application of the minimization criteria to each specific area and trail. The Ninth Circuit Court of Appeals has further clarified this point:

[T]he TMR requires the Forest Service to apply the minimization criteria to *each area* it designated for snowmobile use.... The TMR is concerned with the effects of each particularized area and trail designation. The minimization criteria must be applied accordingly.” *WildEarth Guardians v. USFS*, No. 12-35434, D.C. No. 9:10-cv-00104-DWM, 9th Circuit Court of Appeals, 6/22/15, pp. 23 and 27 (emphasis in original).

Accordingly, in developing the proposed action and alternatives, the Forest Service applied the minimization criteria (indeed, all the specific criteria) with full granularity. That is, we considered each specific area and trail proposed for designation against each specific criteria.

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<sup>4</sup> Granular is used by plaintiffs to define use of minimization criteria. See United States Court of Appeals, Ninth Circuit Court, *Wild Earth Guardians v. US Forest Service*, 2015, page 3 of 30.

However, it is important to note that applying the minimization criteria should not be interpreted as strictly requiring the prevention of all impacts. Instead, in applying the minimization criteria, the Forest Service maintains the flexibility to manage for a reasonable reduction of impacts while still addressing the need to provide trails and areas for public OSV experiences. This point is clarified in the preamble to the Travel Management Regulations Final Rule published on November 9, 2005:

An extreme interpretation of “minimize” would preclude any use at all, since impacts always can be reduced further by preventing them altogether. Such an interpretation would not reflect the full context of E.O. 11644 or other laws and policies related to multiple use of NFS lands. Neither E.O. 11644, nor these other laws and policies, establish the primacy of any particular use of trails and areas over any other. The Department believes “shall consider \* \* \* with the objective of minimizing \* \* \*” will assure that environmental impacts are properly taken into account, without categorically precluding motor vehicle use” (70 FR 68281).

### *Applying the General Designation Criteria*

The general designation criteria were applied in the development of the proposed action and discussed within the effects analysis. The analysis contained in chapter 3 analyzes the effects on natural and cultural resources, public safety, provision of recreation opportunities, access needs, conflicts among uses of National Forest System lands, the need for maintenance and administration of trails and areas that would arise if the uses under consideration are designated, and the availability of resources for maintenance and administration of OSV designations.

### *Applying the Minimization Criteria and Other Specific Designation Criteria*

Although the Ninth Circuit Court of Appeals has referred only to the minimization criteria when specifying the granular application requirement, the Travel Management Regulations introduce the four minimization criteria together with the fifth specific criteria, which requires the responsible official to consider the “[c]ompatibility of motor vehicle use with existing conditions in populated areas, taking into account sound emissions, and other factors” 36 CFR §212.55(b)(5). Accordingly, this analysis treats all five specific criteria the same, considering each specific area and trail proposed for designation against each of the five specific criteria.

To apply the specific criteria in developing the proposed action and alternative actions, the forest used a filter system. The filter system consists of a table that crosswalks each proposed area and trail against each of the five specific criteria in granular fashion. For all specific criteria, forest resource specialists developed potential effect indicators, which are triggers for determining when effects to the given resources and uses set forth in 36 CFR §212.55(b)(1)-(5) may warrant mitigation.

If the specialists found that the potential effect indicators were not triggered for a particular area or trail designation, then the designation could proceed without additional mitigation. However, if the specialists found that a designation would trigger one or more potential effect indicators, then the table asks the specialists to identify specific mitigations that would address the concern. Designations of these areas and trails could proceed if the mitigations are implemented. Some trails and areas were removed from further consideration based on application of the specific criteria where effects triggered one or more potential effect indicators and mitigation was not effective.

Table 2 captures the potential effects indicators developed to shape the areas and trails to be analyzed for designation. Appendices C and D document how the minimization criteria were applied on the Lassen National Forest.

**Table 2. Specific (and minimization) criteria (trails and areas proposed for designation for OSV use)**

<p><b>1</b></p> <p><b>Minimize Damage to Soil, Watershed, Vegetation and Other Forest Resources</b></p>	<p><b>2</b></p> <p><b>Minimize Harassment of Wildlife and Significant Disruption of Wildlife Habitats</b></p>	<p><b>3</b></p> <p><b>Minimize conflicts between motor vehicle use and existing or proposed recreational uses of NFS lands or neighboring Federal lands</b></p>	<p><b>4</b></p> <p><b>Minimize conflicts among different classes of motor vehicle uses on NFS lands or neighboring Federal lands</b></p>	<p><b>5</b></p> <p><b>Consider compatibility of motor vehicle use with existing conditions in populated areas*</b></p>
<ul style="list-style-type: none"> <li>• Would the area (or trail) be located in a watershed that is of concern?</li> <li>• Would the area (or trail) contain sensitive riparian areas, for example wet meadows, bogs, fens, etc.?</li> <li>• Would the area (or trail) drain into a 303(d)-listed waterbody?</li> <li>• Would TES plant be known to occur in this area, particularly those that are near, at, or above the surface of the snow?</li> <li>• Would the area (or trail) include designated botanical areas (SIA, RNA)?</li> <li>• Would the area contain cultural, tribal, or historic sites?</li> </ul>	<ul style="list-style-type: none"> <li>• Would the area (or trail) encompass great gray owl, Northern spotted owl, California spotted owl, and/or goshawk PACs? (Question varies by forest, depending on species likely to exist.)</li> <li>• Would the area (or trail) encompass known bald eagle nest sites?</li> <li>• Would the area contain key deer winter range?</li> <li>• Would Sierra Nevada yellow-legged frog habitat be located in the area?</li> <li>• Would the area contain habitat for marten, wolverine, or other sensitive forest carnivores?</li> </ul>	<ul style="list-style-type: none"> <li>• Would OSV use in this area cause conflicts with non-motorized visitors' desire for solitude and quiet recreation (for example, near popular quiet areas or high value areas for backcountry skiing?)</li> <li>• Would the area encompass areas valued for non-motorized use, including: Pacific Crest National Scenic Trail, Wilderness, Wild &amp; Scenic Rivers, ski areas (cross-country, downhill), and/or IRAs?</li> <li>• Would the area abut a wilderness area or National Park managed by other agencies?</li> <li>• Would the open area or trail abut a developed recreation site?</li> </ul>	<ul style="list-style-type: none"> <li>• Would wheeled vehicle use over snow be allowed in (on) this area (or trail)?</li> <li>• If so, does this affect safety and winter management of this area (or trail)?</li> <li>• Would OSV use of this area (or trail) conflict with plowed roads allowing vehicle use?</li> <li>• Are OSVs allowed to cross roads open to wheeled vehicles in winter?</li> </ul>	<ul style="list-style-type: none"> <li>• Would the area (or trail) be located adjacent to neighborhoods and communities?</li> <li>• Would OSV use of this area (or trail) be compatible with distinct characteristics of the community?</li> <li>• Would the OSV area (or trail) be located adjacent Federal or State lands designated for OSV use?</li> <li>• Would the sounds and emissions from OSV use of this area (or trail) be compatible with nearby populated areas?</li> </ul>
<ul style="list-style-type: none"> <li>• Would OSV use cause adverse impacts to these resources?</li> </ul>	<ul style="list-style-type: none"> <li>• Would OSV use cause this harassment or disruption?</li> </ul>	<ul style="list-style-type: none"> <li>• Would conflicts between motor vehicles and other recreational use exist?</li> </ul>	<ul style="list-style-type: none"> <li>• Are there conflicts among these different classes of motor vehicles?</li> </ul>	<ul style="list-style-type: none"> <li>• Is OSV use incompatible with populated areas?</li> </ul>

\*Note: Column 5 is not a minimization criteria but is required to be specifically considered by the Travel Management Regulations.

### *Applying the Area Size Criteria*

This analysis identifies eight areas on the Lassen National Forest that are smaller than a ranger district. These areas have been identified so we can consider whether OSV use would be appropriate in each one. Not all areas would be designated for OSV use in all alternatives.

The areas are primarily bounded by major highways and roads or other physiographic features that allow each area to be readily distinguished. They are also defined by their proximity to access points and communities that are socially and economically tied to OSV and other types of winter recreation. All but two of these areas also encompass key segments of the groomed OSV trail system. Not all of these eight potential OSV areas would be designated in all action alternatives. Furthermore, the sizes of each OSV area and the total mileage of OSV trails within each area may vary for some areas, by alternative. These areas are named and described as follows:

***Ashpan OSV Area*** – The size of this area ranges from a minimum of 82,380 acres to a maximum of 82,910 acres of the Lassen National Forest, depending on the alternative. It consists of that portion of the Lassen National Forest that lies west and north of Highways 44/89 and south of Highway 299. The community of Old Station is located within this OSV area.

This is a popular area for OSV trail riding and also includes approximately 57 miles of groomed OSV trails accessed through the Ashpan OSV trailhead on Highways 44/89. Approximately 16 miles of these OSV trails are under Forest Service jurisdiction. The groomed trail system connects to the adjacent Latour State Forest, offering further opportunity for OSV recreation. Although it lacks jurisdiction to designate snow trails for OSV use on land that is not part of the National Forest System, the Forest Service still grooms the OSV trails in the Latour State Forest.

***Bogard OSV Area*** – The size of this area ranges from a minimum of 243,620 acres to a maximum of 330,180 acres, depending on the alternative. It is bounded by Highway 44 to the south and west and by the forest boundary to the north and east in the northeastern part of the forest. This OSV area is accessible from the communities of Burney, Fall River, Old Station and Susanville and from the Bogard Trailhead on Highway 44.

***Fall River OSV Area*** – The size of this area ranges from undesignated (zero acres) to a maximum of 42,440 acres, depending on the alternative. It is not shown on the 2005 Winter Recreation Guide for the Lassen National Forest, but is currently open to OSV use. It is located in the vicinity of Lake Britton and MacArthur-Burney State Park. This area is also isolated from the remaining Lassen National Forest and comprises areas of the Shasta-Trinity National Forest administered by the Lassen National Forest. Nearby communities include Burney and Fall River. This area is within a zone of historically minimal snowfall and combined with the state park, tends to serve more as a focal point for non-motorized recreation. Although designated for OSV use, OSV opportunities are irregular throughout this area as there may not be sufficient snow in all parts of this area every year. No marked OSV trails currently exist in this area.

***Fredonyer OSV Area*** – The size of this area ranges from a minimum of 22,570 acres to a maximum of 30,030 acres, depending on the alternative. It is bounded by Highway 36 to the north and forest boundaries to the west, south, and east in the extreme southeastern portion of the forest. This area is a popular OSV destination for the community of Susanville.

***Jonesville OSV Area*** – The size of this area ranges from a minimum of 97,840 acres to a maximum of 119,940 acres, depending on the alternative. It is isolated by private land and the Plumas National Forest in the southern part of the forest. It is bounded by Highway 36 to the north, Lake Almanor to the east, and the forest boundary to the south and west. The Jonesville area is a popular OSV destination, especially for the communities of Chester and Lake Almanor.

***Morgan Summit OSV Area*** – The size of this area ranges from a minimum of 84,930 acres to a maximum of 119,920 acres, depending on the alternative. It lies on the west end of the forest and is bordered by Highway 32 and portions of Highway 36 to the south, Highway 44 to the north, Lassen Volcanic National Park to the east and the western borders of the forest. This area is largely centered around the communities of Mineral and Chester and winter recreation activities, predominately OSV use, contribute significantly to the social and economic health of the area.

***Shasta OSV Area*** – The size of this area ranges from undesignated (zero acres) to a maximum of 119,820 acres, depending on the alternative. It is not shown on the 2005 Winter Recreation Guide for the Lassen National Forest, but is currently open to OSV use. It is located in the extreme northern portion of the forest and is isolated from the remaining forest by private, state, and other agency lands. It comprises areas of the Shasta-Trinity National Forest that are administered by the Lassen National Forest. The community of Day is located within this area. The area is largely comprised of rough lava debris and historically has limited snowfall. Although designated for OSV use, OSV opportunities are irregular throughout this area as there may not be sufficient snow in all parts of this area every year. No marked OSV trails currently exist in this area.

***Swain Mountain OSV Area*** – The size of this area ranges from a minimum of 108,140 acres to a maximum of 172,210 acres, depending on the alternative. It is located east and south of Highway 44 and north of Highway 36, with the remaining boundaries formed by Lassen Volcanic National Park and the Caribou Wilderness. This area is extremely popular with OSV users, especially in the eastern and southeastern portions of the area.

*The area also includes the Bizz Johnson ski trail, parts of which will not be designated for OSV use. A short segment of trail at its west end will be a designated OSV trail in all alternatives. This OSV area is directly accessible from the communities of Old Station, Chester and Susanville.*

#### ***Applying the Rights of Access Designation Criteria***

Effects to rights of access to private lands or for other uses are analyzed in chapter 3. Policy provides direction to provide reasonable access to private property and other rights of access are authorized through special uses. The decision to designate areas and trails for OSV use and to identify snow trails for grooming would have no effect on existing rights of access that is specifically authorized under a written authorization issued under Federal law or regulations such as for managing permitted livestock or for access under a special use permit (36 CFR §212.81(a)).

#### ***Applying the Wilderness Areas and Primitive Areas Designation Criteria***

No trails or areas are designated for OSV use in Wilderness and Primitive Areas. Motorized use is prohibited in Wilderness Areas by the Wilderness Act, and thus, they are not designated for OSV use. The forest plan provides direction to manage primitive areas as non-motorized, and thus, primitive areas are not proposed for OSV designation.

## **Snow Trail Grooming Program**

In 2013, the Forest Service entered into a settlement agreement with Snowlands Network et al., to “complete appropriate NEPA analysis(es) to identify snow trails for grooming” on the Lassen National Forest and four other national forests in California. The Forest Service will comply with the terms of the settlement agreement for the Lassen National Forest by completing this analysis.

Furthermore, additional terms of the settlement agreement require the Forest Service to:

1. Analyze ancillary activities such as the plowing of related parking lots and trailheads as part of the effects analysis;
2. Consider a range of alternative actions that would result in varying levels of snowmobile use; and
3. Consider an alternative submitted by Plaintiffs and/or Intervenors in the NEPA analysis so long as the alternative meets the purpose and need, and is feasible and within the scope of the NEPA analysis, and Plaintiffs and/or Intervenors provide the Forest Service with a detailed description of that alternative during the scoping period for the NEPA analysis.

Ancillary activities such as the plowing of related parking lots and trailheads are considered in terms of how their effects would accumulate with the effects of the proposed action and alternatives.

## **Project Location**

This proposal would be implemented on the Lassen National Forest in northeastern California (figure 1).

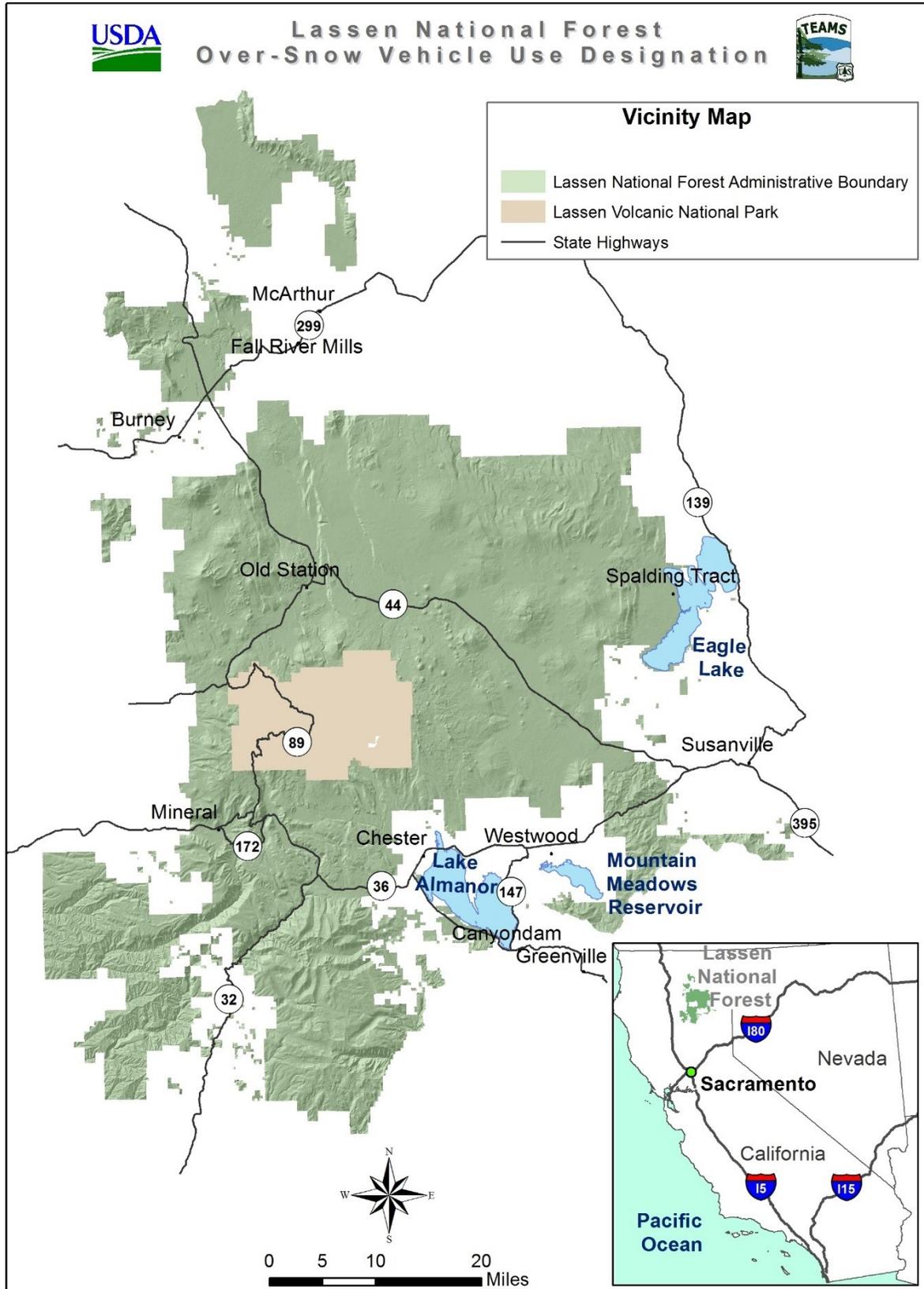


Figure 1. Vicinity map

## Purpose and Need for Action

The existing system of public OSV snow trails and areas on the Lassen National Forest is the culmination of multiple agency decisions over recent decades. Public OSV use of the majority of this available system continues to be manageable and consistent with the Travel Management Regulations. Exceptions have been identified, based on internal and public input and the criteria listed at 36 CFR §212.55.

The Forest Service has identified areas in which public OSV would be prohibited under existing forest plan management direction, but there are no existing orders or directives that have formally prohibited public OSV use within them. These areas total 42,850 acres in addition to the 185,990 acres of NFS land that are currently closed to OSV use. Some of these areas are also in lower elevations that do not typically receive sufficient snow for OSV use; are interspersed among areas currently closed to OSV use, such as wilderness, proposed wilderness, and areas classified as semi-primitive non-motorized in the recreation opportunity spectrum; have limited access, except from adjacent private land; or are small areas adjacent to pedestrian trails that are currently closed to motorized use.

The desired conditions for recreation (winter sports) are found on pages 4-4 to 4-5 of the Lassen National Forest LMP. The desired conditions specific to this project state:

- Provide a wide range of outdoor recreation opportunities to meet public demand by furnishing different levels of assess, service facilities, and information.
- Provide diverse opportunities for winter sports.

Our project purpose and need was developed after considering our existing conditions and the desired conditions in our forest plan. The purpose (goals and objectives) of this project are to effectively manage public OSV use on the Lassen National Forest and to comply with the settlement agreement with Snowlands Network et al. Effective management would provide public OSV access, ensure that OSV use occurs when there is adequate snow, promote the safety of all uses, enhance public enjoyment, minimize impacts to natural and cultural resources, and minimize conflicts among the various uses.

There is a need to provide a manageable, designated OSV system of trails and areas within the Lassen National Forest that is consistent with and achieves the purposes of the Forest Service Travel Management Regulations at 36 CFR part 212, Subpart C.

There is a need to designate an OSV system of trails and areas within the Lassen National Forest that provides public access, promotes the safety of all uses, enhances public enjoyment, minimizes impacts to natural and cultural resources, and minimizes conflicts among various resources.

There is a need to correct inconsistencies with existing management direction and OSV use on the Lassen National Forest.

There is a need to provide a high quality OSV trail system on the Lassen National Forest that is smooth and stable for the novice rider so they can use them without difficulty.

## Modified Proposed Action

The Proposed Action has been modified based on public concerns expressed in the public comment period for the original DEIS and in the pre-decisional objection review period for the FEIS and Draft Record of Decision and this Revised Draft EIS. These modifications are described in chapter 2 of this analysis.

The Forest Service proposes to designate NFS snow trails and areas on NFS land for public over-snow vehicle (OSV) use. These designations would occur on administrative units, or parts of administrative units or Ranger Districts of the Lassen National Forest where snowfall is adequate for that use to occur. These designations would be consistent with the requirements of Subpart C of the Forest Service's Travel Management Regulations at 36 CFR Part 212 (36 CFR 212). The Forest Service would also identify snow trails to be groomed for public OSV use under the Lassen National Forest OSV trail grooming program.

The Forest Service proposes the following actions on the Lassen National Forest:

1. To designate 8 discrete, specifically delineated areas for cross-country OSV use. There would be a total of 921,180 acres of NFS lands within the Lassen National Forest designated as areas where public, cross-country OSV use would be allowed. These areas would encompass approximately 80 percent of the NFS land on the Lassen National Forest. All existing OSV closures applying to areas and trails on the forest where public motorized use is not allowed would continue.
2. To designate approximately 334 miles of NFS snow trails on NFS lands within the Lassen National Forest as trails where public OSV use would be allowed. All existing OSV closures applying to trails where public motorized use is not allowed would continue.
3. To identify approximately 350 miles of snow trails that would be groomed for public OSV use by the Lassen National Forest Grooming Program. We would designate approximately 11.8 miles of snow trails for OSV use that would not be groomed. We would groom approximately 27.0 miles of snow trails for OSV use that would not be designated for OSV use because we do not have jurisdiction over these trails.
4. 2,519 miles of trail would be open to OSV use in areas designated for cross-country OSV use, but would not be designated.
5. To groom snow trails for OSV use according to the California State Parks' snow grooming standards when there is a minimum of 12 inches of snow on trails.
6. To implement Forest-wide snow depth requirements for public OSV use that would provide for public safety and natural and cultural resource protection by:
  - a. Allowing public, cross-country OSV use in designated areas only when there are 12 or more inches of snow or ice covering the landscape based on weather and observations by Forest Service personnel and the public, to minimize potential for impacts to surface and subsurface resources; and
  - b. Allowing public OSV use on designated snow trails when there are 6 or more inches of snow covering the trail. Except for approximately 0.1 mile of OSV trail (which would require a minimum of 12 or more inches of snow for OSV use)<sup>5</sup>, all snow trails to be designated for public OSV use or identified for OSV grooming in all alternatives would overlie an existing paved, gravel, or native surface travel route. These travel routes are trails and roads used by wheeled, motorized vehicles when such use is allowed, or for non-motorized recreation.
7. Designate no areas for public cross-country OSV use that would be located within 500 feet of the Pacific Crest National Scenic Trail on the Lassen National Forest.

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<sup>5</sup> This 0.1 mile of designated OSV trail crosses an area not designated for cross-country OSV use along the Pacific Crest National Scenic Trail, and is the most direct way to cross the Pacific Crest National Scenic Trail while allowing OSVs to remain on National Forest System land.

8. To designate up to 28 possible OSV crossing points of the Pacific Crest National Scenic Trail. All crossing points would overlie NFS routes currently designated for wheeled motorized vehicle use in the Lassen National Forest's Motor Vehicle Use Map that cross the Pacific Crest National Scenic Trail. Approximate locations of these crossing points have been identified, but they may be relocated to ensure greater safety in winter conditions and to facilitate the least difficult and most expedient access for OSV use between areas designated for OSV use. All crossing points would be located consistent with the guidelines in the Comprehensive Management Plan for the Pacific Crest National Scenic Trail (USDA Forest Service 1982). No designated crossing point would be within 0.5 mile of another designated crossing point along the Pacific Crest National Scenic Trail.

Included in the number of miles of snow trails to be designated for OSV use under this alternative are up to 28 possible snow trails that would be designated for OSV use to access the designated crossing points through areas not designated for cross-country OSV use. These crossing trails would mostly overlie routes designated for wheeled motorized vehicle use and follow the most direct approach across the Pacific Crest National Scenic Trail. Currently, we estimate that as many as 26 crossing trails would be designated. Following this estimation, total designated mileage of Pacific Crest National Scenic Trail crossing trails would be 8.1 miles, with all but 0.1 mile overlying a designated wheeled motorized vehicle travel route. Two of the possible 28 crossing points would be surrounded by non-Forest Service land so trails accessing these two crossing points would not be designated due to lack of NFS jurisdiction on surrounding land.

The decision would only apply to the public use of over-snow vehicles as defined in the Forest Service's Travel Management Regulations (36 CFR §212.1). Public OSV use that is inconsistent with the designations made under this decision would be prohibited under 36 CFR Part 261. No trails that are currently closed to OSV use would be designated for OSV use under this alternative.

## Decision Framework

This decision would designate NFS snow trails and areas on NFS lands for public OSV use on the Lassen National Forest where snowfall is adequate for that use to occur. It would also identify the NFS and non-system snow trails where grooming for public OSV use would occur.

## Responsible Official

The Forest Supervisor of the Lassen National Forest is the responsible official who would issue the decision. The Forest Supervisor will consider all reasonable alternatives and decide whether to continue current management of public OSV use on the Lassen National Forest, implement the modified proposed action, or select an alternative for the management of public OSV use.

## Public Involvement

The Lassen National Forest Over-snow Vehicle Use Designation is an activity implementing a land management plan. It is not an activity authorized under the Healthy Forests Restoration Act of 2003 (Pub. L. 108-148). Therefore, this activity is subject to pre-decisional administrative review consistent with the Consolidated Appropriations Act of 2012 (Pub. L. 112-74) as implemented by Subparts A and B of 36 CFR Part 218.

The interdisciplinary team relied on public involvement to ensure that a reasonable range of alternatives, representing a broad array of perspectives, would be analyzed in this revised DEIS.

A pre-scoping meeting was held on November 5, 2014, which was attended by interested and affected stakeholders. These included names of people, agencies, and groups on the Forest Service's public notice mailing list for the Lassen National Forest, known winter recreation interest groups, and the plaintiffs and intervenors in the *Snowlands* lawsuit. The meeting's objectives were to share information about the project and the NEPA process, gather input on public engagement, and confirm and collect public input on a preliminary purpose and need for action through shared concerns and solutions with current OSV management on the forest. The meeting was attended by 28 people. A more detailed description of this meeting and outcomes are included in the December 2014 Pre-NEPA meeting summary report, available on the web and in the project record. The project first appeared on the Lassen National Forest's Schedule of Proposed Actions in January 2015.

A scoping letter describing the proposed action and seeking public comments was sent via regular mail or email to approximately 138 interested groups, individuals, and agencies on January 14, 2015, with comments requested to be returned by February 15, 2015. A press release was sent to local news media outlets on January 14, 2015. A notice of intent to prepare an EIS was published in the Federal Register on January 20, 2015 (80 FR 2676). All notices included a web address for the project's website where comments could also be submitted. The project's website could also be accessed from the home page of the Lassen National Forest's public website.

The public was invited to comment on the proposed action, identify potential concerns or endorsements, and provide any relevant information that would be useful in the subsequent environmental analysis.

The Forest Service received and considered responses from 66 interested groups, individuals, and agencies in the form of letters, emails, and website submissions. We reviewed and analyzed all of the comment letters. All comments were thoughtful narratives responding to the proposed action with support, opposition, concerns, or requests for revision and new alternatives. The Forest Service appreciates the time and perspectives shared by each commenter, and the willingness of all to engage in the environmental analysis process.

During scoping, we also held and attended meetings and discussed the OSV designation process with local county governments, and we considered their opinions in developing alternatives.

A DEIS was released for public review and comment. A notice of availability to comment on the DEIS was published in the *Federal Register* on January 29, 2016 (81 FR 5013). The 45-day comment period began on January 30, 2016. A legal notice of opportunity to comment was published in the newspaper of record on February 2, 2016. Letters were sent to 402 interested groups, individuals, and agencies, notifying them that the DEIS was available for review. As a result of these solicitations, the Forest Service received 156 comment letters containing 623 comments from 142 interested groups, individuals, and agencies in the form of letters, emails, and website submissions. These comments were sorted for redundancies and the Forest Service addressed the 357 remaining comments that were considered materially relevant to the analysis. Documentation of our consideration of these comments is in the project record.

A final EIS and draft record of decision was released for pre-decisional administrative review in August 2016, and "Legal Notice Notice of Opportunity to Object" was published in the *Lassen County Times* on August 23, 2016. This notice signified the beginning of a 45-day objection period that began on August 24, 2016. After considering the objections received, the Forest Service determined it would be necessary to revise the analysis. This revised DEIS is required by the Council on Environmental Quality's implementing regulations for NEPA at 40 CFR §1502.9(a).

## Issues

Concerns about actual cause-effect relationships between the proposed action and its effects are called “issues.” Issues serve to highlight effects or unintended consequences that may result from the proposed action, giving opportunities to reduce adverse effects through mitigations or alternatives. They are the potential cause-effect relationships that we identified to consider and analyze in depth to determine the likely impacts of each alternative.

Significant issues generally concern cause-effect relationships that may result in significant impacts through the implementation of the proposed action. To determine the issues that might be significant, we considered the intensity of the environmental changes that might result from the proposed action, and the context in which these changes might occur.

### Significant Issues

Based on our review of all previous comments and objections received, and analysis of issues in the previous versions of this EIS, we have identified two significant issues for the Lassen National Forest Over-snow Vehicle Use Designation analysis.

Effects to ambient noise, ambient air quality, and water and soil resources were disclosed as significant issues in previous versions of this EIS. After review of the comments on the original DEIS, we determined that effects to ambient noise, ambient air quality, and water and soil resources were not significant issues in the analysis. The potential effects to these environmental conditions would be temporary, short-term, or imperceptible when considered in the contexts of the areas potentially affected and the winter conditions in which they would occur.

However, we also determined that the quality recreation experience significant issue would be better addressed if divided into two separate significant issues, one each for motorized and non-motorized use. Further, noise and air quality impacts are two factors that determine the quality of the recreational experience for both motorized and non-motorized uses and these analyses are incorporated into the analyses of the significant issues.

### Effects on the Availability of Motorized Over-snow Recreation Opportunities

The decision has the potential to impact the opportunities for public access and use of NFS lands by OSV-equipped winter recreation enthusiasts seeking enjoyable and challenging motorized experiences. The designation of snow trails and areas for public OSV use has the potential to impact the opportunities these enthusiasts seek by:

1. Changing the location of and/or reducing the amount of high-quality and desirable areas designated for public, cross-country OSV use on the forest;
2. Designating an insufficient number of opportunities for public OSV use of snow trails on the forest; and
3. Providing an insufficient number of opportunities for public OSV use of groomed snow trails on the forest.

Resource indicators and measures for this issue are shown in table 3.

**Table 3. Resource indicators and measures for the issue of motorized recreation opportunities**

<b>Impact</b>	<b>Resource Indicator</b>	<b>Measure</b>
Changing the location of and/or reducing the amount of high-quality and desirable areas designated for public, cross-country OSV use on the forest	The area of NFS land designated for public, cross-country OSV use	Total area (acres) where public OSV use would be allowed; Percent change in total area (acres) where public OSV use would be allowed as compared to current management
Designating an insufficient number of opportunities for public OSV use of snow trails on the forest	Snow trails designated for public OSV use	Total length of snow trail (miles) designated for public OSV use; Percent change in length of snow trail (miles) designated for public OSV use as compared to current management
Providing an insufficient number of opportunities for public OSV use of groomed snow trails on the forest	Groomed snow trails designated for public OSV use	Total length of snow trail (miles) groomed for public OSV use; Percent change in length of snow trail (miles) groomed for public OSV use as compared to current management

### Effects on the Availability of Non-motorized Recreation Opportunities

The decision has the potential to impact the opportunities for public access and use of NFS lands by non-motorized winter recreation enthusiasts seeking solitude and challenging physical experiences. The designation of snow trails and areas for public OSV use and grooming of snow trails for public OSV use has the potential to impact the opportunities these enthusiasts seek by:

1. Creating noise impacts that intrude on the solitude these enthusiasts seek;
2. Creating local air quality impacts that intrude on the unpolluted air and solitude these enthusiasts seek;
3. Creating visual impacts that intrude on the unaltered scenery these enthusiasts seek.
4. Displacing non-motorized winter recreation enthusiasts, or requiring them to travel longer distances through motorized trails and areas than they are physically able to traverse to access their desired quiet, non-motorized experiences;
  5. Consuming untracked powder desired by backcountry skiers;
  6. Making the snow surface difficult to ski on; and
  7. Creating concerns for their safety when non-motorized winter recreationists share winter recreation trails and areas with OSVs.

Resource indicators and measures for this issue are shown in table 4.

**Table 4. Resource indicators and measures for the issue of non-motorized recreation opportunities**

Impact	Resource Indicator	Measure
<p>Creating noise impacts that intrude on the solitude these enthusiasts seek</p>	<p>Potential noise impacts</p>	<p>Total area (acres) potentially affected by noise compared to the total area (acres) not designated for winter motorized use.</p> <p>Proximity of predicted noise increases above ambient levels in sensitive areas (GIS model for selected points).</p>
	<p>Proximity and frequency of OSV designations in relation to designated non-motorized areas (e.g., Wilderness, Inventoried Roadless, Lassen Volcanic National Park, Research Natural Areas (RNAs), Proposed Wilderness, Primitive and Semi-primitive Non-motorized ROS classifications)</p>	<p>Distance of groomed public OSV snow trails from designated areas/number of public OSV snow trails within designated areas, or number of crossings of linear designated areas.</p>
	<p>Applicable wilderness capability attributes/characteristics (FSH 1909.12 (72.1))</p>	<p>Total area (acres) affected and duration of impact. Qualitative description for each roadless area characteristic.</p>
	<p>Applicable Inventoried Roadless Area (IRA) criteria/characteristics (36 CFR §294.11)</p>	<p>Total area (acres) affected and duration of impact. Qualitative description for each roadless area characteristic.</p>
<p>Creating local air quality impacts that intrude on the unpolluted air and solitude these enthusiasts seek</p>	<p>Potential air quality impacts</p>	<p>Qualitative/narrative description of potential impacts (with reference to the air quality analysis).</p>
	<p>Proximity and frequency of OSV designations in relation to designated non-motorized areas (e.g., Wilderness, Inventoried Roadless, Lassen Volcanic National Park, RNAs, Proposed Wilderness, Primitive and Semi-primitive Non-motorized ROS classifications)</p>	<p>Distance of groomed public OSV snow trails from designated areas/number of public OSV snow trails within designated areas, or number of crossings of linear designated areas.</p>
	<p>Applicable wilderness capability attributes/characteristics (FSH 1909.12 (72.1))</p>	<p>Total area (acres) affected and duration of impact.</p> <p>Qualitative description for each roadless area characteristic.</p>
	<p>Applicable Inventoried Roadless Area (IRA) criteria/characteristics (36 CFR §294.11)</p>	<p>Total area (acres) affected and duration of impact.</p> <p>Qualitative description for each roadless area characteristic.</p>

Impact	Resource Indicator	Measure
Creating visual impacts that intrude on the unaltered scenery these enthusiasts seek	Qualitative/narrative description of potential visual impacts	Qualitative description of potential effects
	Proximity and frequency of OSV designations in relation to designated non-motorized areas (e.g., Wilderness, Inventoried Roadless, Lassen Volcanic National Park, RNAs, Proposed Wilderness, Primitive and Semi-primitive Non-motorized ROS classifications)	Qualitative description of potential effects
	Applicable wilderness capability attributes/characteristics (FSH 1909.12 (72.1))	Qualitative description of potential effects
	Applicable Inventoried Roadless Area (IRA) criteria/characteristics (36 CFR §294.11)	Qualitative description of potential effects
Displacing non-motorized winter recreation enthusiasts, or requiring them to travel longer distances through motorized trails and areas than they are physically able to traverse to access their desired quiet, non-motorized experiences  Consuming untracked powder desired by backcountry skiers;  Making the snow surface difficult to ski on	Access to desired non-motorized settings and opportunities	Total area (acres) and trails (miles) available to non-motorized recreation enthusiasts within 10 miles of plowed trailheads
Creating concerns for their safety when non-motorized winter recreationists share winter recreation trails and areas with OSVs	Recreation Opportunity Spectrum (ROS)	Consistency of OSV designations with ROS classes
	Areas and trails available to non-motorized recreation enthusiasts for quality non-motorized recreation experiences	Total area (acres) designated for public OSV use, total area (acres) of non-motorized areas such as cross-country ski areas, non-motorized trail access

## Issues Considered but not Analyzed in Detail

### The Impacts of Unauthorized OSV Use

Public comments expressed the concern that “unauthorized OSV use is having and will have significant impacts that the analysis in the [original] DEIS does not discuss” (Comments 80-79 and 83-22). The comments cite litigation [*Sierra Club v. U.S. Forest Serv.*, 857 F. Supp. 2d 1167, 1176-78 (D. Utah 2012)] finding that NEPA requires the agency to take a hard look at the impacts of illegal motorized use on forest resources and the likelihood of illegal use continuing under each alternative.

We reviewed the Memorandum Decision and Order in the case cited [857 F. Supp. 2d 1167 (D. Utah 2012)] and we determined that it is not analogous to the present analysis nor its decision. The *Sierra Club*

case was based on a wheeled, motorized vehicle use designation analysis under Subpart B of the Forest Service’s Travel Management Regulations. It dealt with the designation of trails for wheeled, motorized vehicles and the threat that the creation of unauthorized routes posed on forest resources. The environmental consequences of unauthorized routes created for wheeled, motorized vehicles are more substantial than unauthorized routes created by OSVs.

“The difference in management of motor vehicle use and OSV use on NFS lands stems from differences in their associated settings, activities, environmental impacts, and public preferences. National forests and grasslands change when snow blankets the landscape. Vegetation camouflages, animals burrow, and water transforms into ice...

OSV use occurs only in the months when snow is present, in contrast to other types of motor vehicle use, which can occur at any time of the year...

A key difference between OSV use and other types of motor vehicle use is that, when properly operated and managed, OSVs do not make direct contact with soil, water, and vegetation, whereas most other types of motor vehicles operate directly on the ground. Unlike other types of motor vehicles traveling cross-country, OSVs traveling cross-country generally do not create a permanent trail or have a direct impact on soil and ground vegetation...

Subpart B of the TMR recognizes that cross-country travel [and, by association, unauthorized routes created by cross-country travel] by [wheeled, motorized vehicles] is generally unacceptable [and the regulations are written to only permit such travel by wheeled, motorized vehicles in specific circumstances]. Subpart C of the TMR [Travel Management Regulations] as originally promulgated and in the proposed rule recognizes that cross-country travel by OSVs may be acceptable in appropriate circumstances” (79 FR 34679, June 18, 2014).

As the District Court in the *Sierra Club* case stated in its Memorandum Decision and Order, “The test of adequacy of an EIS is to be ‘pragmatic,’ requiring ‘a good faith attempt to identify and to discuss all foreseeable environmental consequences.’” After considering potential environmental impacts, we determined that illegal OSV trail creation and use is not a significant environmental issue. This is because although there may be some risk of OSV enthusiasts creating new OSV trails or going off-trail in areas where OSV use is not allowed, the hazard of this activity resulting in long-term, adverse environmental consequences of any perceptible magnitude is negligible for several reasons:

- Illegal OSV trails that might exist on snow would not be likely to directly affect soil and vegetation;
- OSVs would be prohibited from directly affecting soil, vegetation, and other surface resources by snow depth restrictions in each action alternative;
- Illegal OSV trails would only exist until the next heavy snowfall or snow melt, so the effects on the snow would be temporary;
- We have found no evidence of illegal OSV use that would remain after the snow melts;
- Illegal OSV use would also not likely result in permanent trails because of the widely dispersed nature of off-trail, cross-country OSV travel. Unauthorized OSV trails are not likely to be worn permanently into the landscape due to repeated use;
- Although OSV trails would be designated, most of the designated trails would be located in areas where public, cross-country OSV use would already be allowed. Therefore, there would be fewer opportunities for OSV use in areas not designated for OSV use.



## Chapter 2. Alternatives

### Introduction

This chapter describes and compares the no-action alternative and four action alternatives for the **Lassen National Forest Over-snow Vehicle Use Designation**. It includes a detailed description and maps of each alternative, how they were developed, and alternatives considered but eliminated from detailed study; and presents the alternatives in comparative form, sharply defining the differences between alternatives and providing a clear basis for choice among options by the decision maker and the public. Numbers such as acres and miles are approximate due to the use of GIS data and rounding.

### Development and Modification of Alternatives

The no-action alternative (alternative 1) represents the current management of the OSV program on the Lassen National Forest. The description of this alternative is based primarily on the 2005 Lassen National Forest Winter Recreation Guide (project record) that identifies groomed and non-groomed OSV trails, trails open for non-motorized recreation and closed to OSV use, areas closed to OSV use, and areas open for cross-country OSV use.

The Forest Service developed the proposed action (alternative 2) as originally described in the Notice of Intent to meet the existing demand for OSV recreation, while continuing to protect important resources and provide for some quiet recreation. This alternative also specifically would have prohibited OSV use on the Pacific Crest National Scenic Trail, which was not formally identified in the 2005 Lassen Winter Recreation Guide. In addition, this alternative would have prohibited OSV use in areas below 3,500 feet that historically have low amounts of snowfall that preclude OSV use. This prohibition on the use of OSVs below 3,500 feet was eliminated from the proposed action after we considered comments on the original DEIS. This alternative also established a minimum snow depth of 12 inches in areas designated for cross-country OSV use and 6 inches for OSV use on designated trails.

Alternative 3 was submitted by Snowlands Network, et al. during scoping to respond to the issue of quality recreational experience and the potential of noise and air quality impacting quiet recreation. This alternative was developed in part as a result of discussions with the Forest Service and a group of motorized use supporters to identify areas of low OSV use that could be identified for quiet recreation. This alternative identifies additional acres not designated for OSV use across the forest but accommodates use of OSV trail riding by restricting OSVs to trail-only riding in some areas. This alternative expands areas of quiet recreation across the forest.

Alternative 4 was submitted in scoping by OSV groups, principally Recreation Outdoor Coalition, to address the issue of decreased OSV recreation opportunities on the forest expressed about the proposed action. Specifically, the group proposed eliminating the OSV prohibition below 3,500 feet and allowed OSV use on a minimum of 6 inches of snow on groomed trails. This alternative proposed non-motorized areas, but to a smaller extent than alternative 3.

We modified the proposed action to better address the issues after discussions with organizations and individuals after scoping but prior to the release of the original DEIS. The “Modified Proposed Action” as described in the original DEIS reflected the following changes from the proposed action as described in the Notice of Intent:

- 1) It clarified the State's grooming requirements that a minimum of 12 inches of snow must exist on the trails before grooming may commence, rather than the 18-inch minimum as described in scoping;
- 2) In addition to the Pacific Crest National Scenic Trail, itself, no areas within 500 feet on each side of the Pacific Crest National Scenic Trail would be designated for public OSV use. This addition came about after review of nature and purposes of the Pacific Crest Trail. This alternative also established 28 OSV crossings of the Pacific Crest National Scenic Trail.

We then made the following changes after the comment period on the original DEIS:

- 1) A comment asked us to consider a single universal minimal snow depth for the proposal and/or modify the proposed 6-inch minimum snow depth for OSV use on underlying Forest Service roads. The identification of varying snow depths for different uses or areas, as described in the proposed action can be confusing to the public and difficult to enforce, particularly the 6-inch depth for OSV trails overlying roads, and could lead to increased probability of OSV use off-trail in these areas.
  - Snow depth requirements have been reconsidered in all alternatives. Some were changed. In this RDEIS, this concern is now addressed in Alternative 5 which applies a minimum 12-inch snow depth for for public, cross-country OSV use, OSV use on snow trails, and for grooming. The alternative removes any minimum snow depth requirement for snow trails on existing underlying roads. The comment states that OSVs do not impact roads and the operator should be allowed to decide whether he or she can safely travel on minimal snow to access the backcountry where deeper snow exists.
- 2) A comment asked us to consider ensuring flexibility in the requirement for minimum snow depths and consider them guidelines instead. The comment asked for flexibility to account for snow depths that are affected by variables such as elevation, temperature, aspect, and snow melt.
  - We considered this suggestion and have modified the proposed action to include a 12-inch minimum snow depth for public, cross-country OSV use and the retention of some flexibility in the application of snow depths on underlying roads. The minimum snow depth component of alternative 4 also addresses this concern.
- 3) A comment asked us to consider ensuring that the process used to measure snow depth and enforce minimum snow depths are equitable and that entire areas are not closed to OSV use based on a snow depth measurement taken at just one trailhead, for instance.
  - We considered this suggestion and have developed monitoring measures to determine snow depth measurement criteria and locations, using an interdisciplinary team of resource specialists, which would apply to any of the action alternatives.
- 4) A comment asked us to consider eliminating the prohibition of OSV use in areas below 3,500 feet in elevation and use minimum snow depth to guide use instead.
  - We considered this suggestion and recognize that the provision for ensuring 12 inches of snow are on the ground before public OSV use will be allowed could be used in areas below 3,500 feet, like it would for the rest of the project area, as an alternative to prohibiting use based on this elevational band. This is addressed by the modified proposed action and Alternative 4.

- 5) A comment asked us to consider designating OSV crossings of the Pacific Crest National Scenic Trail, overlying the same roads and trails designated for wheeled, motorized vehicle use, when such use is allowed, as shown on the Subpart B Motor Vehicle Use Map.
  - The Comprehensive Plan for the Pacific Crest National Scenic Trail recommends the number of crossing points based on the Recreational Opportunity Spectrum (ROS) Classification of the land adjacent to the trail. Alternatives 2, 4, and 5 would designate crossing points consistent with these recommendations. Furthermore, alternatives 2 and 5 would designate OSV trails that would be used to approach the crossing points through areas not designated for OSV use. OSV use in these areas would be restricted to designated trails only.
- 6) A comment asked us to consider restricting OSV use on open or flowing water.
  - No alternative would allow OSV use on open or flowing water.
- 7) A comment asked us to modify the minimum snow depth for cross-country OSV use to 10 inches instead of 12 inches; and also consider that 6 or 8 inches of snow is adequate when there is a good crust of snow or if the area is flat.
  - This suggestion is addressed in alternative 4. Under this alternative, a specified snow depth has been eliminated and the minimum snow depth for OSV use cross-country and on snow trails is the depth necessary to avoid resource damage.
- 8) Consider a suggestion for an alternative to the proposed action with an emphasis on providing additional opportunities for motorized uses.
  - This suggestion is considered by alternative 4.
- 9) Consider an alternative that does not require a minimum snow depth for cross-country OSV use as long as there is no damage to underlying surface resources.
  - Alternative 4 was designed with no restriction on public, cross-country OSV use as long as there is no damage to underlying surface resources.

We issued the Final Environmental Impact Statement and Draft Record of Decision in August 2016. The Draft ROD proposed to select alternative 4 with additional non-motorized areas added from alternative 3. In the pre-decisional objection period, several organizations and individuals objected to the proposed decision as described in the Draft ROD.

We met with objectors to discuss their concerns. The agency's resulting objection review determined that a Revised Draft Environmental Impact Statement (RDEIS) would be necessary to address concerns expressed by the objectors. As a result of objections received, this RDEIS reflects the following changes:

- 1) Elaborate on the use of minimization criteria to designate roads, trails and areas for OSV use;
  - The analysis explains the application of the minimization criteria to mitigate the impacts of OSV use on resources in all action alternatives. Minimization criteria are applied individually to each area and trail system in the designation of trails and areas for OSV use. These criteria allow the Forest Service to weigh socio-economic concerns against resource impact issues for each area, independently. Appendices C and D of this RDEIS describe how the minimization criteria would be applied to each area and trail system and the actions that would be implemented if adverse resource impacts would occur.

- 2) Explicitly analyze and document the method for determining adequate snow depth for resource protection;
  - Alternative 4 is modified to include new methods to determine whether adequate snow depth exists in designated areas. Little data are available to determine an “adequate” snow depth for resource protection. Alternative 4 proposes to use resource staff experience, expertise, and individual resource regulatory frameworks to inform the forest as to when OSV use should be open or closed in each area. Additional information would come from groomer operators, weather data stations, and observations from staff at trailheads and in the field as to when the Forest Service should allow or end the OSV season. This further takes the burden of determining adequate snow depth away from public uses and allows them to simply enjoy the OSV season when the Forest Service determines it to be open.
- 3) Broaden the range of alternatives to include fewer areas designated for OSV use;
  - The proposed action (alternative 2) was modified to designate portions of the forest for OSV use that are below 3,500 feet in elevation, allowing the snow depth instead of the elevation to determine whether OSV use should occur on a trail or area.
  - Alternative 5 (a fourth action alternative) has been developed and added to the range of alternatives to provide for additional protection of resources and more opportunities for non-motorized winter recreation by reducing the areas designated for OSV use.
  - Alternative 5 is added to this RDEIS to address the issue of broadening the range of alternatives and provide for additional protection of resources and non-motorized winter recreation by reducing the areas designated for OSV use. This alternative proposes prohibiting OSV use in areas that receive historically low levels of snow which is generally considered inadequate for quality OSV recreation; areas potentially important to both aquatic and terrestrial wildlife; and additional areas deemed inadequate for quality OSV recreation.
  - Along with alternative 2, alternative 5 also protects the Pacific Crest National Scenic Trail from OSV intrusions by not designating areas under Forest Service jurisdiction for OSV use within 500 feet of either side of the trail. Alternative 5 also designates up to 12 OSV crossings of the Pacific Crest National Scenic Trail.
- 4) Designate areas for OSV use smaller than a ranger district.
  - All action alternatives have been modified by dividing the forest into discrete, specifically delineated spaces that are areas designated for OSV use. All areas proposed for designation for cross-country OSV use are smaller than a ranger district. Furthermore, use of OSVs is prohibited on the forest unless the area or trail is designated for this use. Generally, most of these areas encompass major components of the groomed trail system and are readily accessible from affected communities that rely on the activity for economic benefit. Where possible, the boundaries of each area are defined by major state highways, NFS roads, and national forest boundaries.

## Alternatives Considered in Detail

The Forest Service explored and evaluated five alternatives (all are summarized and compared in the “Comparison of Alternatives” section at the end of this chapter).

## Alternative 1: No Action

The no-action alternative is required under NEPA regulations [40 CFR §1502.14(d)]. This alternative represents the existing, baseline condition or trends by which the action alternatives are compared. Under alternative 1, there would be no changes to the existing system of OSV use on roads, snow trails, and areas within the Lassen National Forest except as prohibited by Forest Order. Most of the existing system of OSV use on the Lassen National Forest is shown on the 2005 Winter Recreation Guide for the Lassen National Forest. In addition, only those seasonal restrictions as specified in the Lassen Forest Plan and contained in existing Forest Orders would be continued. The 2005 Travel Management Regulations, Subpart C, would not be implemented, and no OSV use map would be produced.

The following summarizes how the Forest Service currently manages public OSV use on the approximately 1,050,020-acre Lassen National Forest:

- The Lassen National Forest includes approximately 1,050,020 acres of National Forest System (NFS) lands;
- Approximately 964,030 acres of NFS lands are open to public, cross-country OSV use. This comprises approximately 84 percent of the Lassen National Forest;
- Approximately 185,980 acres of NFS lands are closed to public OSV use;
- Approximately 98.4 miles of the Pacific Crest National Scenic Trail are within 500 feet of areas open to public OSV use on the Lassen National Forest (table 13, page 67);
- There are 2,952 miles of currently groomed, ungroomed, marked, and unmarked snow trail open to public OSV and non-motorized use as shown on the 2005 Lassen National Forest Winter Recreation Guide (project record). These trails overlie roads and trails designated for wheeled vehicle use and are within areas currently open to OSV use. Approximately 406 miles of these trails are maintained for OSV use through signage, snow trail grooming, or both;
- The Forest Service grooms approximately 349 miles of snow trails for public OSV use. Approximately 27 miles of these groomed trails are not under National Forest System jurisdiction;
- Snow trail grooming is allowed when there are 12 to 18 or more inches of snow.

Figure 2 depicts the current management.

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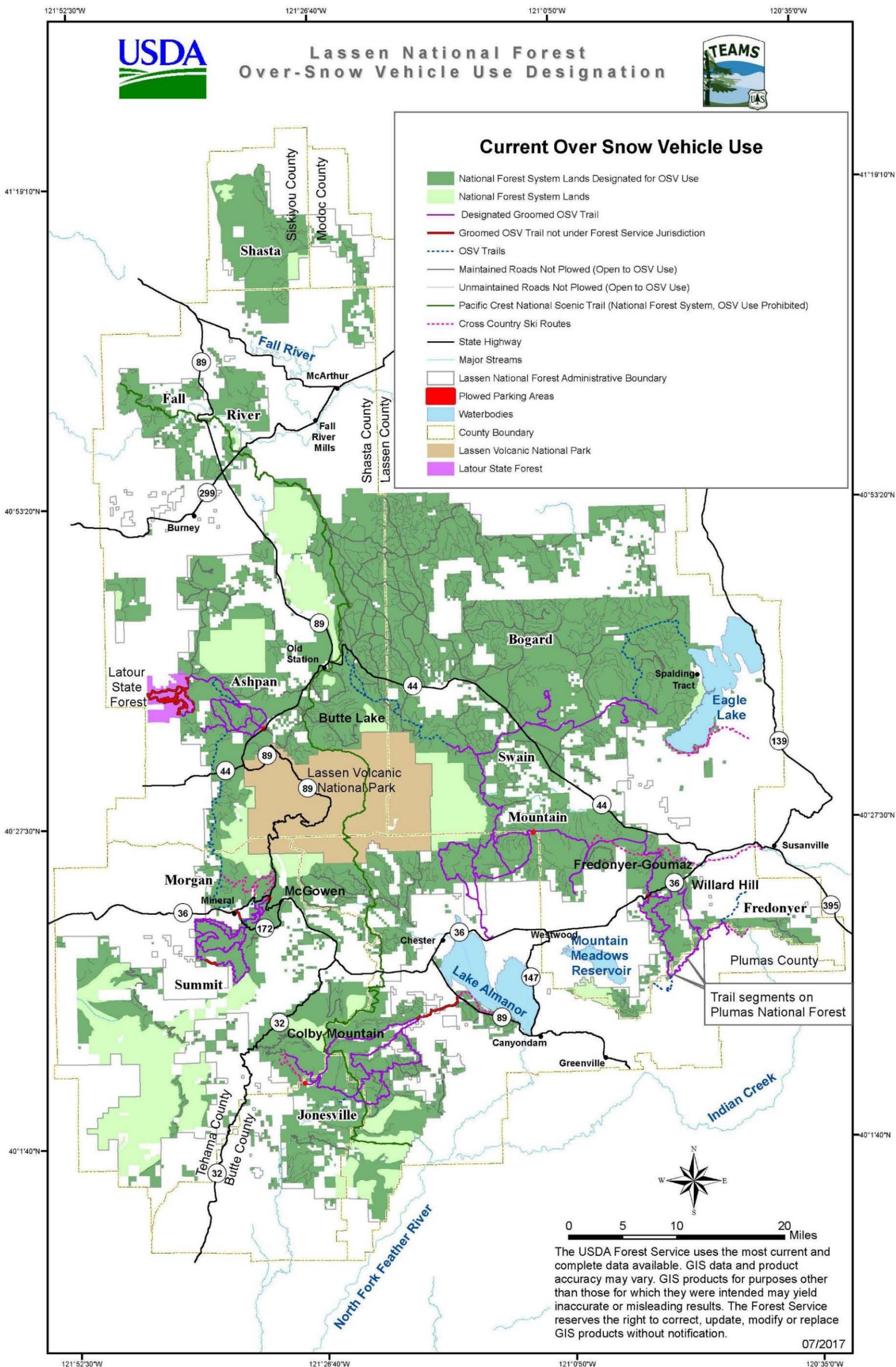


Figure 2. Map showing existing condition – current management

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## Trail Grooming Operations Applicable to All Alternatives

The OSV trail grooming season generally begins the day after the Christmas holiday and continues through March. Start and stop times vary per trail location and are dependent upon the presence and depth of snow. Snow trails are prioritized for grooming based on visitor use. Grooming has historically occurred several times per week. As part of this proposal, the grooming frequency on priority trails would occur several times per week and after major storms, typically between 4:00 p.m. and 6:00 a.m. The total hours of snow trail grooming that would occur at each trail system for an average season are shown in **Error! Reference source not found.**

**Table 5. Summary of grooming operations on the Lassen National Forest (Groomer Hours)**

Grooming Location	Annual Groomed Miles	Annual Snowcat Hours	Max Day Hours
Ashpan	1,743	249	12
Bogard and Fredonyer	5,076	680	12
Jonesville	2,222	420	25
Morgan Summit	900	300	12
Swain Mountain	660	94	12

Snow trails would be groomed for public OSV use to a minimum width of 10 feet and typically up to 14 feet wide. Snow trails would be groomed up to 30 feet wide in the more heavily used areas such as near trailheads. Groomed trail width is determined by variety of factors such as width of the underlying road bed, width of grooming tractor, heavy two-way traffic on the trail, and trail corners. Snow trails would not be groomed beyond the width of the underlying roadbed, where one exists. Where the terrain allows, main ingress and egress snow trails that connect to the trailhead would be groomed to 18 feet wide or greater to facilitate the added traffic.

Snowcats are operated at speeds in the range of 3 to 7 miles per hour. The vehicle is operated with warning lights on at all times. The maximum hours of equipment operation is generally a 12-hour day during peak season.

Snow trail grooming for public OSV use would be conducted in accordance with the 1997 Snowmobile Trail Grooming Standards set by the California Off-Highway Motor Vehicle Recreation (OHMVR) Division, as follows:

- Operators shall be trained and directed by a grooming coordinator.
- Identify hazards in advance of grooming, preferably in autumn before snow falls.

The California OHMVR Division’s snowcat fleet is subject to emission regulation by the California Air Resources Board (CARB) as off-road equipment. The CARB sets an emission limit for the vehicle fleet as a whole rather than for individual pieces of equipment. Based on the total horsepower of the vehicle fleet, and the model and year of the individual equipment within the fleet, CARB determines how much horsepower per year must be repowered, retrofitted, or retired. The California OHMVR Division then determines what modifications to make to its fleet in order to satisfy CARB requirements.

## **Management Direction, Mitigations, Best Management Practices, and Monitoring Applicable to All Action Alternatives**

All four action alternatives would apply the following management direction that can be found in the appendices to this RDEIS:

- Forest Plan Direction (Appendix B)
- Mitigation Measures to Address the Minimization Criteria in the Travel Regulations for Areas Designated for OSV Use (Appendix C)
- Mitigation Measures to Address the Minimization Criteria in the Travel Regulations for Trails Designated for OSV Use (Appendix D)
- Water Quality Best Management Practices (Appendix E)
- General Monitoring Procedures (Appendix F)

### **Alternative 2 – Modified Proposed Action**

Under this alternative, the Forest Service proposes the following actions:

1. To designate 8 discrete, specifically delineated areas for cross-country OSV use. There would be a total of 921,180 acres of National Forest System lands within the Lassen National Forest designated as areas where public, cross-country OSV use would be allowed. These areas would encompass approximately 80 percent of the National Forest System land on the Lassen National Forest. All existing OSV closures applying to areas and trails on the forest where public motorized use is not allowed would continue.
2. To designate approximately 334 miles of NFS snow trails on NFS lands within the Lassen National Forest as trails where public OSV use would be allowed. All existing OSV closures applying to trails where public motorized use is not allowed would continue.
3. 2,519 miles of trail would be open to OSV use in areas designated for cross-country OSV use, but would not be designated.
4. To identify approximately 350 miles of snow trails that would be groomed for public OSV use by the Lassen National Forest Grooming Program. We would designate approximately 11.8 miles of snow trails for OSV use that would not be groomed. We would groom approximately 27.0 miles of snow trails for OSV use that would not be designated for OSV use, because we do not have jurisdiction over these trails.
5. To groom snow trails for OSV use according to the California State Parks' snow grooming standards when there is a minimum of 12 inches of snow on trails.
6. To implement forest-wide snow depth requirements for public OSV use that would provide for public safety and natural and cultural resource protection by:
  - a. Allowing public, cross-country OSV use in designated areas only when there are 12 or more inches of snow or ice covering the landscape to minimize potential for impacts to surface and subsurface resources; and
  - b. Allowing public OSV use on designated snow trails when there are 6 or more inches of snow covering the trail. Except for approximately 0.1 mile of OSV trail (which would

require a minimum of 12 or more inches of snow for OSV use)<sup>6</sup>, all snow trails to be designated for public OSV use or identified for OSV grooming in all alternatives would overlie an existing paved, gravel, or native surface travel route. These travel routes are trails and roads used by wheeled, motorized vehicles when such use is allowed, or for non-motorized recreation.

7. No areas would be designated for OSV use within 500 feet of the Pacific Crest National Scenic Trail on the Lassen National Forest (table 13, page 67).
8. To designate up to 28 possible OSV crossing points of the Pacific Crest National Scenic Trail. All crossing points would overlie NFS routes currently designated for wheeled motorized vehicle use in the Lassen National Forest’s Motor Vehicle Use Map that cross the Pacific Crest National Scenic Trail. Approximate locations of these crossing points have been identified, but they may be relocated to ensure greater safety in winter conditions and to facilitate the least difficult and most expedient access for OSV use between areas designated for OSV use. All crossing points would be located consistent with the guidelines in the Comprehensive Management Plan for the Pacific Crest National Scenic Trail (USDA Forest Service 1982). No designated crossing point would be within 0.5 mile of another designated crossing point along the Pacific Crest National Scenic Trail.

Included in the number of miles of snow trails to be designated for OSV use under this alternative are up to 28 possible snow trails that would be designated for OSV use to access the designated crossing points through areas not designated for cross-country OSV use. These crossing trails would mostly overlie routes designated for wheeled motorized vehicle use and follow the most direct approach across the Pacific Crest National Scenic Trail. Currently, we estimate that as many as 26 crossing trails would be designated. Following this estimation, total designated mileage of Pacific Crest National Scenic Trail crossing trails would be 8.1 miles, with all but 0.1 mile overlying a designated wheeled motorized vehicle travel route. Two of the possible 28 crossing points would be surrounded by non-Forest Service land so trails accessing these two crossing points would not be designated due to lack of National Forest System jurisdiction on surrounding land.

**Table 6. Summary of alternative 2**

Designated Area Name	OSV Areas Designated (Acres)	OSV Trails Designated (Miles)	Groomed OSV Trails (Miles)
Ashpan	82,910	37.7	57.4
Bogard	327,480	27.5	26.6
Fall River	40,480	2.2	0.0
Fredonyer	30,030	48.4	43.7
Jonesville	116,850	63.7	68.2
Morgan Summit	95,710	61.5	62.1
Shasta	56,820	0	0
Swain Mountain	170,900	93.5	91.8
Total	921,180	334.4	349.7
Percent of Total Forest Designated	80%		

<sup>6</sup> This 0.1 mile of designated OSV trail crosses an area not designated for cross-country OSV use along the Pacific Crest National Scenic Trail, and is the most direct way to cross the Pacific Crest National Scenic Trail while allowing OSVs to remain on National Forest System land.

The decision to select this alternative would only apply to the public use of over-snow vehicles as defined in the Forest Service's Travel Management Regulations (36 CFR §212.1). Public OSV use that is inconsistent with the designations made under this decision would be prohibited under 36 CFR Part 261. No trails that are currently closed to OSV use would be designated for OSV use under this alternative. This alternative is shown on the map in figure 3 and figure 4.

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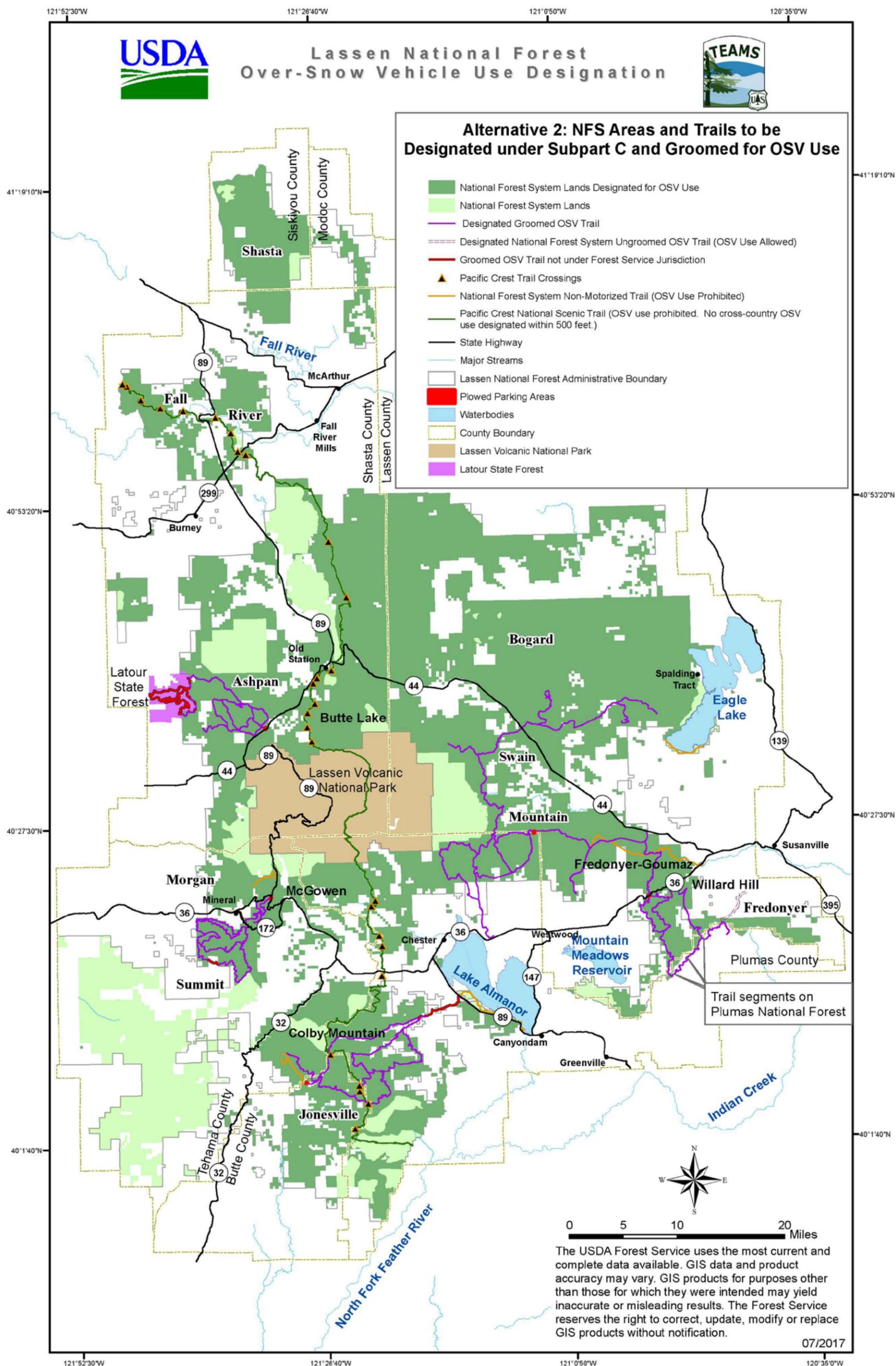


Figure 3. Map showing alternative 2, modified proposed action – NFS areas and trails to be designated under Subpart C and groomed for OSV use

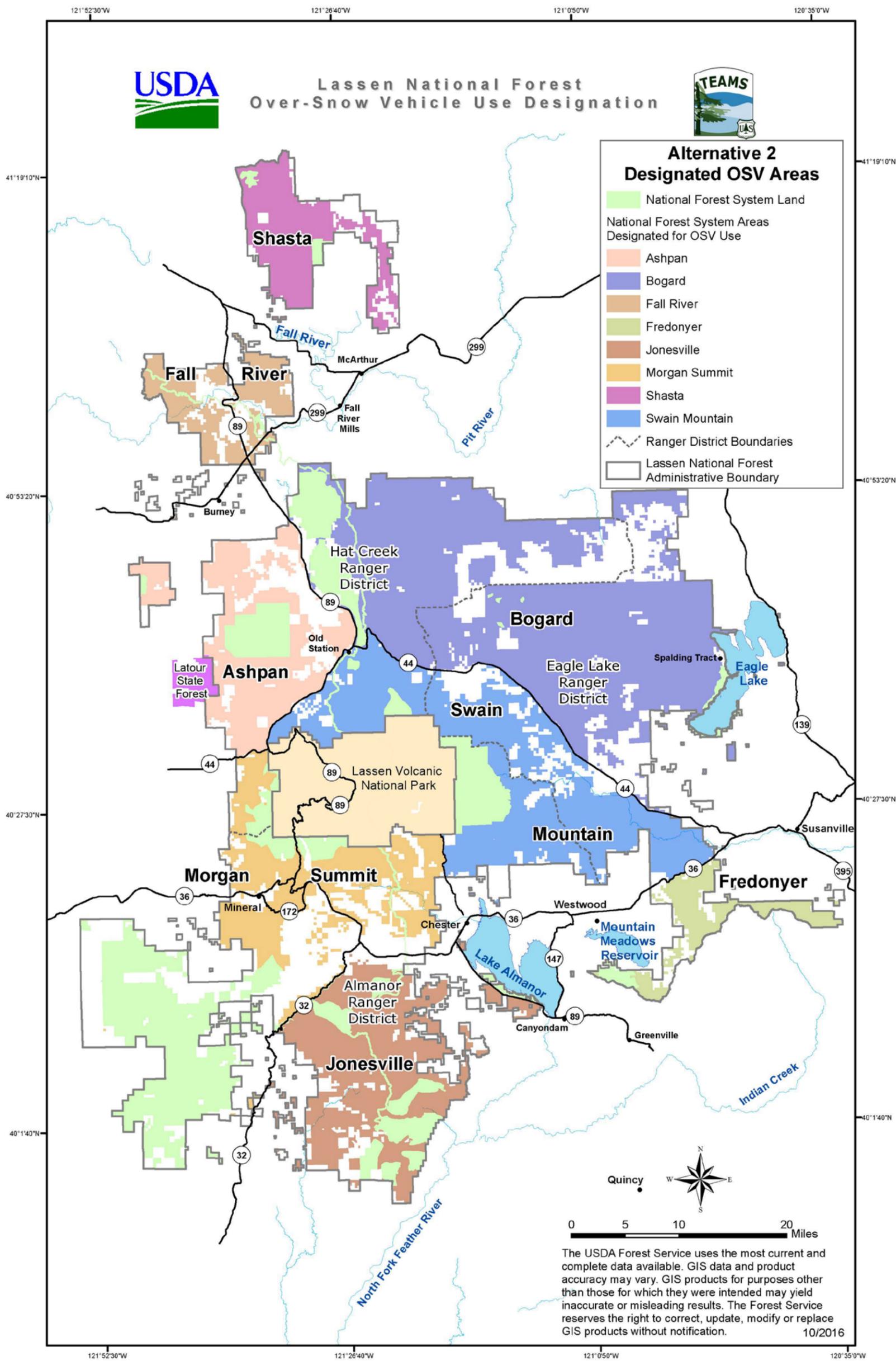


Figure 4. Map distinguishing areas designated for OSV use in alternative 2

### Alternative 3

This alternative addresses the non-motorized recreational experience significant issue. This alternative includes the following actions:

1. Designate 8 discrete, specifically delineated areas for cross-country OSV use. These areas would encompass 833,990 acres. This land area would represent approximately 73 percent of the NFS land within the Lassen National Forest.
2. Designate portions of 5 of the 8 designated areas that would be located within 500 feet of the Pacific Crest National Scenic Trail;
  - a. Approximately 85.4 miles of the Pacific Crest National Scenic Trail would be located within 500 feet of an area designated for public OSV use on the Lassen National Forest (table 13, page 67).
3. Designate approximately 383 miles of snow trails for public OSV use.
4. 2,210 miles of trail would be open to OSV use in areas designated for cross-country OSV use, but would not be designated.
5. Mechanically groom 349 miles of snow trails public OSV use.
6. The minimum snow depth for snow trail grooming would be 18 inches.
7. The minimum snow depth for public OSV use on designated snow trails would be 6 inches.
8. The minimum snow depth for OSV use in areas designated for public, cross-country OSV use would be 12 inches.

**Table 7. Summary of alternative 3**

<b>Designated Area Name</b>	<b>OSV Areas Designated (Acres)</b>	<b>OSV Trails Designated (Miles)</b>	<b>Groomed OSV Trails (Miles)</b>
Ashpan	82,380	47.3	57.4
Bogard	327,770	26.6	26.6
Fall River	17,570	0.0	0.0
Fredonyer	29,350	48.9	44.1
Jonesville	115,500	63.8	67.9
Morgan Summit	90,940	83.2	62.1
Shasta	48,620	0	0
Swain Mountain	121,860	113.4	91.3
<b>Total</b>	<b>833,990</b>	<b>383.2</b>	<b>349.4</b>
Percent of Total Forest Designated	73%		

General project mitigations and monitoring procedures are described in appendices C, and D of this document.

No trails that are currently closed to OSV use would be designated for OSV use under this alternative.

The decision to select this alternative would only apply to the public use of over-snow vehicles as defined in the Forest Service's Travel Management Regulations (36 CFR §212.1). Public OSV use that is

inconsistent with the designations made under this decision would be prohibited under 36 CFR Part 261. This alternative is shown on the map in figure 5 and figure 6.

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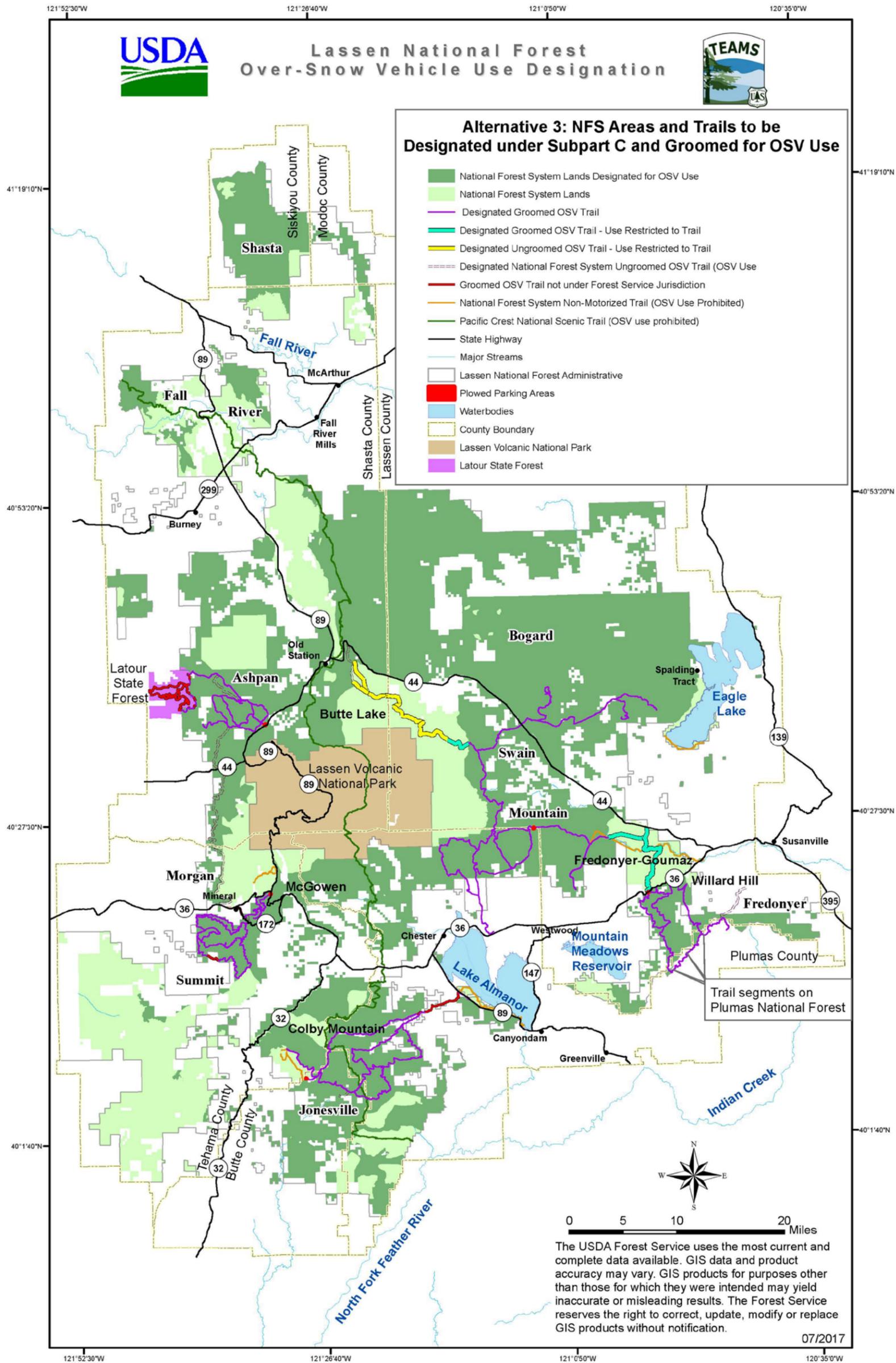


Figure 5. Map showing alternative 3 – NFS areas and trails to be designated under Subpart C and groomed for OSV use



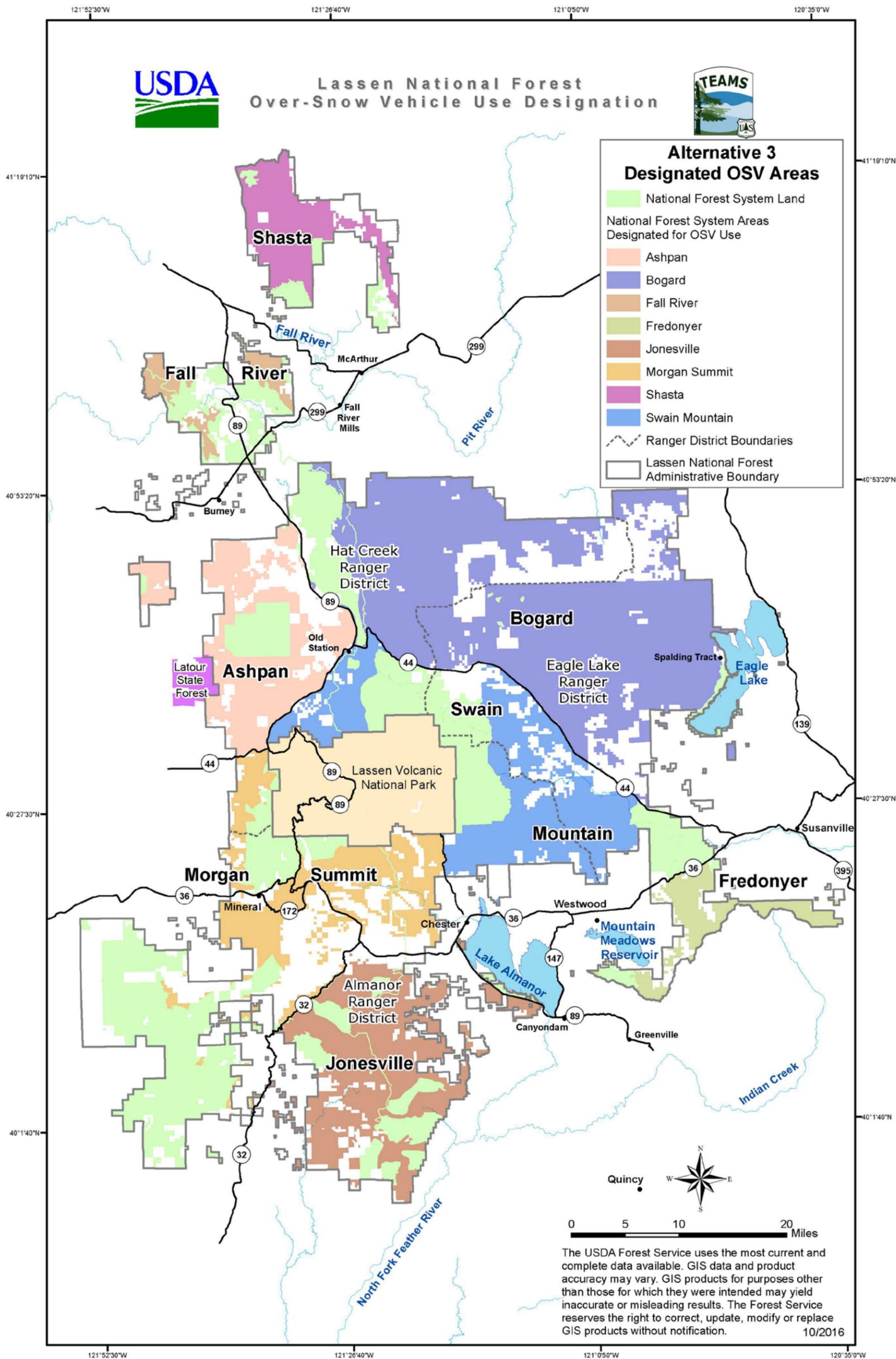


Figure 6. Map distinguishing areas designated for OSV use in alternative 3

## Alternative 4

This alternative addresses the motorized recreational experience significant issue. This alternative includes the following actions:

1. Designate 8 discrete, specifically delineated areas for cross-country OSV use. These areas would encompass 954,450 acres. This land area would represent approximately 83 percent of the NFS land within the Lassen National Forest.
2. Designate 380 miles of snow trails for public OSV use.
3. 2,545 miles of trail would be open to OSV use in areas designated for cross-country OSV use, but would not be designated.
4. Mechanically groom 349 miles of snow trails public OSV use.
5. The minimum snow depth for snow trail grooming would be 12 inches.
6. There would be no defined snow depth in areas designated for cross-country OSV travel or on designated OSV trails. OSV use would be allowed only when conditions are sufficient to allow OSV use while protecting underlying resources. This would be determined by a combination of weather station data, observations at trailheads by staff, and when the groomers decide conditions are right to commence grooming. Seasonal opening and closing would be announced through Public Service announcements, on information kiosks at trailheads, and via the forest website.
7. Designate portions of 5 of the 8 designated areas that would be located within 500 feet of the Pacific Crest National Scenic Trail;
  - a. Approximately 97.7 miles of the Pacific Crest National Scenic Trail would be within 500 feet of an area designated for public OSV use on the Lassen National Forest (table 13, page 67).
8. To designate 28 public OSV crossing points of the Pacific Crest National Scenic Trail at locations where NFS routes are currently designated for wheeled motorized vehicle use in the Lassen National Forest's motor vehicle use map.

**Table 8. Summary of alternative 4**

Designated Area Name	OSV Areas Designated (Acres)	OSV Trails Designated (Miles)	Groomed OSV Trails (Miles)
Ashpan	82,910	47.4	57.4
Bogard	330,180	26.6	26.6
Fall River	42,440	0.0	0.0
Fredonyer	30,030	48.4	43.7
Jonesville	119,940	63.8	67.9
Morgan Summit	119,920	81.9	62.1
Shasta	56,820	0	0
Swain Mountain	172,210	112.3	91.8
Total	954,450	380.3	349.4
Percentage of Total Forest Designated	83%		

General project mitigations and monitoring procedures are described in appendices C and D of this document.

No trails that are currently closed to OSV use would be designated for OSV use under this alternative.

The decision to select this alternative would only apply to the public use of over-snow vehicles as defined in the Forest Service’s Travel Management Regulations (36 CFR §212.1). Public OSV use that is inconsistent with the designations made under this decision would be prohibited under 36 CFR Part 261.

No trails that are currently closed to OSV use would be designated for OSV use under this alternative.

This alternative is shown on the map in figure 7 and figure 8.

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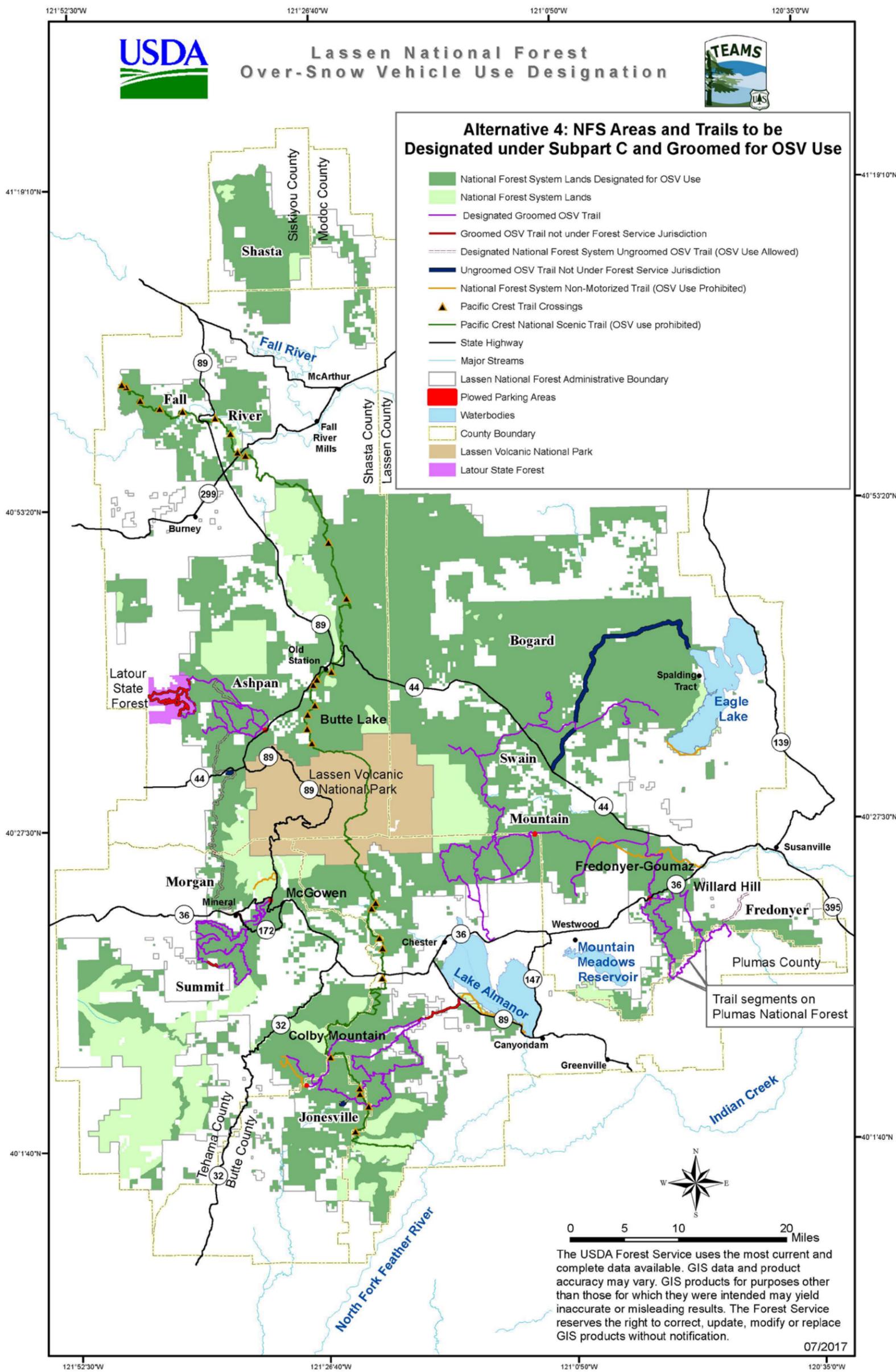


Figure 7. Map showing alternative 4 – NFS areas and trails to be designated under Subpart C and groomed for OSV use

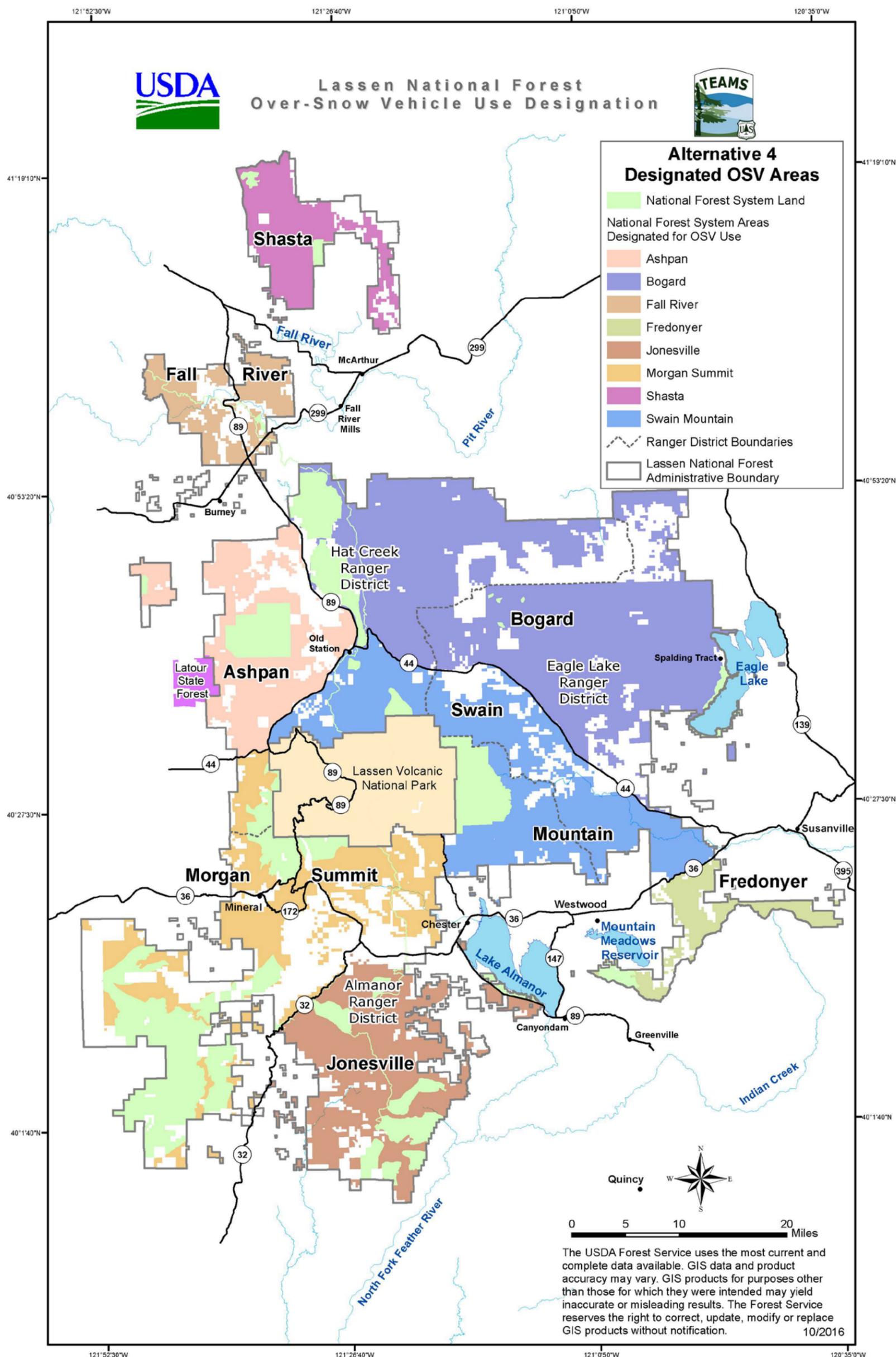


Figure 8. Map distinguishing areas designated for OSV use in alternative 4

## Alternative 5

This alternative addresses the non-motorized recreational experience significant issue by not designating areas with typically low seasonal snow, not designating areas for OSV use brought up during the objection process to avoid conflicts with motorized uses, and not designating areas for additional resource protection. This alternative includes the following actions:

1. Designate 6 discrete, specifically delineated areas for cross-country OSV use. These areas would encompass 633,360 acres. This land area would represent approximately 56 percent of the NFS land within the Lassen National Forest.
2. Designate 393 miles of snow trails for public OSV use.
3. 544 miles of trail would be open to OSV use in areas designated for cross-country OSV use, but would not be designated.
4. Mechanically groom 350 miles of snow trails public OSV use.
5. The minimum snow depth for snow trail grooming would be 12 inches.
6. The minimum snow depth for public OSV use on designated snow trails would be 12 inches.
7. The minimum snow depth for OSV use in areas designated for public, cross-country OSV use would be 12 inches.
8. No areas below the elevation of 3,500 feet would be designated for OSV use. No winter deer range would be designated for OSV use. For the Bogard Area, this would include the small area located between the 3,500-foot and winter deer range restrictions.
9. Designate no areas for public cross-country OSV use that would be within 500 feet of the Pacific Crest National Scenic Trail.
10. To designate up to 12 potential OSV crossing points of the Pacific Crest National Scenic Trail. All crossing points would overlie National Forest System routes currently designated for wheeled motorized vehicle use in the Lassen National Forest's Motor Vehicle Use Map that cross the Pacific Crest National Scenic Trail. Approximate locations of these crossing points have been identified, but they may be relocated to ensure greater safety in winter conditions and to facilitate the least difficult and most expedient access for OSV use between areas designated for OSV use. All crossing points would be located consistent with the guidelines in the Comprehensive Management Plan for the Pacific Crest National Scenic Trail (USDA Forest Service 1982). No designated crossing point would be within 0.5 mile of another designated crossing point along the Pacific Crest National Scenic Trail.

Included in the number of miles of snow trails to be designated for OSV use under this alternative are 11 potential snow trails that would be designated for OSV use to access the designated crossing points through areas not designated for cross-country OSV use. These crossing trails would mostly overlie routes designated for wheeled motorized vehicle use and follow the most direct approach across the Pacific Crest National Scenic Trail. The total designated mileage of Pacific Crest National Scenic Trail crossing trails for OSV use would be 3.8 miles, with all but 0.1 mile overlying a designated wheeled motorized vehicle travel route. One of the potential 12 crossing points would be surrounded by non-Forest Service land so the trail accessing this crossing point would not be designated due to lack of National Forest System jurisdiction on surrounding land.

**Table 9. Summary of alternative 5**

<b>Designated Area Name</b>	<b>OSV Areas Designated (Acres)</b>	<b>OSV Trails Designated (Miles)</b>	<b>Groomed OSV Trails (Miles)</b>
Ashpan	82,380	47.4	57.4
Bogard	243,620	26.6	26.6
Fall River	-	0.0	0.0
Fredonyer	22,570	48.4	43.7
Jonesville	93,940	64.3	68.2
Morgan Summit	83,530	83.7	62.1
Shasta	-	0	0
Swain Mountain	107,320	122.7	91.8
<b>Total</b>	<b>633,360</b>	<b>393.1</b>	<b>349.7</b>
Percent of Total Forest Designated	55%		

General project mitigations and monitoring procedures are described in appendices C and D of this document.

No trails that are currently closed to OSV use would be designated for OSV use under this alternative.

The decision to select this alternative would only apply to the public use of over-snow vehicles as defined in the Forest Service's Travel Management Regulations (36 CFR §212.1). Public OSV use that is inconsistent with the designations made under this decision would be prohibited under 36 CFR Part 261. No trails that are currently closed to OSV use would be designated for OSV use under this alternative. This alternative is shown on the map in figure 9 and figure 10.

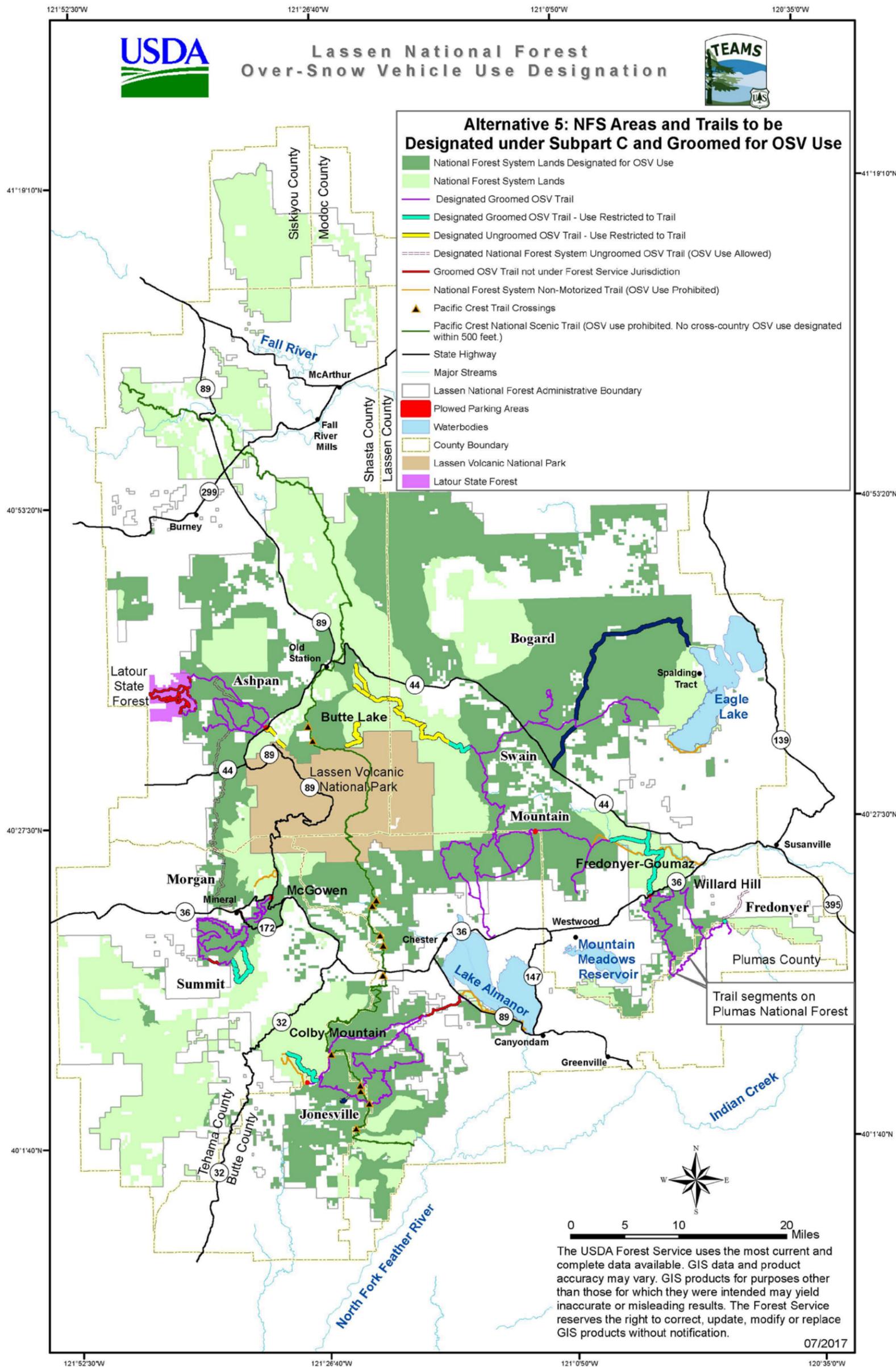


Figure 9. Map showing alternative 5 – NFS areas and trails to be designated under Subpart C and groomed for OSV use

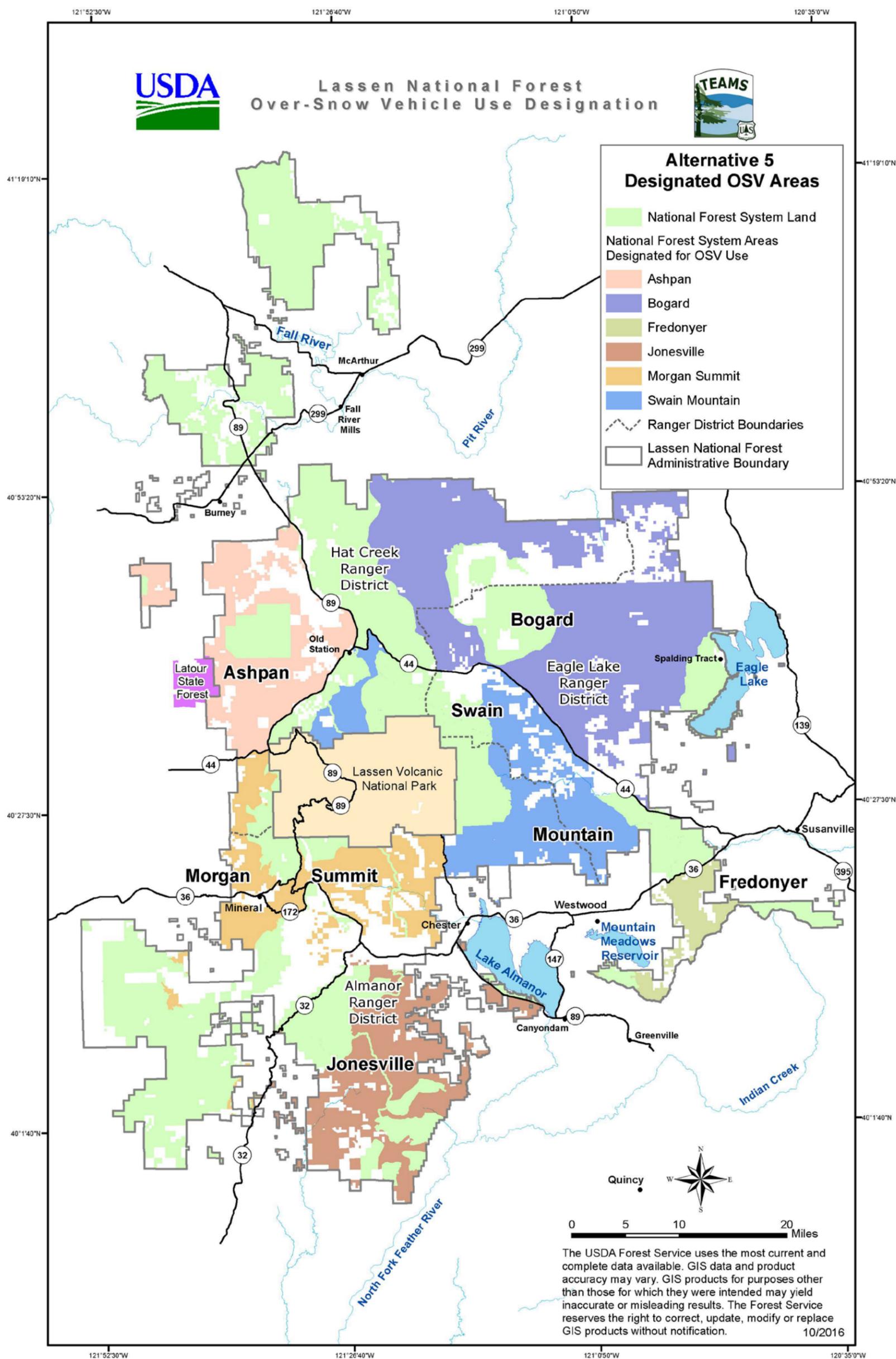


Figure 10. Map distinguishing areas designated for OSV use in alternative 5

## Alternatives or Alternative Components Considered but not Analyzed in Detail

We carefully considered each of the public suggestions discussed below to determine whether the suggestion should be carried forward into detailed analysis in the RDEIS or eliminated from further consideration. Those carried forward into detailed analysis could become a new alternative or part of a revision to the proposed action.

For an alternative to be analyzed in detail in the RDEIS, it must meet the purpose and need for action, must address one or more significant issues, and should reduce the potential for significant impacts. Reasonable alternatives include those that are practical or feasible from a technical and economic standpoint and use common sense; they do not necessarily have to be within Agency jurisdiction to implement.

Alternatives not considered in detail in the RDEIS may include, but are not limited to, those that fail to meet the purpose and need, are technologically infeasible or illegal, or would result in unreasonable environmental harm.

The suggested alternatives and the rationale for elimination from detailed study are summarized below.

1. A comment asked us to consider providing more flexibility in the beginning and ending dates for grooming.

The proposed action states that grooming “generally begins in mid-December and continues through March. Start and stop times vary per trail location and are dependent upon the presence and depth of snow. Snow Trails are prioritized for grooming based on visitor use.” These dates are consistent with the previous wheeled, motorized vehicle travel management decision (Travel Management Regulation, Subpart B) on the Lassen National Forest and allow for passenger vehicle access through mid- to late-December for visitors with Christmas tree permits. There is a safety concern with allowing grooming activities on roads with passenger vehicles. This suggestion would increase conflicts between classes of vehicles, would increase the overall cost of the grooming program, and would conflict with the existing wheeled, motorized vehicle travel decision. For these reasons, this suggestion was eliminated from further detailed analysis.

2. A comment asked us to consider ensuring OSV use designations avoid municipal watersheds.

This suggestion was eliminated from further analysis because there are no designated municipal watersheds in the project area. Water quality is a non-significant issue and the effects of OSV use on water quality are briefly considered in Chapter 3.

3. Increase the minimum snow depth requirement for off-trail OSV use to 18 inches or, better, 24 inches.

We considered this suggestion but disagree that a snow depth greater than 12 inches for public, cross-country OSV use is necessary to provide adequate snow cover while still protecting forest resources. We have conducted preliminary analysis with our interdisciplinary team to ensure that this snow depth is adequate, based on the best available science, while still providing access for public OSV use. For these reasons, this suggestion was eliminated from further detailed analysis. However, the minimum snow depth components of alternatives to the proposed action were developed to address certain resource impacts in certain areas. Project mitigations have also been developed to ensure resource impacts are minimized as well.

4. Consider a suggestion for an alternative to the proposed action with an emphasis on providing additional opportunities for non-motorized uses.

We considered this suggestion and developed alternatives 3 and 5 that are included for detailed analysis in the RDEIS. However, not all aspects of this suggested alternative are within the scope of the analysis, as described below, and these specific components have been eliminated from further detailed analysis:

- ◆ Designation of non-motorized trailheads to access non-motorized areas.
  - The designation of non-motorized trailheads would not address the purpose and need for action which is to provide a manageable, designated system of snow trails and areas for public OSV use within the Lassen National Forest, that is consistent with and achieves the purposes of the Forest Service Travel Management Regulations at 36 CFR Part 212, Subpart C. Therefore this feature is not included in alternative 3 to be analyzed in detail.
- ◆ Monitoring of ambient air quality and noise near trails, in trailheads, and in OSV areas with heavy over-snow vehicle traffic.
  - The monitoring of ambient air quality and noise is outside the scope of the purpose and need for action, which is to provide a manageable, designated system of snow trails and areas for public OSV use within the Lassen National Forest that is consistent with and achieves the purposes of the Forest Service Travel Management Regulations at 36 CFR Part 212, Subpart C. The Forest Service has no regulatory jurisdiction over air quality or noise. There are no standards that would allow the Forest Service to identify or enforce prohibitions against unacceptable noise or air quality levels. These levels are set by state law. The OSV Program Monitoring Checklist for the California Department of Parks and Recreation, OHMVR Division, and U.S. Forest Service does not include ambient air quality monitoring (California OSV Program EIR, Program Years 2010-2020, Appendix C). Therefore, this feature is not included in an alternative to be analyzed in detail. The RDEIS, however, will examine effects on air quality and noise from the modified proposed action and alternatives to the modified proposed action, including the indirect effects of changes in air quality and noise levels on forest resources.
- ◆ Transition to cleaner and quieter OSVs through encouragement of best available technology (BAT) forest-wide to reduce air and noise pollution. Exception is in the “Managed Shared Use” area where air quality and noise monitoring every five years will determine whether mandatory BAT would be needed.
  - The imposition of best available technology requirements is outside the scope of the purpose and need for action, which is to provide a manageable, designated system of snow trails and areas for public OSV use within the Lassen National Forest that is consistent with and achieves the purposes of the Forest Service Travel Management Regulations at 36 CFR Part 212, Subpart C. The regulation of best available technology, whether only encouraged or mandated, is outside the scope of this analysis. The Forest Service has no regulatory jurisdiction over air quality or noise and there are no Forest Service directives requiring the establishment of standards. Therefore, this feature is not included in alternative 3 to be analyzed in detail.
- ◆ Nordic trail grooming.
  - Grooming of trails for non-motorized use would not address the purpose and need for action, which is to provide a manageable, designated system of snow trails and areas for public OSV use within the Lassen National Forest, that is consistent with and achieves the

purposes of the Forest Service Travel Management Regulations at 36 CFR Part 212, Subpart C. Therefore, this feature is not included in alternative 3 to be analyzed in detail.

- ◆ Granting of access rights to private lands.
  - Over-snow vehicle use that is specifically authorized under a written authorization issued under Federal law or regulations is exempt from Subpart C designations (36 CFR §261.14(e)). Therefore, all existing rights of access will be honored as part of this decision. The granting additional rights to access is outside the scope of the purpose and need for action, which is to provide a designated system of snow trails and areas for public OSV use within the Lassen National Forest that is consistent with and achieves the purposes of the Forest Service Travel Management Regulations at 36 CFR Part 212, Subpart C. Therefore, this feature is not included in an alternative to be analyzed in detail. Under the scope of this project, the Forest Service would only designate trails under Subpart C of the Travel Management Regulations that are available for public use. Therefore, designating trails specifically for access to private lands, and not for public use, would not fall within the scope of this analysis or Subpart C of the Travel Management Regulations.
- ◆ Forest plan amendments creating “Front-country Non-motorized,” “Backcountry Solitude,” and “Managed Shared Use” management areas. The objectives of these management areas are to “create a fair balance of recreational opportunity on the Lassen National Forest,” and “protect opportunities for non-motorized recreation recognizing the experience non-motorized users seek, and minimize impacts from OSVs on wildlife, the environment, and other uses.”
  - The suggestion recommends that no OSV use would be allowed in “Front-country Non-motorized” areas. These areas would “protect non-motorized recreation opportunity in areas that are easily accessed from plowed trailheads and roads and have a high degree of non-motorized use. Restriction of OSVs is necessary to eliminate the noise, toxic exhaust, disproportionate consumption of powder snow, trail rutting, and other OSV impacts.”
  - The suggestion recommends that OSVs would be restricted to designated OSV trails in “Backcountry Solitude” areas. These areas would “protect large areas for a quiet and remote recreation experience in winter. These areas also protect sensitive species that thrive only in relatively large areas with minimal human activity.”
  - The suggestion recommends that OSVs would be restricted to designated OSV trails in “Managed Shared Use” areas. These areas would “restrict OSV usage so that there can be meaningful shared use of easily accessible and popular areas. Meaningful shared use is made possible by restricting OSVs to designated trails, establishing separate trailheads, [gradually] restricting OSVs to cleaner and quieter machines, imposing speed limits on shared-use trails, and other management tools.”
    - Forest plan amendments are not necessary to address the concerns the commenter seeks to address, because implementation of Subpart C would result in areas and trails that are clearly designated for public OSV use and use inconsistent with those designations would be prohibited. The forest plan does not directly restrict uses, and an amendment establishing these management areas would have no immediate on-the-ground effect on public uses. In addition, no Forest Plan amendment is required to restrict or prohibit OSV use to achieve most of the objectives of the commenter’s alternative in the identified areas. As discussed above, the creation of separate, non-motorized trailheads and the transition to cleaner and quieter OSVs through the encouragement of BAT are outside the scope of the purpose and need. This feature is, therefore, not included

in an alternative to be analyzed in detail. However, alternatives 3 and 5 include the restrictions on public OSV use sought by the commenter for the same geographic areas.

- ◆ A forest plan amendment allowing the Forest Service to designate snow play areas. “Designation of snow play areas allows for concentration of use in areas that are appropriate for snow play and that have adequate parking, such as Willard Hill. Such areas and their primary access routes should be closed to snowmobile traffic for safety and other reasons.”
  - A forest plan amendment allowing the designation of snow play areas is outside the scope of the purpose and need for action, which is to provide a designated system of snow trails and areas for public OSV use within the Lassen National Forest that is consistent with and achieves the purposes of the Forest Service Travel Management Regulations at 36 CFR Part 212, Subpart C. A forest plan amendment would also not be necessary to address the concern the commenter seeks to address, for the reasons explained above in response to the previous recommendation. Therefore, this feature is not included in an alternative to be analyzed in detail. However, alternatives 3 and 5 include the restrictions on public OSV use sought by the commenter for the Willard Hill area.

5. Segregate motorized and non-motorized use groups by designating separate trailheads, separate trails and/or separate areas. Designate specific areas as snowplay areas.

We considered this suggestion and recognize that the motorized and non-motorized recreational experience is an important concern to be considered for this analysis (see Significant Issues).

However, the development of new facilities such as new trailheads, new trails, or new snowplay areas are outside the scope of this project. This analysis is focused on the designation of snow trails and areas for public OSV use. For this reason, this suggestion has been eliminated from further detailed analysis.

6. Ensure over-snow vehicle route density is below 1 mile per square mile, that wolverine and Canada lynx are considered and protected, that OSV use areas are discreet specified areas that consider visual and acoustic barriers to ensure wildlife habitat security.

We considered this and several other suggestions and concerns related to terrestrial wildlife. We consider terrestrial wildlife a non-significant issue for this analysis and will analyze effects on wildlife in the RDEIS.

7. Create winter conservation plans for sensitive species.

See the response above regarding the identification of terrestrial wildlife as a non-significant issue for this analysis. Development of specific conservation plans for individual species, however, is outside the scope of the analysis.

8. Consider a “no OSV use” alternative.

The agency recognizes that OSV travel is a legitimate use of the national forests. The purpose and need for action in these designations is to “effectively manage public OSV use on the Lassen National Forest. Effective management would provide public OSV access, ensure that OSV use occurs when there is adequate snow, promote the safety of all uses, enhance public enjoyment, minimize impacts to natural and cultural resources, and minimize conflicts among the various uses” (see page 46).

A reasonable alternative must address the purpose and need for action. An alternative that prohibits OSV use on all of the Lassen National Forest would be an action alternative because an action would be required to prohibit OSV use on the entire Lassen National Forest. However, a “no OSV use” action alternative would not address the purpose and need for action, and was therefore, not considered reasonable.

9. Consider designating all of the approximately 2,952 miles of snow trail on the forest for OSV use.

We considered this suggestion, but because many of these trails would be unmarked, ungroomed, and located in areas where cross-country OSV use would be allowed, the agency sees no need to designate them.

- ◆ Many of these trails are ungroomed trails that pass through lands not under Forest Service jurisdiction or where Forest Service jurisdiction is uncertain (unknown if the Forest Service has easements to allow public access on non-National Forest System land). Establishment of Forest Service jurisdiction would be required for these trails to be designated for OSV use under Subpart C.

10. Consider an alternative that does not require a minimum of 12 inches of snow for OSV trail grooming.

- ◆ The 12-inch snow depth for trail grooming is a standard set by the State of California, which funds the grooming program. The Forest Service is obligated to follow this standard in its OSV grooming program.

11. Prohibit OSV use in a 2.5-mile radius around the southwest Visitor’s Center of Lassen Volcanic National Park.

- ◆ Currently, there is no public OSV use allowed within a 2.5-mile radius of the southwest Visitors’ Center in any alternative. A review of the map of Lassen Volcanic National Park shows the Visitors’ Center approximately 1 mile inside the park boundary. No public OSV use is allowed within the park boundary. Outside the park boundary, public OSV use would be prohibited by the Forest Service for at least 1.5 additional miles from the Visitors’ Center. For these reasons, this suggestion was eliminated from further detailed analysis.

12. Consider an alternative that would prohibit OSV use on the Pacific Crest National Scenic Trail, but allow OSVs to cross this trail at any point where it would be accessible to OSVs

- ◆ In order to provide for the nature and purposes of the Pacific Crest National Scenic Trail, including the legislative requirement for the trail to be nonmotorized, designated crossings are required to prevent motorized use along the trail. The Comprehensive Plan for the Pacific Crest National Scenic Trail recommends that we identify and designate public OSV crossing points for this trail.

## Comparison of Alternatives

**Table 10. Comparison of areas to be designated for OSV use, by alternative (acres)**

Areas Designated for OSV Use	Alternative 1 Open to OSV Use Under Current Management*	Alternative 2 OSV Designations	Alternative 3 OSV Designations	Alternative 4 OSV Designations	Alternative 5 OSV Designations
National Forest System Land Area within Administrative Boundary of Lassen National Forest (acres)	1,150,020	1,150,020	1,150,020	1,150,020	1,150,020
Total Designated OSV Areas	964,030	921,180	833,990	954,450	633,360
• Ashpan	82,910	82,910	82,380	82,910	82,380
• Bogard	331,850	327,480	327,770	330,180	243,620
• Fall River	42,440	40,480	17,570	42,440	-
• Fredonyer	30,030	30,030	29,350	30,030	22,570
• Jonesville	122,550	116,850	115,500	119,940	97,840
• Morgan Summit	125,220	95,710	90,940	119,920	84,930
• Shasta	56,820	56,820	48,620	56,820	-
• Swain Mountain	172,210	170,900	121,860	172,210	108,140
Percentage of Lassen National Forest where OSV Use would be Allowed	84%	80%	73%	83%	55%

\*Because no Subpart C designations of areas for OSV use have been made, areas are not “designated,” but are either “open” or “closed” to OSV use under current management. All area size estimates are approximate and are rounded to the nearest 10 acres.

**Table 11. Comparison of trails to be designated for OSV use, by alternative (miles)**

Snow Trails Designated for OSV Use	Area Location	Alternative 1 Open to OSV Use Under Current Management*	Alternative 2 OSV Designations	Alternative 3 OSV Designations	Alternative 4 OSV Designations	Alternative 5 OSV Designations
<b>Grand Total</b>	<b>All</b>	<b>405.7</b>	<b>334.4</b>	<b>383.2</b>	<b>380.3</b>	<b>393.1</b>
26N02	Jonesville	3.7	2.5	2.5	2.5	2.5

Snow Trails Designated for OSV Use	Area Location	Alternative 1 Open to OSV Use Under Current Management*	Alternative 2 OSV Designations	Alternative 3 OSV Designations	Alternative 4 OSV Designations	Alternative 5 OSV Designations
<b>Grand Total</b>	<b>All</b>	<b>405.7</b>	<b>334.4</b>	<b>383.2</b>	<b>380.3</b>	<b>393.1</b>
26N27	Jonesville	9.1	5.0	5.0	5.0	5.0
26N31	Jonesville	5.6	0.8	0.8	0.8	0.8
26N35	Jonesville	5.8	4.8	4.8	4.8	4.8
26N74	Jonesville	-	0.3	-	-	0.3
27N03	Jonesville	1.6	1.2	1.2	1.2	1.2
27N04	Jonesville	6.8	6.6	6.6	6.6	6.6
27N06	Jonesville	5.4	5.3	5.3	5.3	5.3
27N11	Jonesville	11.0	11.2	11.8	11.8	11.8
27N11G	Jonesville	-	0.2	-	-	0.2
27N43	Jonesville	37.7	16.0	16.0	16.0	16.0
27N65	Jonesville	10.0	9.7	9.7	9.7	9.7
280310UC03	Morgan Summit	4.1	0.2	0.2	0.2	0.2
28N08	Fredonyer	-	-	-	0.2	0.2
28N08 on Plumas	Fredonyer	16.0	11.2	11.2	10.9	10.9
28N16	Morgan Summit	-	0.6	-	-	0.6
28N28	Morgan Summit	4.6	4.2	4.2	4.2	4.2
28N61	Morgan Summit	-	0.8	-	-	0.8
28N70	Morgan Summit	4.5	4.2	4.2	4.2	4.2
29N03	Fredonyer	7.1	6.3	6.3	6.3	6.3
29N09	Swain Mountain	4.2	0.2	0.2	0.2	0.2
29N10	Fredonyer	-	4.8	4.8	4.8	4.8
29N17	Morgan Summit	-	0.1	-	-	0.1
29N17J	Morgan Summit	-	0.0	-	-	0.0
29N20Y	Fredonyer	7.3	4.3	4.3	4.3	4.3

Snow Trails Designated for OSV Use	Area Location	Alternative 1 Open to OSV Use Under Current Management*	Alternative 2 OSV Designations	Alternative 3 OSV Designations	Alternative 4 OSV Designations	Alternative 5 OSV Designations
<b>Grand Total</b>	<b>All</b>	<b>405.7</b>	<b>334.4</b>	<b>383.2</b>	<b>380.3</b>	<b>393.1</b>
29N27	Morgan Summit	-	0.0	-	-	0.0
29N44	Morgan Summit	9.1	6.8	6.8	6.8	6.8
29N46	Fredonyer	14.7	13.0	13.0	13.0	13.0
29N46G	Fredonyer	0.7	0.4	0.4	0.4	0.4
29N48	Morgan Summit	26.5	25.7	25.7	25.7	25.7
29N55	Swain Mountain	5.1	4.0	4.0	4.0	4.0
29N57	Morgan Summit	1.6	0.6	0.9	0.6	0.6
29N58	Morgan Summit	8.5	1.1	1.1	1.1	1.1
29N60	Morgan Summit	7.9	4.9	4.9	4.9	4.9
29N60A	Morgan Summit	-	-	0.5	-	-
29N62	Morgan Summit	4.3	2.4	2.4	2.4	2.4
29N67	Morgan Summit	4.7	2.0	2.0	2.0	2.0
29N84YA	Fredonyer	3.8	0.4	0.4	0.4	0.4
29N85	Fredonyer	8.9	7.7	7.7	7.7	7.7
29N91	Morgan Summit	1.0	0.9	0.9	0.9	0.9
29N97	Morgan Summit	-	0.2	-	-	0.2
30N03	Swain Mountain	4.8	4.6	4.6	4.6	4.6
30N06	Swain Mountain	6.6	3.8	3.8	3.8	3.8
30N07	Swain Mountain	14.2	13.8	13.8	13.8	13.8
30N09	Swain Mountain	6.1	5.5	5.5	5.5	5.5
30N25	Swain Mountain	1.8	1.4	1.4	1.4	1.4
30N29	Swain Mountain	4.8	4.6	4.6	4.6	4.6
30N31	Swain Mountain	2.1	2.0	2.0	2.0	2.0
30N72	Swain Mountain	11.8	11.7	11.7	11.7	11.7

Snow Trails Designated for OSV Use	Area Location	Alternative 1 Open to OSV Use Under Current Management*	Alternative 2 OSV Designations	Alternative 3 OSV Designations	Alternative 4 OSV Designations	Alternative 5 OSV Designations
<b>Grand Total</b>	<b>All</b>	<b>405.7</b>	<b>334.4</b>	<b>383.2</b>	<b>380.3</b>	<b>393.1</b>
310314UC01	Morgan Summit	-	-	0.1	0.1	0.1
310314UC07	Morgan Summit	-	-	0.1	0.1	0.1
31N17	Ashpan	-	-	-	0.0	-
31N17	Morgan Summit	-	-	21.7	21.7	21.7
31N17O	Morgan Summit	-	-	0.2	0.2	0.2
320306UC01	Ashpan	3.0	2.9	2.9	2.9	2.9
32N02	Bogard	9.7	9.5	9.5	9.5	9.5
32N07	Bogard	4.2	3.9	3.9	3.9	3.9
32N08	Bogard	6.8	6.8	6.8	6.8	6.8
32N09	Swain Mountain	3.9	3.9	7.7	10.4	7.7
32N10	Bogard	0.0	0.0	-	0.0	0.0
32N10	Swain Mountain	29.3	29.3	29.3	29.3	29.3
32N12	Swain Mountain	-	0.3	-	-	4.8
32N13	Swain Mountain	-	-	-	-	2.1
32N17	Ashpan	-	-	4.8	4.8	4.8
32N17F	Ashpan	-	-	0.5	0.5	0.5
32N20	Swain Mountain	-	0.2	-	-	-
32N21	Swain Mountain	-	-	0.4	0.4	0.4
32N24	Ashpan	7.8	7.8	7.8	7.8	7.8
32N25	Ashpan	2.4	2.4	2.4	2.4	2.4
32N26	Swain Mountain	-	-	0.8	0.8	0.8
32N28Y	Bogard	0.6	0.6	0.6	0.6	0.6
32N30	Ashpan	3.2	3.2	3.2	3.2	3.2
32N31	Ashpan	6.2	6.2	6.2	6.2	6.2

Over-snow Vehicle Use Designation

Snow Trails Designated for OSV Use	Area Location	Alternative 1 Open to OSV Use Under Current Management*	Alternative 2 OSV Designations	Alternative 3 OSV Designations	Alternative 4 OSV Designations	Alternative 5 OSV Designations
<b>Grand Total</b>	<b>All</b>	<b>405.7</b>	<b>334.4</b>	<b>383.2</b>	<b>380.3</b>	<b>393.1</b>
32N36	Ashpan	3.3	3.3	3.3	3.3	3.3
32N42Y	Swain Mountain	-	0.2	-	-	0.2
32N44Y	Ashpan	1.3	1.3	1.3	1.3	1.3
32N46	Ashpan	-	-	4.0	4.0	4.0
32N47	Ashpan	0.5	0.5	0.5	0.5	0.5
32N56	Swain Mountain	-	-	3.0	3.0	3.0
32N61	Swain Mountain	-	-	2.3	2.3	2.3
32N63Y	Bogard	0.7	0.7	0.7	0.7	0.7
32N64Y	Bogard	1.2	1.2	1.2	1.2	1.2
32N71	Swain Mountain	-	0.3	-	-	-
32N73	Bogard	3.9	3.9	3.9	3.9	3.9
32N80Y	Swain Mountain	-	-	1.7	1.7	1.7
32N81Y	Swain Mountain	-	-	0.3	0.3	0.3
32N82Y	Swain Mountain	-	-	0.8	0.8	0.8
32N92	Swain Mountain	-	0.2	-	-	0.2
32N92Y	Swain Mountain	-	-	1.1	1.1	1.1
32N98	Swain Mountain	-	-	1.0	1.0	1.0
32N99	Swain Mountain	-	0.2	-	-	-
33N16	Ashpan	9.9	9.9	9.9	9.9	9.9
33N20	Swain Mountain	-	-	2.0	1.9	1.9
33N20A	Swain Mountain	-	-	2.6	0.7	2.6
33N22	Swain Mountain	-	0.2	-	-	-
33N56	Swain Mountain	-	-	1.2	0.0	2.4
33N56A1	Swain Mountain	-	-	0.1	-	0.2

Snow Trails Designated for OSV Use	Area Location	Alternative 1 Open to OSV Use Under Current Management*	Alternative 2 OSV Designations	Alternative 3 OSV Designations	Alternative 4 OSV Designations	Alternative 5 OSV Designations
<b>Grand Total</b>	<b>All</b>	<b>405.7</b>	<b>334.4</b>	<b>383.2</b>	<b>380.3</b>	<b>393.1</b>
33N56C	Swain Mountain	-	-	0.2	-	0.3
34N34	Bogard	-	0.2	-	-	-
34N94	Bogard	-	0.4	-	-	-
35N10	Bogard	-	0.3	-	-	-
36N09	Fall River	-	0.2	-	-	-
36N10	Fall River	-	0.2	-	-	-
36N33B	Fall River	-	0.2	-	-	-
36N36Y	Fall River	-	0.2	-	-	-
37N02	Fall River	-	0.1	-	-	-
37N05	Fall River	-	0.8	-	-	-
37N05C	Fall River	-	0.3	-	-	-
37N52Y	Fall River	-	0.1	-	-	-
CA 172	Morgan Summit	4.3	4.3	4.3	4.3	4.3
Fredonyer Pass connector	Fredonyer	0.0	-	0.5	0.0	-
Fredonyer Pass connector	Swain Mountain	0.5	0.5	-	0.5	0.5
Latour State Forest Trails	Ashpan	0.0	0.0	-	-	0.0
Manzanita Creek Connector	Ashpan	-	-	0.3	0.3	0.3
Manzanita Creek connector	Morgan Summit	-	-	0.1	0.1	0.1
Mineral Summit connector	Morgan Summit	-	-	0.4	-	-
Morgan Summit connector	Morgan Summit	1.0	1.0	1.0	1.0	1.0
PL 322A	Swain Mountain	0.5	0.5	0.5	0.5	0.5
TR9763, Bizz Johnson	Swain Mountain	5.2	5.2	5.2	5.2	5.2
UCC571	Swain Mountain	-	-	0.2	-	0.2

Snow Trails Designated for OSV Use	Area Location	Alternative 1 Open to OSV Use Under Current Management*	Alternative 2 OSV Designations	Alternative 3 OSV Designations	Alternative 4 OSV Designations	Alternative 5 OSV Designations
<b>Grand Total</b>	<b>All</b>	<b>405.7</b>	<b>334.4</b>	<b>383.2</b>	<b>380.3</b>	<b>393.1</b>
UCC572	Swain Mountain	-	-	0.1	-	0.1
UCC587	Swain Mountain	-	-	0.1	-	0.1
ULA186	Morgan Summit	-	-	0.1	-	-
ULA189	Morgan Summit	0.6	0.6	0.6	0.6	0.6
ULA190	Morgan Summit	0.9	0.9	0.9	0.9	0.9
ULA408	Swain Mountain	0.8	0.8	0.8	0.8	0.8
ULA557	Fredonyer	0.4	0.4	0.4	0.4	0.4
UMN790	Swain Mountain	-	-	0.2	-	0.2
UMN853	Swain Mountain	-	-	0.3	-	0.3
Unnamed Exit - Addition to East Hat Creek	Swain Mountain	-	0.1	-	-	0.1
	Total Ashpan	37.8	37.7	47.3	47.4	47.4
	Total Bogard	27.1	27.5	26.6	26.6	26.6
	Total Fall River	0.0	2.2	0.0	0.0	0.0
	Total Fredonyer	58.9	48.4	48.9	48.4	48.4
	Total Jonesville	96.7	63.7	63.8	63.8	64.3
	Total Morgan Summit	83.7	61.5	83.2	81.9	83.7
	Total Swain Mountain	101.6	93.5	113.4	112.3	122.7
Total OSV Trails Open but not Designated	Forest-wide	2,952.5	2,519.2	2,209.2	2,544.6	543.8

\*Because no Subpart C designations of trails for OSV use have been made, trails are not "designated," but are either "open" or "closed" to OSV use under current management. All trail length estimates are approximate and are rounded to the nearest 0.1 mile.

**Table 12. Trails designated for OSV use crossing the Pacific Crest National Scenic Trail**

<b>OSV/Pacific Crest National Scenic Trail Crossing</b>	<b>Alternative 1 Current Management</b>	<b>Alternative 2 OSV Designations</b>	<b>Alternative 3 OSV Designations</b>	<b>Alternative 4 OSV Designations</b>	<b>Alternative 5 OSV Designations</b>
Designated Pacific Crest National Scenic Trail Crossing Points (#)	No Designated Pacific Crest National Scenic Trail Crossing Points	28	No Designated Pacific Crest National Scenic Trail Crossing Points	No Designated Pacific Crest National Scenic Trail Crossing Points	12
Designated OSV Access Trails Through Designated Pacific Crest National Scenic Trail Crossing Points by Road Name (miles)	-	8.1	-	-	3.8
<ul style="list-style-type: none"> <li>Pit River Canyon Rd. (St Dr 50) – Only a crossing point designated in alternative 2. Not located on NFS land.</li> </ul>	-	Designated as Crossing Point Only. No NFS Jurisdiction on Adjacent Land.	-	-	-
<ul style="list-style-type: none"> <li>St. Bernard So Rd. (Collins 1) - Only a crossing point designated in alternative 2. Not located on NFS land.</li> </ul>	-	Designated as Crossing Point Only. No NFS Jurisdiction on Adjacent Land	-	-	Designated as Crossing Point Only. No NFS Jurisdiction on Adjacent Land
<ul style="list-style-type: none"> <li>26N02</li> </ul>	-	0.2	-	-	0.2
<ul style="list-style-type: none"> <li>26N74</li> </ul>	-	0.3	-	-	0.3
<ul style="list-style-type: none"> <li>27N11</li> </ul>	-	0.3	-	-	0.3
<ul style="list-style-type: none"> <li>27N11G</li> </ul>	-	0.2	-	-	0.2
<ul style="list-style-type: none"> <li>27N43</li> </ul>	-	0.6	-	-	0.6
<ul style="list-style-type: none"> <li>28N16</li> </ul>	-	0.6	-	-	0.6
<ul style="list-style-type: none"> <li>28N61</li> </ul>	-	0.8	-	-	0.8
<ul style="list-style-type: none"> <li>29N17</li> </ul>	-	0.1	-	-	0.1
<ul style="list-style-type: none"> <li>29N17J</li> </ul>	-	0.0	-	-	0.0
<ul style="list-style-type: none"> <li>29N27</li> </ul>	-	0.0	-	-	0.0
<ul style="list-style-type: none"> <li>29N97</li> </ul>	-	0.2	-	-	0.2
<ul style="list-style-type: none"> <li>32N12</li> </ul>	-	0.3	-	-	-

<b>OSV/Pacific Crest National Scenic Trail Crossing</b>	<b>Alternative 1 Current Management</b>	<b>Alternative 2 OSV Designations</b>	<b>Alternative 3 OSV Designations</b>	<b>Alternative 4 OSV Designations</b>	<b>Alternative 5 OSV Designations</b>
• 32N20	-	0.2	-	-	-
• 32N42Y	-	0.2	-	-	0.2
• 32N71	-	0.3	-	-	-
• 32N92	-	0.2	-	-	0.2
• 32N99	-	0.2	-	-	-
• 33N22	-	0.2	-	-	-
• 34N34	-	0.2	-	-	-
• 34N94	-	0.4	-	-	-
• 35N10	-	0.3	-	-	-
• 36N09	-	0.2	-	-	-
• 36N10	-	0.2	-	-	-
• 36N33B	-	0.2	-	-	-
• 36N36Y	-	0.2	-	-	-
• 37N02	-	0.1	-	-	-
• 37N05	-	0.8	-	-	-
• 37N05C	-	0.3	-	-	-
• 37N52Y	-	0.1	-	-	-
• Unnamed Exit - Addition to East Hat Creek	-	0.1	-	-	0.1
Designated OSV Access Trails Through Designated Pacific Crest National Scenic Trail Crossing Points (#)	-	26	-	-	14
Designated Groomed OSV Access Trails Through Designated Pacific Crest National Scenic Trail Crossing Points - Jonesville Groomed Trail System (#)	-	3	-	-	3

<b>OSV/Pacific Crest National Scenic Trail Crossing</b>	<b>Alternative 1 Current Management</b>	<b>Alternative 2 OSV Designations</b>	<b>Alternative 3 OSV Designations</b>	<b>Alternative 4 OSV Designations</b>	<b>Alternative 5 OSV Designations</b>
Designated Groomed OSV Access Trails Through Designated Pacific Crest National Scenic Trail Crossing Points - Jonesville Groomed Trail System (mile)	-	1.1	-	-	1.1
Designated Ungroomed OSV Access Trails Through Designated Pacific Crest National Scenic Trail Crossing Points (#)	-	23	-	-	11
Designated Ungroomed OSV Access Trails Through Designated Pacific Crest National Scenic Trail Crossing Points (miles)	-	7.0	-	-	2.7

\* Motorized use would be prohibited on the tread of the Pacific Crest National Scenic Trail in all alternatives.

All area size and total trail distance estimates are approximate and are rounded to the nearest 10 acres or nearest 0.1 mile.

**Table 13. Length of the Pacific Crest National Scenic within 500 feet of an area designated for OSV use (miles by area)**

<b>Areas Designated for OSV Use (North to South)</b>	<b>Alternative 1 Open to OSV Use Under Current Management*</b>	<b>Alternative 2 OSV Designations</b>	<b>Alternative 3 OSV Designations</b>	<b>Alternative 4 OSV Designations</b>	<b>Alternative 5 OSV Designations</b>
Fall River	18.05	-	7.34	18.05	-
Bogard	25.02	-	22.94	24.49	-
Swain Mountain	12.18	-	11.97	11.97	-
Morgan Summit	12.89	-	12.89	12.89	-
Jonesville	30.28	-	30.28	30.28	-
Total	98.42	-	85.42	97.68	-

Table 14. Comparison of trails to be groomed for OSV use, by alternative (miles)

Snow Trails identified for OSV Grooming	Area Location	Alternative 1 Groomed Under Current Management*	Alternative 2 Groomed	Alternative 3 Groomed	Alternative 4 Groomed	Alternative 5 Groomed
<b>Grand Total</b>	<b>All</b>	<b>349.5</b>	<b>349.7</b>	<b>349.4</b>	<b>349.4</b>	<b>349.7</b>
26N02	Jonesville	2.5	2.5	2.5	2.5	2.5
26N27	Jonesville	5.0	5.0	5.0	5.0	5.0
26N31	Jonesville	0.8	0.8	0.8	0.8	0.8
26N35	Jonesville	4.8	4.8	4.8	4.8	4.8
27N03	Jonesville	1.2	1.2	1.2	1.2	1.2
27N04	Jonesville	6.6	6.6	6.6	6.6	6.6
27N06	Jonesville	5.3	5.3	5.3	5.3	5.3
27N11	Jonesville	11.0	11.2	11.0	11.0	11.2
27N43	Jonesville	21.0	21.0	21.0	21.0	21.0
27N65	Jonesville	9.7	9.7	9.7	9.7	9.7
280310UC03	Morgan Summit	0.2	0.2	0.2	0.2	0.2
28N08	Fredonyer	-	-	-	0.2	0.2
28N08 on Plumas	Fredonyer	11.2	11.2	11.2	10.9	10.9
28N28	Morgan Summit	4.2	4.2	4.2	4.2	4.2
28N70	Morgan Summit	4.2	4.2	4.2	4.2	4.2
29N03	Fredonyer	6.3	6.3	6.3	6.3	6.3
29N09	Swain Mountain	0.2	0.2	0.2	0.2	0.2
29N20Y	Fredonyer	4.3	4.3	4.3	4.3	4.3
29N44	Morgan Summit	6.8	6.8	6.8	6.8	6.8
29N46	Fredonyer	13.0	13.0	13.0	13.0	13.0
29N46G	Fredonyer	0.4	0.4	0.4	0.4	0.4
29N48	Morgan Summit	27.0	27.0	27.0	27.0	27.0
29N55	Swain Mountain	4.0	4.0	4.0	4.0	4.0

Snow Trails Identified for OSV Grooming	Area Location	Alternative 1 Groomed Under Current Management*	Alternative 2 Groomed	Alternative 3 Groomed	Alternative 4 Groomed	Alternative 5 Groomed
<b>Grand Total</b>	<b>All</b>	<b>349.5</b>	<b>349.7</b>	<b>349.4</b>	<b>349.4</b>	<b>349.7</b>
29N57	Morgan Summit	0.6	0.6	0.6	0.6	0.6
29N58	Morgan Summit	1.1	1.1	1.1	1.1	1.1
29N60	Morgan Summit	4.9	4.9	4.9	4.9	4.9
29N62	Morgan Summit	2.4	2.4	2.4	2.4	2.4
29N67	Morgan Summit	2.0	2.0	2.0	2.0	2.0
29N84YA	Fredonyer	0.4	0.4	0.4	0.4	0.4
29N85	Fredonyer	7.7	7.7	7.7	7.7	7.7
29N91	Morgan Summit	0.9	0.9	0.9	0.9	0.9
30N03	Swain Mountain	4.6	4.6	4.6	4.6	4.6
30N06	Swain Mountain	3.8	3.8	3.8	3.8	3.8
30N07	Swain Mountain	13.8	13.8	13.8	13.8	13.8
30N09	Swain Mountain	5.5	5.5	5.5	5.5	5.5
30N25	Swain Mountain	1.4	1.4	1.4	1.4	1.4
30N29	Swain Mountain	4.6	4.6	4.6	4.6	4.6
30N31	Swain Mountain	2.0	2.0	2.0	2.0	2.0
30N72	Swain Mountain	11.7	11.7	11.7	11.7	11.7
320306UC01	Ashpan	2.9	2.9	2.9	2.9	2.9
32N02	Bogard	9.5	9.5	9.5	9.5	9.5
32N07	Bogard	3.9	3.9	3.9	3.9	3.9
32N08	Bogard	6.8	6.8	6.8	6.8	6.8
32N09	Swain Mountain	3.9	3.9	3.9	3.9	3.9
32N10	Bogard	0.0	0.0	0.0	0.0	0.0
32N10	Swain Mountain	29.3	29.3	29.3	29.3	29.3
32N24	Ashpan	7.8	7.8	7.8	7.8	7.8

Snow Trails Identified for OSV Grooming	Area Location	Alternative 1 Groomed Under Current Management*	Alternative 2 Groomed	Alternative 3 Groomed	Alternative 4 Groomed	Alternative 5 Groomed
<b>Grand Total</b>	<b>All</b>	<b>349.5</b>	<b>349.7</b>	<b>349.4</b>	<b>349.4</b>	<b>349.7</b>
32N25	Ashpan	2.4	2.4	2.4	2.4	2.4
32N28Y	Bogard	0.6	0.6	0.6	0.6	0.6
32N30	Ashpan	3.2	3.2	3.2	3.2	3.2
32N31	Ashpan	6.2	6.2	6.2	6.2	6.2
32N36	Ashpan	3.3	3.3	3.3	3.3	3.3
32N44Y	Ashpan	1.3	1.3	1.3	1.3	1.3
32N47	Ashpan	0.5	0.5	0.5	0.5	0.5
32N63Y	Bogard	0.7	0.7	0.7	0.7	0.7
32N64Y	Bogard	1.2	1.2	1.2	1.2	1.2
32N73	Bogard	3.9	3.9	3.9	3.9	3.9
33N16	Ashpan	9.9	9.9	9.9	9.9	9.9
CA 172	Morgan Summit	5.4	5.4	5.4	5.4	5.4
Fredonyer Pass connector	Fredonyer	0.0	-	0.5	0.0	-
Fredonyer Pass connector	Swain Mountain	0.5	0.5	-	0.5	0.5
Latour State Forest Trails	Ashpan	19.7	19.7	19.7	19.7	19.7
Morgan Summit connector	Morgan Summit	1.0	1.0	1.0	1.0	1.0
PL 322A	Swain Mountain	0.5	0.5	0.5	0.5	0.5
TR9763, Bizz Johnson	Swain Mountain	5.2	5.2	5.2	5.2	5.2
ULA189	Morgan Summit	0.6	0.6	0.6	0.6	0.6
ULA190	Morgan Summit	0.9	0.9	0.9	0.9	0.9
ULA408	Swain Mountain	0.8	0.8	0.8	0.8	0.8
ULA557	Fredonyer	0.4	0.4	0.4	0.4	0.4

Snow Trails Identified for OSV Grooming	Area Location	Alternative 1 Groomed Under Current Management*	Alternative 2 Groomed	Alternative 3 Groomed	Alternative 4 Groomed	Alternative 5 Groomed
<b>Grand Total</b>	<b>All</b>	<b>349.5</b>	<b>349.7</b>	<b>349.4</b>	<b>349.4</b>	<b>349.7</b>
	Total Ashpan	57.4	57.4	57.4	57.4	57.4
	Total Bogard	26.6	26.6	26.6	26.6	26.6
	Total Fall River	0.0	0.0	0.0	0.0	0.0
	Total Fredonyer	43.7	43.7	44.1	43.7	43.7
	Total Jonesville	68.0	68.2	67.9	67.9	68.2
	Total Morgan Summit	62.1	62.1	62.1	62.1	62.1
	Total Swain Mountain	91.8	91.8	91.3	91.8	91.8

\*Because no Subpart C designations of trails for OSV use have been made, trails are not “designated,” but are either “open” or “closed” to OSV use under current management. All trail length estimates are approximate and are rounded to the nearest 0.1 mile.

**Table 15. Summary comparing current OSV management with the action alternatives for minimum snow depth (in inches) and OSV trail grooming season on the Lassen National Forest**

OSV Management	Alternative 1 – Current Management	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Minimum Snow Depth for Public OSV Use on Snow Trails (Inches)	No Minimum Enforced	6 inches on snow trails overlying roads and trails 12 inches on trail not overlying roads or trails	6 inches where site review determines there would be no damage to underlying resources	Depth necessary to avoid resource damage	12
Minimum Snow Depth for Public, Cross-country OSV Use (Inches)	No Minimum Enforced	12	12	Depth necessary to avoid resource damage	12
Minimum Snow Depth for Snow Trail Grooming to Occur (Inches)	12	12*	18	12	12
OSV Trail Grooming Season	12/26 – 3/31	12/26 – 3/31	12/26 – 3/31	12/26 – 3/31	12/26 – 3/31

\*The originally scoped proposed action has been modified to be consistent with the state grooming standard which states, “Begin grooming when the snow depth is at least 12 to 18 inches” (OSV Program Draft EIR, Program Years 2010-2020 – October 2010, California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division, page 2-12).

**Table 16. Summary of comparison of alternatives by environmental effects (ranking alternatives averaged across indicators) (chapter 3)**

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
<b>Recreation</b>						
Motorized Recreation Opportunities – cross-country	Opportunities for motorized winter uses/total area (acres) and percent change	964,030 acres open to public, cross-country OSV use, subject to snow depth restrictions  No minimum snow depth requirement	921,180 acres open to public cross-country OSV use, subject to snow depth restrictions, a 4.4 percent decrease from existing conditions.  12 inch snow depth requirement	833,990 acres open to public cross-country OSV use, subject to snow depth restrictions, a 13.5 percent decrease from existing conditions.  12 inch snow depth requirement	954,450 acres open to public cross-country OSV use, subject to snow depth restrictions, a 1 percent decrease from existing conditions.  Depth necessary to avoid resource damage	633,360 acres open to public cross-country OSV use, subject to snow depth restrictions, a 33 percent decrease from existing conditions.  12 inch snow depth requirement
Motorized Recreation Opportunities – designated snow trails	OSV trail designations, length of trails (miles) and percent change	406 miles of groomed, ungroomed, marked and unmarked OSV trails open for OSV use, subject to snow depth restrictions  No minimum snow depth requirement	334 miles of designated OSV snow trails, subject to snow depth restrictions, 17.7 percent decrease from existing conditions (however a majority of the current trail system is designated or in OSV open areas).  6 inch or more snow depth on snow trails overlaying roads and trails;  12 inch snow depth on 0.1 mile of trail not overlaying roads or trails.	383 miles of designated OSV snow trails, subject to snow depth restrictions. 5.6 percent decrease from existing conditions (however a majority of the current trail system is designated or in OSV open areas).  6 inches where site review determines there would be no damage to underlying resources	380 miles of designated OSV snow trails, subject to snow depth restrictions. 6.4 percent decrease from existing conditions (however a majority of the current trail system is designated or in OSV open areas)  Depth necessary to avoid resource damage	390 miles of OSV snow trails, subject to snow depth restrictions. 3.9 percent decrease from existing conditions (however a majority of the current trail system is designated or in OSV open areas)  12 inch snow depth requirement

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Motorized Recreation Opportunities – groomed snow trails	OSV trail grooming, length of trails (miles), percent change	349 miles  12 inch snow depth requirement for grooming	349 miles, no change  12 inch snow depth requirement for grooming	349 miles, no change  18 inch snow depth requirement for grooming	349 miles, no change  12 inch snow depth requirement for grooming	349 miles, no change  12 inch snow depth requirement for grooming
Non-motorized Recreation Opportunities - displacement	Access to desired non-motorized recreation settings and opportunities  Total area (acres) and length of trails (miles) available to non- motorized recreation enthusiasts within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non- motorized winter use,  75,169 acres available for non- motorized recreation within 10 miles of plowed trailheads  44 miles of cross- country ski trails and other non- motorized routes available within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non- motorized winter use,  85,706 acres available for non- motorized recreation within 10 miles of plowed trailheads  44 miles of cross- country ski trails and other non- motorized trails available within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non- motorized winter use,  122,774 acres available for non- motorized recreation within 10 miles of plowed trailheads  44 miles of cross- country ski trails and other non- motorized trails available within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non- motorized winter use,  81,259 acres available for non- motorized recreation within 10 miles of plowed trailheads  44 miles of cross- country ski trails and other non- motorized trails available within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non- motorized winter use,  166,463 acres available for non- motorized recreation within 10 miles of plowed trailheads  44 miles of cross- country ski trails and other non- motorized trails available within 10 miles of plowed trailheads
	Recreation Opportunity Spectrum/Consistency with ROS class	Consistent	Consistent	Consistent – with enhanced opportunities for non-motorized recreation experiences	Consistent – with enhanced opportunities for motorized recreation experiences	Consistent – with substantially enhanced opportunities for non-motorized recreation experiences
Non-motorized Recreation Conflicts - Public Safety	Total area (acres) and length of trails (miles) available to non- motorized recreation	185,983 acres closed to OSV use, a total of 148 miles	228,847 acres, a 23 percent increase/ six non-motorized trails with a total of	316,048 acres, a 41.2 percent increase/ six non- motorized trails with	195,580 acres, 4.9 percent increase/ six non-motorized trails with a total of	510,540 acres, 63.6 percent increase/ six non-motorized trails with a total of

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	enthusiasts for quality non-motorized recreation experiences	for non-motorized use.	148 miles for non-motorized use.	a total of 148 miles for non-motorized use.	148 miles for non-motorized use.	148 miles for non-motorized use.
Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas	Proximity and frequency of OSV designations in relation to designated non-motorized areas  Distance of groomed public OSV snow trails from areas designated as non-motorized under existing law or policy, or number of crossings of linear areas designated as non-motorized under existing law or policy	A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries.  Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park’s southeast corner, and 1 1/2 miles north of the park’s northwest corner.  No designated PCT crossing points. 98.42 miles of the PCT are within 500 feet of an area designated for OSV use.  No known conflicts with tribal/spiritual	A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries.  Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park’s southeast corner, and 1 1/2 miles north of the park’s northwest corner.  28 designated PCT crossing points. No areas designated for OSV use within 500 feet of the PCT.	A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries  Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park’s southeast corner, and 1 1/2 miles north of the park’s northwest corner.  No designated PCT crossing points. 85.42 miles of the PCT are within 500 feet of an area designated for OSV use.  No known conflicts with tribal/spiritual	A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries  Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park’s southeast corner, and 1 1/2 miles north of the park’s northwest corner.  No designated PCT crossing points. 97.68 miles of the PCT are within 500 feet of an area designated for OSV use.  No known conflicts with tribal/spiritual areas, historic	A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries  Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park’s southeast corner, and 1 1/2 miles north of the park’s northwest corner.  28 designated PCT crossing points. No areas designated for OSV use within 500 feet of the PCT.

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
		areas, historic areas or populated areas.	No known conflicts with tribal/spiritual areas, historic areas or populated areas.	areas, historic areas or populated areas.	areas or populated areas.	No known conflicts with tribal/spiritual areas, historic areas or populated areas.
	Noise Total area (acres) potentially affected by noise/total area (acres) closed to winter motorized use	964,030 acres open to OSV use, potentially affected by noise; 185,983 acres closed to OSV use, available for quiet recreation.	921,180 acres open to OSV use, potentially affected by noise; 228,847 acres closed to OSV use, available for quiet recreation.	833,990 acres open to OSV use, potentially affected by noise; 316,048 acres closed to OSV use, available for quiet recreation.	954,450 acres open to OSV use, potentially affected by noise; 195,580 acres closed to OSV use, available for quiet recreation.	633,360 acres open to OSV use, potentially affected by noise; 510,540 acres closed to OSV use, available for quiet recreation
Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas (continued)	Air Quality Qualitative/narrative description of potential impacts (with reference to air quality analysis)	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions (see air quality report).	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions. Slightly fewer acres open to OSV use than in existing conditions (see air quality report).	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions. Fewer acres open to OSV use than in existing conditions and Alt. 2 (see air quality report).	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions. Slightly fewer acres open to OSV use than in existing conditions (see air quality report).	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions. Substantially fewer acres open to OSV use than in existing conditions (see air quality report).
	Scenery Qualitative/narrative description of potential visual impacts	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. The visual evidence of snowmobile use decreases as fresh snow covers the tracks and/or when the snow melts at	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. Fewer acres open to cross-country OSV use, and associated visual impacts than in existing conditions. The visual evidence of	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. Fewer acres open to cross-country OSV use, and associated visual impacts than in existing conditions or Alt. 2. The visual evidence	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. Slightly fewer acres open to cross-country OSV use, and associated visual impacts than in existing conditions. The visual evidence of	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. Substantially fewer acres open to cross-country OSV use, and associated visual impacts than in existing conditions. The

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
		the end of the season.	snowmobile use decreases as fresh snow covers the tracks and/or when the snow melts at the end of the season	of snowmobile use decreases as fresh snow covers the tracks and/or when the snow melts at the end of the season	snowmobile use decreases as fresh snow covers the tracks and/or when the snow melts at the end of the season	visual evidence of snowmobile use decreases as fresh snow covers the tracks and/or when the snow melts at the end of the season
Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas (continued)	Wilderness Attributes Total area (acres) affected and duration of impact. Qualitative description for wilderness attributes	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries. There are approximately 27,108 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries, The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries. There are approximately 21,266 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries, The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries. There are approximately 19,173 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries, The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries. There are approximately 25,575 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries, The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries. There are approximately 17,257 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries, The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.
	Roadless Characteristics Total area (acres) affected and duration	Approximately 72,969 IRA acres open to OSV use.	Approximately 59,746 IRA acres open to OSV use.	Approximately 58,291 IRA acres open to OSV use.	Approximately 72,681 IRA acres open to OSV use.	Approximately 83,411 IRA acres open to OSV use

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	of impact. Qualitative description for roadless characteristics	Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of expected high to moderate OSV use.	Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of expected high to moderate OSV use.	Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of expected high to moderate OSV use.	Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of expected high to moderate OSV use.	Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of expected high to moderate OSV use.
<b>Transportation and Engineering</b>						
Safety	Public Safety & Traffic	The current Lassen National Forest Winter Recreation Guide map provides adequate information to maintain a reasonable level of public safety and avoid traffic conflicts	The over-snow vehicle use map would provide adequate information to maintain a reasonable level of public safety and avoid traffic conflicts; this would also improve understanding of allowed uses and prohibitions.	The over-snow vehicle use map would provide adequate information to maintain a reasonable level of public safety and avoid traffic conflicts; this would also improve understanding of allowed uses and prohibitions.	The over-snow vehicle use map would provide adequate information to maintain a reasonable level of public safety and avoid traffic conflicts; this would also improve understanding of allowed uses and prohibitions.	The over-snow vehicle use map would provide adequate information to maintain a reasonable level of public safety and avoid traffic conflicts; this would also improve understanding of allowed uses and prohibitions.
Cost	Affordability	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.
Transportation property	Effects to underlying NFS roads and trails	12 or more inches of snow for grooming and 12 inches or more for general cross-country OSV use areas and on trails or roads	12 inches minimum snow depth for grooming and general cross-country OSV use, and 6 inches for OSV use on underlying routes	18 inches minimum snow depth for grooming, 6 inch minimum snow depth for use on underlying roads and trails and 12 inch minimum snow	12 inch minimum snow depth for grooming. The minimum snow depth necessary to avoid underlying resource damage requirements on	12 inches minimum snow depth requirement for grooming, designated public cross-country OSV use areas and on designated trails

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
		requirement provides more than adequate protection of underlying roads and trails.	requirement would provide adequate protection of underlying roads and trails.	depth for OSV cross-country use area requirement would provide adequate protection of underlying roads and trails.	roads, trails and cross-country OSV use areas would provide protection of underlying roads and trails.	would provide protection of underlying roads and trails.
<b>Noise</b>						
	Opportunities for motorized winter uses Size of areas (acres) open to public, cross-country OSV use; percentage change compared to current management	964,030 acres open to OSV use and potentially affected by noise 185,983 acres closed to OSV use and available for quiet recreation	921,180 acres open to OSV use and potentially affected by noise, a 4.5 percent decrease from existing conditions 228,847 acres closed to OSV use and available for quiet recreation, a 23 percent increase from existing conditions	833,990 acres open to OSV use and potentially affected by noise, a 13.4 percent decrease from existing conditions 316,048 acres closed to OSV use and available for quiet recreation, a 41.2 percent increase from existing conditions	954,450 acres open to OSV use and potentially affected by noise, a 0.5 percent decrease from existing conditions 195,580 acres closed to OSV use and available for quiet recreation, a 4.9 percent increase from existing conditions	639,480 acres open to public cross-country OSV use, subject to snow depth restrictions, a 34 percent decrease from existing conditions.  510,540 acres closed to OSV use and available for quiet recreation, a 63.6 percent increase from existing conditions
	OSV designations Length of snow trails (miles), groomed and ungroomed, designated and identified for public OSV use	405 miles designated /349 miles groomed	334 miles designated /349 miles groomed	383 miles designated /349 miles groomed	380 miles designated /349 miles groomed	390 miles designated/ 349 miles groomed
	Opportunities for motorized winter uses Size of areas (acres) open to public, cross-country OSV use; percentage change	964,030 acres open to OSV use and potentially affected by noise 185,983 acres closed to OSV use	921,180 acres open to OSV use and potentially affected by noise, a 4.5 percent decrease from existing conditions	833,990 acres open to OSV use and potentially affected by noise, a 13.4 percent decrease from existing conditions	954,450 acres open to OSV use and potentially affected by noise, a 0.5 percent decrease from existing conditions	639,480 acres open to public cross-country OSV use, subject to snow depth restrictions, a 34 percent

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	compared to current management	and available for quiet recreation	228,847 acres closed to OSV use and available for quiet recreation, a 23 percent increase from existing conditions	316,048 acres closed to OSV use and available for quiet recreation, a 41.2 percent increase from existing conditions	195,580 acres closed to OSV use and available for quiet recreation, a 4.9 percent increase from existing conditions	decrease from existing conditions.  510,540 acres closed to OSV use and available for quiet recreation, a 63.6 percent increase from existing conditions
<b>Soil Resources</b>						
Soil Productivity and Soil Stability	OSV acres open to cross-country travel on sensitive soils (including wet meadows, areas with potential low stability, and areas with potential erosion hazards).	There would be no change in acreage of area currently open to cross-country OSV travel on sensitive soils. Approximately 53,902 acres with mapped sensitive soil types are open to cross-country travel. The no action alternative has the most acres of sensitive soils open to OSV use.	Approximately 52,964 acres of sensitive soils would be open to cross-country OSV travel within the forest. This is slightly less acres than the no-action alternative and alternative 4, but more acres than alternative 3 and alternative 5.	Approximately 40,590 acres of sensitive soils will be open to cross-country OSV travel. This is less acres open to OSV use than any other alternative other than alternative 5.	Approximately 53,507 acres of sensitive soils will be open to cross-country OSV travel. Under this alternative, there would be more acres of sensitive soils open to cross-country OSV travel than any other action alternative, but there would less acres of sensitive soils open to OSV use than under the no-action alternative.	Approximately 33,221 acres of sensitive soils will be open to cross-country OSV travel. Under this alternative, the least amount of sensitive soils will be open to OSV cross-country travel.
Soil Stability	Minimum snow depths on trails (inches)	No enforced minimum snow depth prior to any OSV travel over existing roads and trails. Without a minimum snow depth, soil resource	Minimum snow depth is 6 inches of snow prior to any OSV travel over existing roads and trails. This minimum snow depth may potentially create	Minimum snow depth is 6 inches of snow prior to any OSV travel over existing roads and trails. This minimum snow depth may potentially create	No defined snow depth for OSV use on trails. No minimum snow depth may potentially create conditions in which the road surface is	Minimum snow depth is 12 inches of unpacked snow prior to any OSV travel over existing roads and trails. This minimum snow depth has been

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
		damage is more likely to occur as OSV use could occur when bare soil is exposed on trails, leading to potential erosion.	conditions in which the road surface is exposed to OSVs and there is potential for some soil erosion or rutting of the road surface. Monitoring of this snow depth is will occur to further evaluate the potential effects to soils.	conditions in which the road surface is exposed to OSVs and there is potential for some soil erosion or rutting of the road surface. Monitoring of this snow depth is will occur to further evaluate the potential effects to soils.	exposed to OSVs and there is potential for some soil erosion or rutting of the road surface. Monitoring will occur to further evaluate the potential effects to soils.	observed to be sufficient to prevent contact of OSVs with the bare soil surface.
Soil Productivity	Minimum snow depths for cross-country travel (inches)	No minimum snow depth for cross-country OSV travel could lead to greater soil resource damage. If bare soil or forest floor is exposed, soil erosion, soil loss, compaction, rutting and displacement could occur. With no minimum snow depth, the no-action alternative could potentially have the greatest impacts to soil productivity.	Minimum snow depth of 12 inches of unpacked snow for cross-country OSV travel would not change. Potential effects to the soil are unlikely to occur with at least 12 inches of snow covering the soil surface.	Minimum snow depth of 12 inches of unpacked snow for cross-country OSV travel would not change. Potential effects to the soil are unlikely to occur with at least 12 inches of snow covering the soil surface.	No minimum snow depth exists under this alternative. The potential for reduced soil productivity could occur, but Forest staff will monitor use and recommend usage seasons based on monitoring to prevent soil resource damage.	Minimum snow depth of 12 inches of unpacked snow for cross-country OSV travel would not change. Potential effects to the soil are unlikely to occur with at least 12 inches of snow covering the soil surface.
Soil Productivity	Total acres open to OSV use	Approximately 964,030 acres of the forest are open to OSV use. Under the no-action alternative, the most acreage is	Approximately 921,180 acres of the forest would be open to OSV use. This is less area open to OSV use compared to the	Approximately 833,990 acres of the forest would be open to OSV use, which is less than all the alternatives	Approximately 954,450 acres of the forest would be open to OSV use, which is a greater area than under the proposed action,	Approximately 633,360 acres of the forest would be open to OSV use, which is the least amount of land open to OSV use

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
		open to OSV use; therefore, the most potential for soil damage exists under this alternative.	no-action alternative and alternative 4, but it is greater than alternative 3 and alternative 5. The proposed action has the potential for more impacts than alternatives 3 and 5, but less than the proposed action and alternative 4.	except alternative 5.	alternative 3 and alternative 5, but less area than the no-action action alternative. Alternative 4 has the potential to have the greatest soil impacts out of the 3 action alternatives.	out of all the five alternatives.
<b>Air Quality</b>						
Air Quality	Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality, miles open to OSV visitor use	2,952 miles of groomed, ungroomed, marked, and unmarked snow trails are open to public OSV use.  No known violations of the CAA as a result of OSV use under the existing condition.	334 miles designated for OSV use. An 88 percent reduction in miles as compared to the existing condition.  No violations of the CAA are anticipated.	383 miles designated for OSV use. An 86 percent reduction in miles as compared to the existing condition.  No violations of the CAA are anticipated.	380 miles designated for OSV use. An 86 percent reduction in miles as compared to the existing condition.  No violations of the CAA are anticipated.	393 miles of trails for OSV use. An 85 percent reduction in miles as compared to the existing condition.  No violations of the CAA are anticipated.
	Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality/ acresl open to OSV visitor use	964,030 acres open to OSV use.  No known violations of the CAA as a result of OSV use under the existing condition	921,180 acres open to OSV use, a 4 percent reduction from existing conditions.  No violations of the CAA are anticipated.	833,990 acres open to OSV use, a 13 percent reduction from existing conditions.  No violations of the CAA are anticipated.	954,450 acres open to OSV use, a <1 percent reduction from existing conditions.  No violations of the CAA are anticipated.	633,360 acres open to OSV use, a 34 percent reduction from existing conditions.  No violations of the CAA are anticipated.
	Potential effects of OSV emissions to	Groomed OSV trails are in close	Groomed OSV trails are in close	Groomed OSV trails are in close	Groomed OSV trails are in close	Groomed OSV trails are in close

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	create adverse impacts to air quality/ Shifts in OSV use in relation to sensitive areas (Class 1 and II areas).	proximity to the Caribou Wilderness, Thousand Lakes Wilderness, and the boundary of Lassen Volcanic National Park.  No known violations of the CAA or impacts to Class 1 areas as a result of OSV use under the existing condition.	proximity to the Caribou Wilderness, Thousand Lakes Wilderness, and the boundary of Lassen Volcanic National Park.  No violations of the CAA or impacts to Class 1 areas are anticipated under this alternative.	proximity to the Caribou Wilderness, Thousand Lakes Wilderness, and the boundary of Lassen Volcanic National Park.  Designation of Butte Lake Backcountry Solitude area minimizes OSV impacts and reduces emissions near Caribou wilderness and Lassen NP  No violations of the CAA or impact to Class 1 areas are anticipated under this alternative.	proximity to the Caribou Wilderness, Thousand Lakes Wilderness and the boundary of Lassen Volcanic National Park.  No violations of the CAA are anticipated or impacts to Class 1 areas.	proximity to the Caribou Wilderness, Thousand Lakes Wilderness and the boundary of Lassen Volcanic National Park.  No violations of the CAA are anticipated or impacts to Class 1 areas.
<b>Socioeconomic Conditions</b>						
Economic activity	Employment, income, tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue
Quality of life	Recreation visitation	No change due to management; visitor use expected	No change due to management; visitor use expected	No change due to management; visitor use expected	No change due to management; visitor use expected	No change due to management; visitor use expected

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
		to increase over time	to increase over time	to increase over time	to increase over time	to increase over time
Quality of life	Values, beliefs, and attitudes	No net change in quality of life relative to current conditions; user conflict may increase due to population growth and increased visitor use	23 percent increase in acres not designated for OSV use would benefit quality of life of non-motorized winter recreation users and may adversely affect quality of life for OSV users; potential for continued user conflict due to trails in proximity to wilderness, national park, and shared trailheads	70 percent increase in acres not designated for OSV use would benefit quality of life of non-motorized winter recreation users and may adversely affect quality of life for OSV users; potential for continued user conflict due to trails in proximity to wilderness, national park, and shared trailheads	No net change in quality of life relative to current conditions; user conflict may increase due to population growth and increased visitor use	175 percent increase in acres not designated for OSV use would benefit quality of life of non-motorized winter recreation users and may adversely affect OSV users; potential for continued user conflict due to trails in proximity to wilderness, national park, and shared trailheads
Environmental Justice	Low-income and minority populations	No change due to management; climate change may increase distances winter recreation users must travel for adequate snow depth	Minor change in travel costs due to fewer areas designated for OSV use and reductions in snow depth requirements; climate change may increase distances winter recreation users must travel for adequate snow depth	Minor change in travel costs due to fewer areas designated for OSV use and reductions in snow depth requirements; climate change may increase distances winter recreation users must travel for adequate snow depth	Minor change due to management, snow depth reductions may decrease the distance that OSV users must travel; climate change may increase distances winter recreation users must travel for adequate snow depth	Minor change due to prohibition on OSV use below 3,500 feet in elevation and reduced open acres; climate change may increase distances winter recreation users must travel for adequate snow depth
<b>Water Resources</b>						
	Consistency with Riparian Conservation Objectives 1, 2, 4, 5, and 6	Complies with RCOs 1,2,4,5,6	Complies with RCOs 1,2,4,5,6	Complies with RCOs 1,2,4,5,6	Complies with RCOs 1,2,4,5,6	Complies with RCOs 1,2,4,5,6

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<b>Botanical Resources</b>						
Threatened and Endangered plants	Acres Within 100 feet of OSV Trails	11 out of Total 78 on the Forest	0 out of Total 78 on the Forest	11 out of Total 78 on the Forest	11 out of Total 78 on the Forest	11 out of Total 78 on the Forest
Threatened and Endangered plants	Acres in Areas Open to OSV Use	76 out of Total 78 on the Forest	70 out of Total 78 on the Forest	49 out of Total 78 on the Forest	70 out of Total 78 on the Forest	22 out of Total 78 on the Forest
	<i>Orcuttia tenuis</i> <i>Tuctoria greenei</i>	No effect				
Threatened and Endangered plant Critical Habitats	Acres Within 100 feet of OSV Trails	13 out of Total 23,840 on the Forest	21 out of Total 23,840 on the Forest	13 out of Total 23,840 on the Forest	13 out of Total 23,840 on the Forest	13 out of Total 23,840 on the Forest
Threatened and Endangered plant Critical Habitats	Acres in Areas Open to OSV Use	21,992 out of Total 23,840 on the Forest	21,161 out of Total 23,840 on the Forest	16,664 out of Total 23,840 on the Forest	21,991 out of Total 23,840 on the Forest	22,001 out of Total 23,840 on the Forest
	<i>Chamaesyce hoover</i>	No Effect, because designated critical habitat is not present	No Effect, because designated critical habitat is not present	No Effect, because designated critical habitat is not present	No Effect, because designated critical habitat is not present	No Effect, because designated critical habitat is not present
	<i>Limnanthes floccosa</i> <i>ssp. californica</i>	No Effect, because designated critical habitat is not present	No Effect, because designated critical habitat is not present	No Effect, because designated critical habitat is not present	No Effect, because designated critical habitat is not present	No Effect, because designated critical habitat is not present
	<i>Orcuttia tenuis</i>	No Effect, because Primary Constituent Elements would remain unaffected	No Effect, because Primary Constituent Elements would remain unaffected	No Effect, because Primary Constituent Elements would remain unaffected	No Effect, because Primary Constituent Elements would remain unaffected	No Effect, because Primary Constituent Elements would remain unaffected
	<i>Tuctoria greenei</i>	No Effect, because Primary Constituent Elements would remain unaffected	No Effect, because Primary Constituent Elements would remain unaffected	No Effect, because Primary Constituent Elements would remain unaffected	No Effect, because Primary Constituent Elements would remain unaffected	No Effect, because Primary Constituent Elements would remain unaffected
Sensitive plants	Acres Within 100 feet of OSV Trails	123 out of Total 2,543 on the Forest	86 out of Total 2,543 on the Forest	123 out of Total 2,543 on the Forest	123 out of Total 2,543 on the Forest	126 out of Total 2,543 on the Forest
Sensitive plants	Acres in Areas Open to OSV Use	1,756 out of Total 2,543 on the Forest	1,626 out of Total 2,543 on the Forest	1,535 out of Total 2,543 on the Forest	1,720 out of Total 2,543 on the Forest	1,358 out of Total 2,543 on the Forest

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	<p><i>Astragalus pulsiferae</i> var. <i>suksdorfii</i> <i>Boechera constancei</i> <i>Botrychium</i> <i>ascendens</i> <i>Botrychium</i> <i>crenulatum</i> <i>Botrychium</i> <i>minganense</i> <i>Botrychium montanum</i> <i>Botrychium pinnatum</i> <i>Cypripedium</i> <i>fasciculatum</i> <i>Eremogone cliftonii</i> <i>Eriogonum spectabile</i> <i>Frangula purshiana</i> ssp. <i>ultramafica</i> <i>Lewisia kelloggii</i> ssp. <i>hutchisonii</i> <i>Lomatium roseanum</i> <i>Meesia uliginosa</i> <i>Monardella follettii</i> <i>Packera eurycephala</i> var. <i>lewisrosei</i> <i>Peltigera gowardii</i> <i>Penstemon</i> <i>personatus</i> <i>Penstemon sudans</i> <i>Pinus albicaulis</i> <i>Pyrocoma lucida</i> <i>Rorippa columbiae</i> <i>Rupertia hallii</i> <i>Scheuchzeria</i> <i>palustris</i></p>	<p>May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.</p>	<p>May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.</p>	<p>May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.</p>	<p>May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.</p>	<p>May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.</p>

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<i>Sedum albomarginatum</i> , <i>Silene occidentalis</i> <i>ssp. longistipitata</i>					
	<i>Calochortus longebarbatus</i> var. <i>longebarbatus</i> <i>Cypripedium montanum</i> <i>Eriogonum prociduum</i> <i>Juncus leiospermus</i> var. <i>leiospermus</i>	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	No Impact
	<i>Fritillaria eastwoodiae</i>	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	No Impact	May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability in the planning area.	No Impact
	<i>Clarkia gracilis</i> ssp. <i>albicaulis</i> <i>Clarkia mildrediae</i> ssp. <i>mildrediae</i> <i>Cryptantha crinita</i> <i>Eriastrum tracyi</i> <i>Limnanthes floccosa</i> ssp. <i>bellingermana</i> <i>Mimulus evanescens</i> <i>Phacelia inundata</i>	No Impact	No Impact	No Impact	No Impact	No Impact
Survey and Manage Plants	<i>Botrychium minganense</i> <i>Botrychium montanum</i> <i>Buxbaumia viridis</i> <i>Cypripedium fasciculatum</i>	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts

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	<i>Cypripedium montanum</i> <i>Ptilidium californicum</i> <i>Alpova olivaceotinctus</i> <i>Bondarzewia mesenterica</i> <i>Clavariadelphus truncatus</i> <i>Mythicomycetes comeipes</i> <i>Ramaria rubrievanescens</i> <i>Rhizopogon truncatus</i> <i>Spathularia flavida</i>					
Special Interest Plants						
	<i>Allium sanbornii</i> var. <i>sanbornii</i>	Not affected				
	<i>Anthoxanthum nitens</i> ssp. <i>Nitens</i>	Not affected				
	<i>Arnica fulgens</i>	Not affected				
	<i>Artemisia tripartita</i> ssp. <i>tripartita</i>	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend
	<i>Asplenium septentrionale</i>	Not affected				
	<i>Astragalus inversus</i>	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend
	<i>Astragalus pauperculus</i>	Not affected				
	<i>Betula glandulosa</i>	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<i>Botrychium simplex</i>	Not affected				
	<i>Brasenia schreberi</i>	Not affected				
	<i>Calystegia atriplicifolia</i> ssp. <i>Buttensis</i>	Not affected				
	<i>Cardamine bellidifolia</i> var. <i>pachyphylla</i>	Not affected				
	<i>Carex davyi</i>	May be affected, not contributing to a downward trend				
	<i>Carex geyeri</i>	Not affected				
	<i>Carex lasiocarpa</i>	Not affected				
	<i>Carex limosa</i>	Not affected				
	<i>Carex petasata</i>	May be affected, not contributing to a downward trend				
	<i>Caulanthus major</i> var. <i>nevadensis</i>	Not affected				
	<i>Claytonia palustris</i>	May be affected, not contributing to a downward trend				
	<i>Crataegus</i> <i>castlegarensis</i>	Not Affected	May be affected, not contributing to a downward trend	Not Affected	May be affected, not contributing to a downward trend	Not Affected
	<i>Dimeresia howellii</i>	Not affected				
	<i>Drosera anglica</i>	Not affected				
	<i>Erigeron inornatus</i> var. <i>calidipetris</i>	May be affected, not contributing to a downward trend				
	<i>Erigeron nivalis</i>	Not affected				
	<i>Erigeron petrophilus</i> var. <i>sierrensis</i>	Not affected				

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<i>Eriogonum ovalifolium</i> <i>var. depressum</i>	May be affected, not contributing to a downward trend				
	<i>Eriogonum</i> <i>pyrolifolium var.</i> <i>pyrolifolium</i>	Not Affected				
	<i>Eriogonum tripodum</i>	May be affected, not contributing to a downward trend	Not Affected	Not Affected	May be affected, not contributing to a downward trend	Not Affected
	<i>Eriogonum</i> <i>umbellatum var.</i> <i>ahartii</i>	Not affected				
	<i>Eriophorum gracile</i>	Not affected				
	<i>Gratiola heterosepala</i>	Not affected				
	<i>Hackelia amethystina</i>	May be affected, not contributing to a downward trend				
	<i>Hackelia cusickii</i>	Not affected				
	<i>Hesperocyparis bakeri</i>	May be affected, not contributing to a downward trend				
	<i>Hulsea nana</i>	Not affected				
	<i>Iliamna bakeri</i>	Not affected				
	<i>Juncus hemiendytus</i> <i>var. abjectus</i>	May be affected, not contributing to a downward trend				
	<i>Lilium humboldtii ssp.</i> <i>Humboldtii</i>	Not affected				
	<i>Limnanthes floccosa</i> <i>ssp. Floccosa</i>	Not affected				
	<i>Lupinus dalesiae</i>	Not affected				
	<i>Lycopus uniflorus</i>	Not affected				
	<i>Lysimachia thyrsoiflora</i>	Not affected				

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<i>Meesia triquetra</i>	Not affected				
	<i>Mimulus glaucescens</i>	Not affected				
	<i>Mimulus pygmaeus</i>	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend
	<i>Muhlenbergia jonesii</i>	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend
	<i>Navarretia subuligera</i>	Not affected				
	<i>Nemophila breviflora</i>	Not affected				
	<i>Packera indecora</i>	Not affected				
	<i>Penstemon cinicola</i>	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend
	<i>Penstemon heterodoxus var. shastensis</i>	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend
	<i>Penstemon janishiae</i>	Not affected				
	<i>Phlox muscoides</i>	Not affected				
	<i>Piperia colemanii</i>	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend
	<i>Pogogyne floribunda</i>	Not affected				
	<i>Polycytenium fremontii var. fremontii</i>	Not affected				
	<i>Polygonum bidwelliae</i>	Not affected				
	<i>Polystichum kruckebergii</i>	Not affected				
	<i>Polystichum lonchitis</i>	Not affected				
	<i>Potamogeton praelongus</i>	Not affected				
	<i>Potamogeton robbinsii</i>	Not affected				

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<i>Potentilla newberryi</i>	Not affected				
	<i>Rhynchospora alba</i>	Not affected				
	<i>Schoenoplectus heterochaetus</i>	Not affected				
	<i>Schoenoplectus subterminalis</i>	Not affected				
	<i>Scutellaria galericulata</i>	Not affected				
	<i>Senecio hydrophiloides</i>	Not affected				
	<i>Silene occidentalis ssp. Occidentalis</i>	Not affected				
	<i>Sparganium natans</i>	Not affected				
	<i>Stellaria longifolia</i>	Not affected				
	<i>Stellaria obtusa</i>	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend	May be affected, not contributing to a downward trend
	<i>Stenotus lanuginosus</i>	Not affected				
	<i>Streptanthus longisiliquus</i>	Not affected				
	<i>Stuckenia filiformis ssp. Alpina</i>	Not affected				
	<i>Subularia aquatica ssp. Americana</i>	Not affected				
	<i>Thermopsis californica var. argentata</i>	Not affected				
	<i>Trifolium andersonii ssp. Andersonii</i>	Not affected				
	<i>Trillium ovatum ssp. Oettingeri</i>	Not affected				
	<i>Utricularia intermedia</i>	Not affected				
	<i>Utricularia minor</i>	Not affected				

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<i>Utricularia ochroleuca</i>	Not affected				
	Invasive Plants	Very Low Risk				
Special Interest Areas	Montgomery Creek Grove Botanical Area Murken Botanical Area Willow Lake Bog Botanical Area	Compliant with purpose of establishment				
<b>Heritage Resources</b>	Effects to heritage resources	No adverse effect	No adverse effect	No adverse effect	Adverse effect	No adverse effect
<b>Terrestrial Wildlife</b>						
	Giant garter snake ( <i>Thamnophis gigas</i> )	NE	NE	NE	NE	NE
	Sierra Nevada red fox ( <i>Vulpes vulpes necator</i> )	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	Gray wolf ( <i>Canis lupus</i> )	NLAA	NLAA	NLAA	NLAA	NLAA
	California wolverine ( <i>Gulo gulo luteus</i> )	Will not jeopardize	NJ	NJ	NJ	NJ
	Northern spotted owl ( <i>Strix occidentalis caurina</i> )	NLAA	NLAA	NLAA	NLAA	NLAA-B
	Northern spotted owl Designated critical habitat	NE	NE	NE	NE	NE
	Valley elderberry long- horned beetle	NE	NE	NE	NE	NE

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<i>(Desmocerus californicus dimorphus)</i>					
	Valley elderberry long-horned beetle Designated critical habitat	NE	NE	NE	NE	NE
	Yellow-billed cuckoo <i>(Coccyzus americanus)</i>	NE	NE	NE	NE	NE
	Yellow-billed cuckoo Proposed critical habitat	NE	NE	NE	NE	NE
	Fisher <i>(Pekania pennanti)</i>	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	Pacific marten <i>(Martes caurina)</i>	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	Fringed myotis <i>(Myotis thysanodes)</i>	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	Pallid bat <i>(Antrozous pallidus)</i>	May impact individuals, but not likely to lead to a loss of viability or a	May impact individuals, but not likely to lead to a loss of viability or a	May impact individuals, but not likely to lead to a loss of viability or a	May impact individuals, but not likely to lead to a loss of viability or a	May impact individuals, but not likely to lead to a loss of viability or a

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
		trend toward Federal listing				
	Townsend's big-eared bat ( <i>Corynorhinus townsendii</i> )	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	Bald eagle ( <i>Haliaeetus leucocephalus</i> )	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	California spotted owl ( <i>Strix occidentalis occidentalis</i> )	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	Great gray owl ( <i>Strix nebulosa</i> )	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	Greater Sandhill crane ( <i>Grus canadensis tabida</i> )	No impact				
	Northern goshawk ( <i>Accipiter gentilis</i> )	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing	May impact individuals, but not likely to lead to a loss of viability or a trend toward Federal listing
	Willow flycatcher	No impact				

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	<i>(Empidonax traillii)</i>					
	Yellow rail <i>(Coturnicops noveboracensis)</i>	No impact				
	Shasta Hesperian snail <i>(Vespericola shasta)</i>	No impact				
	Western bumble bee <i>(Bombus occidentalis)</i>	No impact				
<b>Fisheries and Aquatic Resources</b>						
	Chinook salmon, Central Valley Spring Run ESU Threatened	May affect, not likely to adversely affect				
	Critical Habitat	May affect, not likely to adversely affect				
Central Valley Steelhead	Threatened	May affect, not likely to adversely affect				
	Critical Habitat	May affect, not likely to adversely affect				
Sierra Nevada Yellow-legged Frog	Endangered	No effect				
Sierra Nevada Yellow-legged Frog	Suitable Habitat	May affect, not likely to adversely affect				
Cascades frog	Forest Service Sensitive	May affect individuals, but is not likely to result in a trend toward Federal listing or	May affect individuals, but is not likely to result in a trend toward Federal listing or	May affect individuals, but is not likely to result in a trend toward Federal listing or	May affect individuals, but is not likely to result in a trend toward Federal listing or	May affect individuals, but is not likely to result in a trend toward Federal listing or

Resource/ Condition	Impacts Considered/ Indicators	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
		loss of viability in the planning area				
Black juga	Forest Service Sensitive	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability in the planning area	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability in the planning area	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability in the planning area	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability in the planning area	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability in the planning area

## Chapter 3. Affected Environment and Environmental Consequences

### Introduction

This chapter presents the relevant resource components of the existing environment—the baseline environment. It describes the resources of the area that would be affected by the alternatives. This chapter also discloses the environmental effects of implementing the alternatives. These form the scientific and analytical basis for comparing the alternatives described in chapter 2.

Chapter 3 explains the basic components of the analysis followed by a section on each resource. This should provide the reader a better understanding of the overall designations of trails and areas for over-snow vehicles within the planning area. Area size and trail mileage totals are approximate within tables and text due to rounding.

This revised draft environmental impact statement (RDEIS) looks at effects within the Lassen National Forest. The effects of the modified proposed action were aggregated rather than describing the site-specific effect at each road or trail, unless necessary for a particular sensitive resource or concern area. For instance, specialists' reports describe the overall effects of reducing or allowing places people could ride OSVs instead of listing every route and predicting the effects at a particular site.

Most specialists used Geographic Information System (GIS) to calculate the miles and areas affected, or to model habitats. If specialists used models other than GIS, it would be described in their report.

It was assumed that OSV use would occur where it is proposed. In doing so, the effects analysis describes the effects resulting from the change between where people are riding OSVs (alternative 1) and where people would ride OSVs (alternatives 2, 3, and 4).

### OSV Use Assumptions

Assumptions regarding areas of high, moderate, low and potential OSV use were identified on an assumptions map. These assumptions will be utilized by all resource specialists when conducting their analyses. Refer to the Assumptions Maps, in appendix G for a visual depiction of where these areas are located.

**High use:** Areas within 0.5 mile of staging areas and of groomed trails; meadows within 0.5 mile of a groomed trail.

**Moderate use:** Areas within 0.5 mile of marked (not groomed) trails; areas between 0.5 mile and 1.5 miles of groomed routes; meadows 10 acres or greater in size or 0.5 to 1.5 miles from OSV trails.

**Low use:** Areas where OSV use is prohibited or restricted under current management; areas below 5,000 feet elevation; CWHV Vegetation 2D, 3D, 4D, 4M; vegetation types 5 and 6 with a slope greater than 20 percent; meadows 30 acres or greater, 1.5 miles or greater from OSV trail; areas more than 1.5 miles from groomed OSV trail; areas more than 0.5 mile from marked (not groomed) OSV trail.

General characteristics of existing OSV use on the forest are as follows:

1. Overall use of OSVs on the Lassen is limited relative to other forests in the Sierra Nevada and across the nation. Visitor use, based on 2001, 2005, and 2010 National Visitor Use Monitoring (NVUM) surveys as well as the State OHV Program EIR (2009) is characterized as follows:
  - a. Total annual visits to the forest by OSV uses varies from 7,000 to 25,000; average annual use over the last 15 years is estimated at approximately 10,000 OSV visits per winter season.
  - b. Weekend and holiday use of the forest by OSV uses is highest with an estimated average of approximately 212 OSVs on the forest per weekend/holiday day; during the week, forest-wide use is estimated at approximately 42 OSVs per day (CA State EIR (2009) data).
  - c. OSV use is primarily day use (generally 10:00 a.m. to 3:00 p.m.); OSV trail grooming occurs at night.
2. The majority of OSV use occurs on the groomed trail system. This information is derived from field observations conducted by recreation and patrol staff over the years and accounts of OSV users, themselves. For analysis purposes, high OSV use is considered to occur within 0.5 mile of groomed trails and staging areas; moderate use is considered to occur within 0.5 mile of marked (not groomed) trails and areas between 0.5 and 1.5 miles of any groomed trail; the remaining area of the forest receives little or no OSV use.
3. There is limited OSV use on steep slopes with heavy forest cover/high tree density. For analysis purposes, we assume no use on slopes 35 percent or greater.
4. The months with the highest OSV use are January and February.
5. State OHV standards for grooming identify 12 inches to 18 inches as minimum for all grooming activities. Our interpretation of this guideline implies a minimum 12 inches of snow for grooming in alternatives 1, 2, 4, and 5.
6. OSV parking areas are primary staging areas for OSV use; once snow on the groomed system melts at trailheads and along the immediate trail system leading from trailheads, OSV access to the larger cross-country open areas is no longer available. Similarly, OSV trailheads are generally located at lower elevations along main roadways, and as such, tend to melt prior to cross-country areas.
7. Groomed trails and designated but ungroomed trails almost entirely overlie NFS roads. The use of OSVs on groomed trails has equal or less effect than wheeled OHVs on the same routes.
8. Ungroomed trails receive 50 percent less use than groomed trails.
9. Groomed trails and trailheads provide a higher degree of educational messages including those regarding awareness of wildlife, encouraging trail sharing to avoid use conflicts, etc.
10. No OSV use is allowed on the Pacific Crest National Scenic Trail.
11. There are no identified crossings for OSVs to cross the Pacific Crest National Scenic Trail.

Additional resource specific assumptions utilized during effects analysis are disclosed in the applicable sections of this chapter.

## Adequate Snow Depth for OSV Use

In multiple reviews of best available scientific data, specialists have determined there is little or no science to support a universal snow depth for protection of multiple resources. Specialists believe this is due to differences in the snow depth to protect different resources, the variable nature of snowpack, and differences that occur regionally and nationally. For example, maritime snowpack (Sierra Nevada and Cascades) exhibits a greater accumulation than continental snowpack, but a shorter duration than continental snowpack (Rockies and Wasatch) and intermountain snowpack (Canadian Rockies and Bitterroots). Additionally, maritime snowpack exhibits the greatest ablation or snowmelt rates and the earliest onset of snowmelt. The snow level of maritime snowpack tends to occur at higher elevation than in other regions as well (Trujillo and Molotch 2014). These factors also create unique challenges for establishment of open seasonal dates.

The few empirical studies available do not provide a consistent conclusion regarding a snow depth at which multiple resources may be considered protected from OSV activities. In a report on the effects of winter recreation activities on subnivean species, Wildlife Resource Consultants (2004) reported that recreation probably plays a role, but the large number of variables present on the landscape prevent a confident conclusion. In this study, snowpack itself influenced the presence of these species, with larger snowpack having a greater negative effect. Other papers on subnivean fauna report that skiers actually may have a greater effect than snowmobilers because skis have a greater footload (weight per surface area) in comparison to a snowmobile track (Effects of Winter Recreation on Subnivean Fauna; In Olliff, et.al. 1999). In numerous additional studies, while there is a correlation between increasing compaction of snow and effects on small mammals, the results are not clear and most conclude that additional research is needed.

Studies on the effects of snow depth or snow compaction on vegetation are equally inconclusive. Again, there is a recognition that increasing snow depth provides some measure of protection, but no empirical studies exist that identify a specific cut-off depth. Vegetation studies in the Greater Yellowstone Area (Effects of Winter Recreation on Vegetation; In Olliff et al. 1999) indicate that there is little information available describing the ecological effects of snowmobiling and other winter recreational activities. They further show that the impact of snowmobile activities on the physical environment varies considerably with winter severity, the depth of snow accumulation, the intensity of snowmobile traffic, and the susceptibility of the organism to injury. Interestingly, one of the few empirical studies identifying a critical snow depth indicates that where snow cover exceeded 3 inches in depth there were no detrimental effects on grass or vegetation stands, although these were largely non-forest species (Proceedings of the 1973 Snowmobile and Off the Road Vehicle Symposium; 1974).

In arriving at a relatively consistent determination regarding the best estimate of a minimal depth necessary to protect resources, specialists monitoring the conditions on the ground provide most reliable current estimates of protective snow depth. The California State Historical Preservation Office (SHPO), in their programmatic agreement with Region 5 forests on the protection of cultural resources has stipulated that 12 inches of snow or ice is considered sufficient for resource protection. Similarly, the California Department of Parks and Recreation, Winter Recreation Division, has identified 12 inches of snow depth as the minimum needed for grooming operations in order to protect their machines and the underlying natural surface. Finally, U.S. Forest Service staff at the forest and district level have decades of experience managing for OSV use and monitoring its effects. OSV managers, groomers, and other specialists with field knowledge of OSV use have observed timing of OSV use, weather and snowpack patterns, resource conditions throughout the winter season and during the summer season to develop their empirical understanding of appropriate measures needed for OSV management and for resource protection. Generally, staff agree in the Sierra Nevada range, that 12 inches of snow provides adequate protection for resources in areas open to OSV use.

## Past, Present, and Reasonably Foreseeable Actions

The interdisciplinary team considered the effects of past actions as part of the existing condition. The current conditions are the sum total of past actions. The Council on Environmental Quality recognizes “agencies can conduct an adequate cumulative effects analysis by focusing on current aggregate effects of past actions without delving into the historical details of individual past actions” (Council on Environmental Quality 2005). Innumerable actions over the last century and beyond have shaped the Lassen National Forest’s current designated road system within the planning area. Attempting to isolate and catalog these individual actions and their effects would be nearly impossible. By looking at current conditions, the effects of past human actions and natural events, regardless of which event contributed to those effects are captured.

Courts have interpreted a “reasonably foreseeable future action” as one that has been proposed and is in the planning stages. To analyze the cumulative effects of present and reasonably foreseeable future actions, each resource specialist looked at the list of projects in appendix H. They identified the ones expected to cause effects to their resource, at the same time and in the same place as effects from the modified proposed action or alternatives.

## Specialist Reports

Relevant resource components from each resource specialist’s report are highlighted in this chapter. Components include the existing environment, which is the baseline environmental condition as described under alternative 1, and the anticipated environmental effects of implementing the range of alternatives. Please see appendix B for forest plan consistency for each resource.

This RDEIS incorporates by reference the resource specialists’ reports in the Project Record (40 CFR §1502.21). These reports contain the detailed data, executive summaries, regulatory framework, specific resource assumptions and methodologies, analyses, conclusions, maps, references, and technical documentation that the resource specialists relied upon to reach their conclusions.

## Recreation Resources

This analysis considers and discloses potential effects to recreation settings and opportunities, access, scenery, and areas designated as non-motorized under existing law or policy such as: Wilderness, Inventoried Roadless Areas, Wild and Scenic rivers, national trails, and Research Natural Areas that could result from the following proposed actions on the Lassen National Forest:

- Designating trails and areas for over-snow vehicle (OSV) use
- Identifying snow trails for grooming for snowmobile use

Designating trails and areas for OSV use has the potential to change recreation settings and opportunities by enhancing opportunities for motorized winter users in some areas and limiting those opportunities in other areas. In the same way, OSV designations have the potential to enhance opportunities for non-motorized winter users in some areas while limiting or displacing those users in other areas. Conflict between motorized and non-motorized winter users arises due to differing desired recreation experiences, public safety concerns, noise, air quality, and access issues. OSV use and the grooming of snow trails for OSV use has the potential to impact areas designated as non-motorized under existing law or policy that are managed for non-motorized recreation opportunities through incidental noise emanating from trails and areas where OSV use would be designated, increased human presence, and illegal encroachment on trails and areas where OSV use would not be designated (i.e., Pacific Crest National Scenic Trail, Wilderness).

This analysis compares alternatives that would result in varying levels of snowmobile use on the Lassen National Forest. The analysis considers the extent to which the alternatives respond to recreation management direction established in the Lassen National Forest Land and Resource Management Plan (LRMP or forest plan), as amended; the Sierra Nevada Forest Plan Amendment; and the requirements of Subpart C of the Forest Service’s Travel Management Regulations (36 CFR Part 212).

The designation of trails and areas for OSV use is not intended to be a comprehensive winter recreation planning effort. The focus is on OSV use designations and identification of OSV trails for grooming. This analysis considers how the proposed actions and alternatives would potentially impact quality recreation opportunities and experiences for both motorized and non-motorized users.

In accordance with the Travel Management Regulations, and following a decision on the OSV use designations as required by Subpart C of those regulations, the Forest Service would publish an over-snow vehicle use map (OSVUM) identifying snow trails and areas that would be designated for public OSV use on the Lassen National Forest. Public OSV use that is inconsistent with the OSVUM would be prohibited under Federal regulations at 36 CFR §261.14.

## **Relevant Laws, Regulations, and Policy**

### **Regulatory Framework**

#### *National Forest Management Act*

Specifically for off-highway vehicle management, the National Forest Management Act (NFMA) requires that this use be planned and implemented to protect land and other resources, promote public safety, and minimize conflicts with other uses of the National Forest System (NFS) lands. NFMA also requires that a broad spectrum of forest and rangeland-related outdoor recreation opportunities be provided that respond to current and anticipated user demands.

#### *Sierra Nevada Forest Plan Amendment*

The Sierra Nevada Forest Plan Amendment established standards and guidelines specific to wheeled motor vehicle travel off of designated routes, trails, and limited off-highway vehicle (OHV) use areas. Unless otherwise restricted by current forest plans or other specific area standards and guidelines or forest orders, cross-country travel by OSVs would continue (forest-wide standard and guideline number 69 (USDA Forest Service 2009)).

#### *Land and Resource Management Plan*

The 1992 Lassen LRMP summarizes the dispersed recreation opportunities relevant to winter use as follows:

*Recreationists hike and horseback ride, mainly on 465 miles of trails; they also snowmobile and cross-country ski on trails, unplowed roads, and open areas. The Forest has 125 miles of the Pacific Crest National Scenic Trail, and several National Recreation Trails: the McGowan Cross Country Ski Trail, Colby Meadows, Swain Mountain, the Heart Lake Trail, and the Spencer Meadow Trail...The Bizz Johnson Trail (a “Rails to Trails” project) provides excellent opportunities for hiking, biking, and cross-country skiing between Westwood and Susanville....Cross-country skiers ski the McGowan Cross Country Ski Trail and the Butte Lake Trail. Much of the Forest's road system is skiable during winter months when snow plowing does not occur. Use of the Forest trail system is light to moderate and its user capacity is undetermined. New trails would be built to improve or disperse existing use and provide*

*additional opportunities. Reconstruction is generally a higher priority than new construction. (LRMP 3-21)*

*Because snowmobile use has increased recently, the Forest has improved snowmobiling opportunities by constructing snowmobile parking areas and warming huts financed by State Off-Highway Vehicle funds. Additional OHV recreation developments are likely (LRMP 3-33).*

The Lassen LRMP provides forest-wide and management area-specific standards and guidelines relevant to winter recreation as follows:

**Forest Goals:**

**Recreation:**

(a) Provide a wide range of outdoor recreation opportunities to meet public demand by furnishing different levels of access, service, facilities, and information.

d. Provide diverse opportunities for winter sports.

**Visual Resources:**

a. Throughout the Forest, maintain visual quality commensurate with other resource needs. Adopt and apply specific visual quality objectives (VQOs) for all areas of the Forest.

**Wild and Scenic Rivers:**

b. Protect and enhance outstandingly remarkable values and free-flowing condition of recommended and designated wild and scenic rivers.

**Wilderness and Further Planning Areas**

a. Protect wilderness character in designated and recommended Wilderness.

**Special Areas**

a. Protect areas of outstanding scientific, scenic, botanic or geologic value as research natural areas (RNAs), or special interest areas (SIAs).

**Standards and Guidelines:**

**15. Recreation**

(a)(3). Manage recreation according to the recreation opportunity spectrum (ROS) classes described in the ROS User's Guide, as specified in Appendix J [of the forest plan], and the Management Prescriptions Refer to the separate ROS Map for the distribution of ROS classes throughout the Forest.

(b)(1) Continue to implement the preferred alternative of the 1989 Winter OHV Management Plan, for the construction of trailheads and trail networks for winter recreation.

(b)(2) Cooperate with the State of California to identify locations where snow removal is needed to accommodate safe, off-highway parking for dispersed winter use.

(b)(3) Designate and mark trails needed for additional dispersed winter recreation.

(b)(4) Designate and sign cross-country ski trails.

(b)(5) Accommodate snowmobile use over most of the Forest where not in conflict with other uses or resources. Due to the dispersed nature of the activities, do not provide regular patrols. Provide first aid services only as Forest personnel happen to be available.

(b)(6) Minimize user conflicts by specifying allowable winter use on certain roads and trails (for example cross-country ski trails, snowmobile-only trails or winter 4-wheel drive only).

(b)(7) Prohibit snow removal on designated snowmobile and cross-country ski trails between specified dates.

(b)(8) Areas for snow play will not be designated. (LRMP 4-34)

### **18. Special Areas**

(a)(4) Protect and preserve the values of each special area as identified in an establishment report or area management plan, in conformance with the Special Areas Prescription and Management Area direction.

### **23. Wild and Scenic Rivers**

(b)(1) Administer river corridors commensurate with their proposed Wild and Scenic designations, as provided in the Wild and Scenic Rivers Act, the Special Areas Prescription, and Management Area direction.

### **24. Wilderness and Further Planning Areas**

(a)(1) Conduct management activities according to the Wilderness Act of 1964, the Wilderness Prescription in this Plan, and any applicable wilderness plan.

### **Desired Condition**

The desired future condition for recreation and areas designated as non-motorized under existing law or policy is described in the Lassen LRMP as follows:

*Recreation facilities are well maintained and are sufficient to handle the increased demand. Wilderness, semi-primitive, Wild and Scenic Rivers, Special Interest Areas, and other special areas are managed to provide generally primitive recreational experiences while maintaining healthy, natural ecosystems (LRMP 4-2).*

The desired future condition for scenery is described in the Lassen LRMP as follows:

*The appearance of the Forest from designated throughways and vantage points appears mostly unchanged by management activities, from other areas, harvest openings and roads may be visible (LRMP 4-3).*

The desired outcome of this OSV use designation process would be a manageable, designated OSV system of trails and areas within the Lassen National Forest, which is consistent with and achieves the purposes of the Forest Service Travel Management Regulations at 36 CFR Part 212, Subpart C. The system of trails and areas will provide access, ensure that OSV use occurs when there is adequate snow, promote the safety of all users, enhance public enjoyment, minimize impacts to natural and cultural resources, and minimize conflicts among the various uses.

This is consistent with the goal in the Lassen LRMP to provide diverse opportunities for winter sports.

### **Management Area**

#### **F – Riparian – Fish Prescriptions (Recreation)**

3. Confine off-highway vehicles, except over-snow vehicles, to designated roads, trails, and stream crossings in riparian areas. (LRMP 4-75)

### **M – Semi-Primitive Motorized Recreation**

This prescription is derived from the Recreation Opportunity Spectrum (ROS) class of semi-Primitive Motorized (SPM) (see Appendix J [of the Forest Plan] for the definition of this class). It is intended to facilitate dispersed, motorized recreation, such as snowmobiling, four-wheel driving, and motorcycling, in areas essentially undisturbed except for the presence of four-wheel drive roads and trails. Non-motorized activities such as hiking, fishing, hunting, picnicking, and cross-country skiing are also possible. Motorized travel may be seasonally prohibited or restricted to designated routes to protect other resources. (LRMP 4-60)

### **N – Semi-Primitive Non-Motorized Recreation:**

This prescription is derived from the Recreation Opportunity Spectrum (ROS) class of Semi-Primitive Non-Motorized (SPNM). See Appendix J [of the Forest Plan] for the definition of this class. It is intended to facilitate dispersed recreation such as hiking, mountain bicycling, horseback riding, hunting, and cross-country skiing in unroaded, essentially undisturbed areas outside of existing and proposed wilderness areas. Motorized recreation is prohibited (LRMP 4-63).

Prohibit motorized recreation, including four wheel driving, motorcycling, and snowmobiling (LRMP 4-64).

### **S – Special Areas**

Recreation: 2. Prohibit motorized vehicles within Research Natural Areas (LRMP 4-68).

Wild and Scenic Rivers: 1. Allow public recreation and other resource use activity based on the recommended category of each river segment (LRMP 4-69).

### **W – Wilderness Prescription**

The prescription specifies management direction in accordance with the Wilderness Act of 1964, assuming no permanent or long-lasting evidence of human use. Motorized and mechanized equipment is prohibited (LRMP 4-76).

### **Management Areas – Logan:**

Recreation: 1. Continue designation of trails and restrict snow plowing of snowmobile trails for timber sales between December 1 and April 1 (LRMP p 4-118).

### **Special Area Designations**

Special area designations present within the Lassen National Forest include eligible Wild and Scenic Rivers, Wilderness, proposed wilderness, Inventoried Roadless Areas, national trails, and Research Natural Areas.

### *Federal Law*

The proposed OSV designations will be reviewed to determine their consistency with the following applicable laws, regulations and policies:

- Wilderness Act of 1964 and applicable Wilderness Implementation Plans
- Wild and Scenic Rivers Act of 1968 and applicable Wild and Scenic River Plans
- National Trails System Act of 1968 (P.L. 90-543) and the Pacific Crest National Scenic Trail Comprehensive Plan (USDA Forest Service 1982)
- 36 CFR §261.20 which prohibits use of a motorized vehicle on the Pacific Crest National Scenic Trail without a special-use authorization

- 2001 Roadless Area Final Rule (36 CFR Part 294)
- 2005 Travel Management Regulation – Subpart C (36 CFR Parts 212 and 261) as amended in 2015 - Use by Over Snow Vehicles (Travel Management Regulation)

### *Executive Orders*

Executive Order 11644 of February 8, 1972, as amended by Executive Order 11989 of May 24, 1977, and by Executive Order 12608 of September 9, 1987, requires certain Federal agencies, including the Forest Service, to “ensure that the use of off-road vehicles on public lands [is] controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands.”

### *Other Guidance or Recommendations*

National Best Management Practices for Water Quality Management on National Forest System Lands – Rec – 7 Over-Snow Vehicle Use (USDA Forest Service 2012).

The California Off-Highway Motor Vehicle Recreation Division of the California Department of Parks and Recreation provides funding for operating, maintaining, and grooming of winter recreation trails and trailheads in mountainous regions throughout California. OSV trail grooming and ancillary activities, such as trailhead plowing and maintenance are described in detail in the OSV Program Draft and Final Environmental Impact Report (EIR), Program Years 2010–2020. The EIR includes annual monitoring and reporting requirements for Forest Service participation in the grooming program (California Department of Parks and Recreation 2010).

## **Topics and Issues Addressed in This Analysis**

### **Purpose and Need**

The existing system of public OSV snow trails and areas on the Lassen National Forest is the culmination of multiple agency decisions over recent decades. Public OSV use of the majority of this available system continues to be manageable and consistent with the Travel Management Regulations. Exceptions have been identified, based on internal and public input and the criteria listed at 36 CFR §212.55.

The Forest Service has identified areas in which public OSV use would be prohibited under existing forest plan management direction, but there are no existing orders or directives that have formally prohibited public OSV use within them. These areas total 42,850 acres in addition to the 185,990 acres of National Forest System land that are currently closed to OSV use. Other than being inconsistent with existing management direction, some of these areas are also in lower elevations that do not typically receive sufficient snow for OSV use; are interspersed among areas currently closed to OSV use, such as wilderness, proposed wilderness, and areas classified as semi-primitive non-motorized in the recreation opportunity spectrum; have limited access, except from adjacent private land; or are small areas adjacent to pedestrian trails that are currently closed to motorized use.

The desired conditions for recreation (winter sports) are found on pages 4-4 to 4-5 of the Lassen National Forest LRMP. The desired conditions specific to this project state:

- Provide a wide range of outdoor recreation opportunities to meet public demand by furnishing different levels of access, service facilities, and information.
- Provide diverse opportunities for winter sports.

Our project purpose and need was developed after considering our existing conditions and the desired conditions in our forest plan. The purpose (goals and objectives) of this project are to effectively manage public OSV use on the Lassen National Forest and to comply with the settlement agreement with Snowlands Network et al. Effective management would provide public OSV access, ensure that OSV use occurs when there is adequate snow, promote the safety of all uses, enhance public enjoyment, minimize impacts to natural and cultural resources, and minimize conflicts among the various uses.

There is a need to provide a manageable, designated OSV system of trails and areas within the Lassen National Forest that is consistent with and achieves the purposes of the Forest Service Travel Management Regulations at 36 CFR part 212, Subpart C.

There is a need to designate an OSV system of trails and areas within the Lassen National Forest that provides public access, promotes the safety of all uses, enhances public enjoyment, minimizes impacts to natural and cultural resources, and minimizes conflicts among various resources.

There is a need to correct inconsistencies with existing management direction and OSV use on the Lassen National Forest.

There is a need to provide a high quality OSV trail system on the Lassen National Forest that is smooth and stable for the novice rider so they can use them without difficulty.

### *Recreation Analysis*

The recreation opportunities and desired experiences for both motorized and non-motorized winter activities are key drivers behind the purpose and need for this analysis. Effectively managing OSV use and identifying snow trails for grooming would help the Forest Service address the forest plan goals of providing a wide range of outdoor recreation opportunities to meet public demand by furnishing different levels of access, service, facilities, and information, and providing diverse opportunities for winter sports on the Lassen National Forest (USDA Forest Service 1992).

## Significant Issues

### *Effects on the Availability of Motorized Over-snow Recreation Opportunities*

The decision has the potential to impact the opportunities for public access and use of NFS lands by OSV-equipped winter recreation enthusiasts seeking enjoyable and challenging motorized experiences. The designation of snow trails and areas for public OSV use has the potential to impact the opportunities these enthusiasts seek by:

- a. Changing the location of and/or reducing the amount of high quality and desirable areas designated for public, cross-country OSV use on the forest;
- b. Designating an insufficient number of opportunities for public OSV use of snow trails on the forest; and
- c. Providing an insufficient number of opportunities for public OSV use of groomed snow trails on the forest. These opportunities are subject to an external constraint due to limits on the amount of funding from the State of California for grooming snow trails for public OSV use. Snow trail grooming for OSV use on NFS land is 100 percent State-funded. The State's financial support of snow trail grooming for OSV use is not expected to increase.

Resource indicators and measures for this issue are shown in table 17.



**Table 17. Resource indicators and measures for the issue of availability of motorized over-snow recreation opportunities**

Impact	Resource Indicator	Measure
Changing the location of and/or reducing the amount of high-quality and desirable areas designated for public, cross-country OSV use on the forest	The area of National Forest System land designated for public, cross-country OSV use	Total area (acres) where public OSV use would be allowed; Percent change in total area (acres) where public OSV use would be allowed as compared to current management
Designating an insufficient number of opportunities for public OSV use of snow trails on the forest	Snow trails designated for public OSV use	Length of snow trail (miles) designated for public OSV use; Percent change in length of snow trail (miles) designated for public OSV use as compared to current management
Providing an insufficient number of opportunities for public OSV use of groomed snow trails on the forest	Groomed snow trails designated for public OSV use	Length of snow trail (miles) groomed for public OSV use; Percent change in length of snow trail (miles) groomed for public OSV use as compared to current management

#### *Availability of Non-motorized Recreation Opportunities*

The decision has the potential to impact the opportunities for public access and use of NFS lands by non-motorized winter recreation enthusiasts seeking solitude and challenging physical experiences. The designation of snow trails and areas for public OSV use and grooming of snow trails for OSV use has the potential to impact the opportunities these enthusiasts seek by:

- a. Displacing non-motorized winter recreation enthusiasts, or requiring them to travel longer distances through motorized snow trails and areas than they are physically able to traverse to access their desired quiet, non-motorized experiences;
- b. Consuming untracked powder desired by backcountry skiers;
- c. Making the snow surface difficult to ski on;
- d. Creating concerns for their safety when non-motorized winter recreationists share winter recreation routes and areas with OSVs;
- e. Creating noise impacts that intrude on the solitude these enthusiasts seek;
- f. Creating local air quality impacts that intrude on the unpolluted air and solitude these enthusiasts seek; and
- g. Creating visual impacts that intrude on the unaltered scenery these enthusiasts seek.

Resource indicators and measures for this issue are shown in table 4.

**Table 18. Resource indicators and measures for the issue of availability of non-motorized recreation opportunities**

Impact	Resource Indicator	Measure
Creating noise impacts that intrude on the solitude these enthusiasts seek	Potential noise impacts	Total area (acres) potentially affected by noise compared to the total area (acres) not designated for winter motorized use  Proximity of predicted noise increases above ambient levels in sensitive areas (GIS model for selected points)
	Proximity and frequency of OSV designations in relation to designated non-motorized areas (e.g., Wilderness, Inventoried Roadless, Lassen Volcanic National Park, Research Natural Areas (RNAs), Proposed Wilderness, Primitive and Semi-primitive Non-motorized ROS classifications)	Distance of groomed public OSV snow trails from designated areas/number of public OSV snow trails within designated areas, or number of crossings of linear designated areas
	Applicable wilderness capability attributes/characteristics (FSH) 1909.12 (72.1))	Total area (acres) affected and duration of impact. Qualitative description for each roadless area characteristic.
	Applicable Inventoried Roadless Area (IRA) criteria/characteristics (36 CFR §294.11)	Total area (acres) affected and duration of impact. Qualitative description for each roadless area characteristic.
Creating local air quality impacts that intrude on the unpolluted air and solitude these enthusiasts seek	Potential air quality impacts	Qualitative/narrative description of potential impacts (with reference to the air quality analysis)
	Proximity and frequency of OSV designations in relation to designated non-motorized areas (e.g., Wilderness, Inventoried Roadless, Lassen Volcanic National Park, RNAs, Proposed Wilderness, Primitive and Semi-primitive Non-motorized ROS classifications)	Distance of groomed public OSV snow trails from designated areas/number of public OSV snow trails within designated areas, or number of crossings of linear designated areas
	Applicable wilderness capability attributes/characteristics (FSH) 1909.12 (72.1))	Total area (acres) affected and duration of impact.  Qualitative description for each roadless area characteristic.
	Applicable Inventoried Roadless Area (IRA) criteria/characteristics (36 CFR §294.11)	Total area (acres) affected and duration of impact.  Qualitative description for each roadless area characteristic.

Impact	Resource Indicator	Measure
Creating visual impacts that intrude on the unaltered scenery these enthusiasts seek	Qualitative/narrative description of potential visual impacts	Qualitative description of potential effects
	Proximity and frequency of OSV designations in relation to designated non-motorized areas (e.g., Wilderness, Inventoried Roadless, Lassen Volcanic National Park, RNAs, Proposed Wilderness, Primitive and Semi-primitive Non-motorized ROS classifications)	Qualitative description of potential effects
	Applicable wilderness capability attributes/characteristics (FSH 1909.12 (72.1))	Qualitative description of potential effects
	Applicable Inventoried Roadless Area (IRA) criteria/characteristics (36 CFR §294.11)	Qualitative description of potential effects
Displacing non-motorized winter recreation enthusiasts, or requiring them to travel longer distances through motorized trails and areas than they are physically able to traverse to access their desired quiet, non-motorized experiences  Consuming untracked powder desired by backcountry skiers;  Making the snow surface difficult to ski on	Access to desired non-motorized settings and opportunities	Total area (acres) and trails (miles) available to non-motorized recreation enthusiasts within 10 miles of plowed trailheads
Creating concerns for their safety when non-motorized winter recreationists share winter recreation trails and areas with OSVs	Recreation Opportunity Spectrum (ROS)	Consistency of OSV designations with ROS classes
	Areas and trails available to non-motorized recreation enthusiasts for quality non-motorized recreation experiences	Total area (acres) designated for public OSV use, total area (acres) of non-motorized areas such as cross-country ski areas, non-motorized trail access

## Other Resource Concerns

Other resources relevant to this analysis that were addressed in public scoping comments include Wilderness, Research Natural Areas, Wild and Scenic Rivers, and the Pacific Crest National Scenic Trail.

## Methodology

This analysis used ArcMap and relevant Geographic Information System (GIS) data layers covering the Lassen National Forest, including recreation opportunity spectrum (ROS) classes, wilderness areas, inventoried roadless areas, national trails, wild and scenic rivers, research natural areas, etc. The GIS layer of proposed OSV designations and groomed trails was used as an overlay with the recreation settings and opportunities, scenery, access and designated area layers listed above to determine any potential conflicts.

forest plan direction was considered to ensure compliance with management direction. A review of existing law, regulation and policy relevant to recreation settings and opportunities, access, scenery, and designated area resources within the project area was completed and referenced where appropriate.

The requirements of the Travel Management Regulation, Subpart C, including the general criteria for designation of roads, trails and areas (36 CFR §212.55(a)):

- Natural and cultural resources
- Public safety
- Provision of recreational opportunities
- Access needs
- Conflicts among uses of NFS lands
- Need for maintenance and administration of roads, trails and areas that would arise if uses under consideration are designated and availability of resources for that maintenance and administration.

And the specific criteria to consider effects on the following with the objective of minimizing (36 CFR §212.55 (b)):

1. Damage to soil, watershed, vegetation, and other forest resources;
2. Harassment of wildlife and significant disruption of wildlife habitats;
3. Conflicts between motor vehicle use and existing or proposed recreational uses of NFS lands or neighboring Federal lands; and
4. Conflicts among different classes of motor vehicle uses of NFS lands or neighboring Federal lands.

In addition:

5. Compatibility of motor vehicle use with existing conditions in populated areas, taking into account sound, emissions, and other factors.

The NVUM results, California State Parks, California Outdoor Recreation Plan, National Recreation Survey and the Environment information and online visitor information sources provided by the Forest Service and other local organizations and industry was used as an overview of the recreation opportunities, visitor use, and trends within the analysis area. The Recreation Facility Analysis niche statement was used to depict the importance of winter use (motorized or non-motorized) on the national forest; and secondly, consideration was given to how important the NFS lands are for this use (motorized or non-motorized) compared to other non-NFS lands.

The NVUM visitor use information from 2001, 2006, and 2010 was considered. The best available site-specific visitor use information for Lassen National Forest OSV use was from the 2009 OSV Winter Trailhead Survey conducted in support of the 2010 State OSV Program EIR for Program Years 2010–2020. OSV registration information for the State of California and for counties within the Lassen National Forest was also used to depict OSV use trends.

A case study and literature review of current information regarding motorized and non-motorized winter recreation trends and preferences; and coordination with local Forest Service specialists regarding on-the-ground conditions and use patterns were used to summarize existing conditions and potential impacts.

To evaluate potential impacts to recreation settings and opportunities, access, scenery, and designated area resources, each alternative will be compared using issues, indicators and measures defined below.

## Resource Indicators and Measures

The resource indicators and measures shown in table 19 will be used to measure and disclose effects to recreation resources related to OSV use designations and grooming trails for OSV use.

**Table 19. Recreation resource indicators and measures for assessing effects**

<b>Resource Element</b>	<b>Resource Indicator</b>	<b>Measure (Quantify if possible)</b>	<b>Used to address: Purpose and Need (P/N), or key issue?</b>	<b>Source (LRMP S&amp;G,<sup>7</sup> law or policy, BMPs,<sup>8</sup> etc.)?</b>
<b>Motorized Recreation Opportunities – cross-country</b>	Opportunities for motorized winter uses	Total area (acres) open to OSV use, percent change	P/N	LRMP Forest Goals, Recreation: <i>d. Provide diverse opportunities for winter sports</i> , and LRMP S&G 15 Recreation. (b)(5) <i>Accommodate snowmobile use over most of the Forest where not in conflict with other uses or resources...</i> Travel Management Regulation (36 CFR Part 212), Subpart C.
<b>Motorized Recreation Opportunities – designated snow trails</b>	OSV trail designations	Length of designated OSV trails (miles), percent change	P/N	Travel Management Regulation (36 CFR Part 212), Subpart C.
<b>Motorized Recreation Opportunities – groomed snow trails</b>	OSV trail grooming	Length of groomed OSV trails (miles), percent change	P/N	Travel Management Regulation (36 CFR Part 212), Subpart C.
<b>Non-motorized Recreation Opportunities - displacement</b>	Access to desired non-motorized recreation settings and opportunities	Total area (acres) and length of trails (miles) available to non-motorized recreation enthusiasts within 10 miles of plowed trailheads	Significant Issue	Scoping, Civil Complaint
	Recreation Opportunity Spectrum	Consistency of OSV designations with ROS classes	Significant Issue	LRMP S&G 15 (3) – p 4-24: <i>Manage recreation according to the Recreation Opportunity Spectrum (ROS) classes described in the ROS User's Guide, as specified in Appendix J [of the Forest Plan], and the Management Prescriptions. Refer to the separate ROS Map for the distribution of ROS classes throughout the Forest.</i>

<sup>7</sup> Standard and guideline

<sup>8</sup> Best management practices

Resource Element	Resource Indicator	Measure (Quantify if possible)	Used to address: Purpose and Need (P/N), or key issue?	Source (LRMP S&G, <sup>7</sup> law or policy, BMPs, <sup>8</sup> etc.)?
<b>Non-motorized Recreation Conflicts - Public Safety</b>	Areas and trails available to non-motorized recreation enthusiasts for quality non-motorized recreation experiences	Total area (acres) closed to OSV use, percent change.	Significant Issue	Minimization Criteria: 36 CFR §212.55(b)(3): Consider effects on the following with the objective of minimizing: <i>Conflicts between motor vehicle use and existing or proposed recreational uses of National Forest System lands or neighboring Federal lands; and (4) Conflicts among different classes of motor vehicle uses of National Forest System lands or neighboring Federal lands. In addition, the responsible official shall consider: (5) Compatibility of motor vehicle use with existing conditions in populated areas, taking into account sound, emissions, and other factors</i>
<b>Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas</b>	Proximity and frequency of OSV designations in relation to designated non-motorized areas	Distance of groomed public OSV snow trails from areas designated as non-motorized under existing law or policy, or number of crossings of linear areas designated as non-motorized under existing law or policy	Significant Issue	Wilderness Act of 1964 Wild and Scenic Rivers Act of 1968 National Trails System Act of 1968 Pacific Crest National Scenic Trail Comprehensive Plan
	Noise	Total area (acres) potentially affected by noise/total area (acres) closed to winter motorized use  Proximity of predicted noise increases above ambient levels in sensitive areas (GIS model for selected points)	Issue analyzed to inform analysis of significant issue	Minimization Criteria: 36 CFR §212.55(b)(3)
	Air Quality	Qualitative/narrative description of potential impacts (with reference to air quality analysis)	Issue analyzed to inform analysis of significant issue	Minimization Criteria: 36 CFR §212.55(b)(3)
	Scenery	Qualitative/narrative description of potential visual impacts	Issue analyzed to inform analysis of significant issue	

Resource Element	Resource Indicator	Measure (Quantify if possible)	Used to address: Purpose and Need (P/N), or key issue?	Source (LRMP S&G, <sup>7</sup> law or policy, BMPs, <sup>8</sup> etc.)?
	Wilderness Attributes	Total area (acres) affected and duration of impact. Qualitative description for wilderness attributes	Issue analyzed to inform analysis of significant issue	FSH 1909.12 (72.1)
	Roadless Characteristics	Total area (acres) affected and duration of impact. Qualitative description for roadless characteristics	Issue analyzed to inform analysis of significant issue	36 CFR §294.11

## OSV Use Assumptions for Analysis

The following OSV use assumptions were developed based on information in the State EIR and 2009 Trailhead Survey, and based on local knowledge and observations of resource specialists from the Lassen National Forest. The assumptions were mapped and used in this analysis to consider potential impacts from OSV designations and OSV trail grooming activities on recreation and areas designated as non-motorized under existing law or policy. These assumptions are based on topography, vegetation characteristics, and groomed OSV trail locations, which would remain the same in all alternatives. The maps of OSV use potential for the Almanor, Eagle Lake, and Hat Creek Ranger Districts are included as in appendix G of this RDEIS.

The OSV use assumptions include:

- Limited OSV use on steep slopes with heavy forest cover/high tree density (assume no use on slopes 35 percent or greater). In open terrain, with no trees, there is no slope-limiting factor for high-marking.
- Open areas with many shrubs, OSVs won't use without adequate snow depth.
- OSV use patterns:
  - Primarily day use (generally 10:00 am to 3:00 pm; grooming occurs at night).
  - OSV use is at the highest on weekends and holidays.
  - Highest concentrations of OSV use occur along groomed trails (this is supported by research documented in State EIR).
  - Concentrated use at trailheads.
  - Higher use in open meadows (concentrated on meadows with groomed trail access) and flatter areas.
  - OSV “high-marking” occurs primarily on slopes with open vegetation coverage, near groomed trails.
  - Lower elevations generally have less OSV use – snow occurs at lower elevations less frequently and does not persist for long periods of time (2 to 5 days), 3,500 feet and below for the Lassen.
- Ungroomed routes receive 50 percent less use than groomed routes (only 25,000 registered OSVs in California per State EIR, most use on groomed trails; if OSV trail grooming were discontinued, assume that use would decline by 50 percent).
- Groomed trails are suitable for OSVs other than snowmobiles (side-by-sides and quads on tracks, snowcats, etc.)
- Groomed trails provide a higher degree of educational messages including messages encouraging trail sharing to reduce potential use conflicts.

## Spatial and Temporal Context for Effects Analysis

### *Spatial Context:*

- Forest Boundary

### *Effects Timeframe:*

- Short-term effects occur within one year.
- Long-term effects occur up to 20 years.

## Affected Environment

### Existing Condition

#### *Recreation Settings and Opportunities*

The Lassen National Forest offers a variety of high-quality recreation opportunities in a range of settings, year round. Three geomorphic provinces meet within the national forest and contribute to its diversity—the Sierra Nevada Mountains, the Southern Cascade Mountains, and the Modoc Plateau. Elevations range from 900 feet to 8,677 feet. Topography varies from deep river canyons and vast sage brush flats to sharp rocky peaks. The forest completely surrounds Lassen Volcanic National Park, and the 10,457-foot Lassen Peak is a prominent feature that visitors view from many national forest locations. Proximity to the national park and a variety of access points from the forest increase visitors' opportunities for quiet recreation.

Other public lands adjacent to the Lassen National Forest include the Plumas National Forest (south), Shasta-Trinity National Forest (north), Bureau of Land Management (BLM) (north and east), and Tehama Wildlife area (State of California) (west). Private lands surrounding the Lassen National Forest vary between rural or sparsely populated to residential subdivisions. In addition, private timber companies like Sierra Pacific Industries, Collins Pine Company, Beaty & Associates, and Fruit Growers hold significant acreage (USDA Forest Service 2009).

#### **Recreation Niche**

The recreation niche is a characterization of the distinct role the national forest has in providing outdoor recreation opportunities to the public. The niche allows the Forest Service to focus management efforts on providing recreation opportunities related to what is unique and valuable about the Lassen. The recreation niche statement of Lassen National Forest is:

*Your Crossroads to Discovery—The Lassen National Forest is a crossroads of landscape and people. Here the granite of the Sierra Nevada, the lava of the Cascades and the Modoc Plateau, and the ranges of the Great Basin converge. The geologic crossroads has influenced the cultural crossroads throughout time. For generations, the Forest has and continues to provide quality of life and livelihood for local families and native people while enriching the experiences of a changing and diverse group of visitors. In this high country oasis, water is the key attraction. Large, high elevation lakes provide a social weekend get-away and clear streams offer premier fishing. The Volcanic Legacy All-American Road, Lassen Backcountry Discovery Trail and other major routes traverse the Forest offering outstanding viewing and learning opportunities and access to the Forest backcountry. (USDA Forest Service 2007)*

Water-based recreation, hiking or walking, viewing scenery and wildlife, developed camping, and driving for pleasure, as well as geologic and cultural interpretation, provide the focus for recreation on the Lassen National Forest. Four broad niches describe this focus: lakes and special waterways, travel ways, backcountry, and wildlands.

#### **Recreation Opportunity Spectrum**

The Forest Service uses the recreation opportunity spectrum (ROS) to inventory and describe the range of recreation opportunities available based on the following characteristics of an area: physical (characteristics of the land and facilities), social (interactions and contact with others), and managerial (services and controls provided). The recreational settings are described on a continuum ranging from Primitive to Urban. The ROS classes within the Lassen include Primitive (P), Semi-Primitive Non-

Motorized (SPNM), Semi-Primitive Motorized (SPM), Roded Natural (RN), and Rural (R). OSV designations that remain consistent with the ROS classes will provide for a diversity of opportunities for both motorized and non-motorized winter activities and the associated desired experiences.

**Primitive:** High opportunity for isolation from sights and sounds of man, unmodified natural environment. Very low interaction with other users.

**Semi-Primitive Non-Motorized:** Moderate opportunity for isolation from sights and sounds of man, natural appearing environment. Low interaction with other users.

**Semi-Primitive Motorized:** Moderate opportunity for isolation from sights and sounds of man, natural appearing environment. Low interaction with other users. Access permitted by four-wheel-drive or motor bikes.

**Roded Natural Appearing:** Sights and sounds of man are moderate. Mostly natural appearing as viewed from sensitive roads and trails. Landings, roads, slash, and other debris are evident. Access travel is conventional motorized.

**Rural:** Sights and sounds of man are evident. Natural environment is culturally modified, yet attractive. Access and travel facilities are for individual intensive motorized use.

A majority of Lassen National Forest acres are in the Roded Natural class.

**Table 20. Lassen National Forest recreation opportunity spectrum classes**

Recreation Opportunity Spectrum	ROS Class Acres
Primitive	3,393
Semi-Primitive Non-Motorized	146,387
Semi-Primitive Motorized	59,350
Roded Natural	910,774
Rural	9,681

LRMP Table 3.1 (3-21)

On the Lassen National Forest, all wilderness and proposed wilderness areas are classified as Semi-Primitive Non-Motorized and Primitive. All Semi-Primitive Non-Motorized and Primitive areas are closed to OSV use. Groomed trails are located in Semi-Primitive Motorized, Roded Natural, and Rural classes.

### Motorized Winter Recreation

The Lassen National Forest has a well-developed winter recreation program, which emphasizes snowmobile use. There are 2,952 miles of currently groomed, ungroomed, marked, and unmarked snow trail open to public OSV and non-motorized use as shown on the 2005 Lassen National Forest Winter Recreation Guide (project record). These trails overlie roads and trails designated for wheeled vehicle use and are within areas currently open to OSV use. Approximately 406 miles of these trails are maintained for OSV use through signage, snow trail grooming, or both.

For over 30 years, the Forest Service, Pacific Southwest Region, in cooperation with the California Department of Parks and Recreation (California State Parks) Off-highway Motor Vehicle Division has enhanced winter recreation, and more specifically, snowmobiling recreation by maintaining National

Forest System trails (snow trails) by grooming snow for snowmobile use. Plowing of local access roads and trailhead parking lots, grooming trails for snowmobile use, and light maintenance of facilities (e.g., restroom cleaning, garbage collection) are the essential elements of the OSV Program that keep the national forests open for winter recreation use.

The groomed OSV trail system on the Hat Creek, Eagle Lake, and Almanor Ranger Districts, and other geographic areas where OSV designations will be considered through this analysis are described below.

#### **Ashpan Snowmobile Area**

This area covers 82,910 acres of the Lassen National Forest under the proposed action. It consists of that portion of the Lassen National Forest that lies west and north of Highways 44/89 and south of Highway 299. The community of Old Station is located within this OSV area.

This is a popular area for OSV trail riding and also includes approximately 57 miles of groomed OSV trails accessed through the Ashpan OSV trailhead on Highways 44/89. Approximately 16 miles of these OSV trails are under Forest Service jurisdiction. The groomed trail system connects to the adjacent Latour State Forest, offering further opportunity for OSV recreation. Although it lacks jurisdiction to designate snow trails for OSV use on land that is not part of the National Forest System, the Forest Service still grooms the OSV trails in the Latour State Forest.

The Ashpan Snowmobile Area is located 4 miles northeast of the north entrance to Lassen Volcanic National Park. This trail system travels through mixed conifer forests with the higher sections containing views of Mount Lassen, Mount Shasta, and the upper Sacramento Valley. Trail elevations range from 5,400 feet to 6,000 feet. The Ashpan trailhead has a parking lot, warming hut, and restroom.

#### **Bogard Snowmobile Area**

This area covers 331,850 acres of the Lassen National Forest under the proposed action. It is bounded by Highway 44 to the south and west and by the forest boundary to the north and east in the northeastern part of the forest. This OSV area is accessible from the communities of Burney, Fall River, Old Station and Susanville and from the Bogard Trailhead on Highway 44.

This area also includes approximately 27 miles of groomed OSV trails connecting riders to several popular destination points.

#### **Fall River OSV Area**

This area covers 42,440 acres. It is not shown on the 2005 Winter Recreation Guide for the Lassen National Forest, but is open to OSV use. It is located in the vicinity of Lake Britton and MacArthur-Burney State Park. This area is also isolated from the remaining Lassen National Forest and comprises areas of the Shasta-Trinity National Forest administered by the Lassen National Forest. Nearby communities include Burney and Fall River. This area is within a zone of historically minimal snowfall and combined with the state park, tends to serve more as a focal point for non-motorized recreation. Although designated for OSV use, OSV opportunities are irregular throughout this area as there may not be sufficient snow in all parts of this area every year. No marked OSV trails currently exist in this area.

#### **Fredonyer Snowmobile Area**

The Fredonyer Snowmobile Area covers approximately 30,030 acres and is located on State Route 36, 10 miles west of Susanville. The area has 80 miles of groomed trails, a parking area, a warming hut, and a restroom.

The Fredonyer Snowmobile Area can be accessed from three different areas. Primary access is from the Fredonyer trailhead on State Route 36 at Fredonyer Pass. Additional pullout parking is available along the road shoulder, dependent upon plowed conditions. Willard Hill, a few miles farther east on State Route 36

also provides access with pullout parking along the road. South of Susanville, Gold Run Road (County Road 204) provides an ungroomed trail link to the Fredonyer trails.

The Fredonyer trails are located on both the north and south sides of State Route 36 with the northern trail route linking to the Swain Mountain Snowmobile Area. Trails on the south side of State Route 36 offer various loop trails which traverse through a combination of forest and open meadow and offer views of the Great Basin and the high country around Mount Lassen. Trail elevations range from 4,800 feet to 7,000 feet.

The Forest Service (Eagle Lake Ranger District) is responsible for operating and maintaining the Fredonyer Snowmobile Area. Caltrans provides plowed trailhead access, but a private vendor could provide the service under contract to the Forest Service (Lassen National Forest) in the future.

#### **Jonesville Snowmobile Area**

This area covers 122,550 acres of the Lassen National Forest. It is isolated by private land and the Plumas National Forest in the southern part of the forest. It is bounded by Highway 36 to the north, Lake Almanor to the east, and the forest boundary to the south and west. The Jonesville area is a popular OSV destination, especially for the communities of Chester and Lake Almanor.

The area also contains approximately 68 miles of groomed snow trails accessed from the Jonesville Trailhead on Humboldt Road and Highway the 89 Staging Area at County Road 308.

#### **Morgan Summit Snowmobile Area**

This area covers 125,220 acres of the Lassen National Forest. It lies on the west end of the forest and is bordered by Highway 32 and portions of Highway 36 to the south, Highway 44 to the north, Lassen Volcanic National Park to the east and the western borders of the forest. This area is largely centered around the communities of Mineral and Chester and winter recreation activities, predominately OSV use, contribute significantly to the social and economic health of the area.

This area also contains approximately 62 miles of groomed OSV trails, accessed by the Morgan Summit Trailhead on Highway 36.

#### **Shasta OSV Area**

This area covers 56,820 acres of the Lassen National Forest. It is not shown on the 2005 Winter Recreation Guide for the Lassen National Forest, but is open to OSV use. It is located in the extreme northern portion of the forest and is isolated from the remaining forest by private, state, and other agency lands. It comprises areas of the Shasta-Trinity National Forest that are administered by the Lassen National Forest. The community of Day is located within this area. The area is largely comprised of rough lava debris and historically has limited snowfall. Although designated for OSV use, OSV opportunities are irregular throughout this area as there may not be sufficient snow in all parts of this area every year.

No marked OSV trails currently exist in this area and none will be designated in this area for OSV use in any alternative.

#### **Swain Mountain Snowmobile Area**

This area covers 172,210 acres of the Lassen National Forest. It is located east and south of Highway 44 and north of Highway 36, with the remaining boundaries formed by Lassen Volcanic National Park and the Caribou Wilderness. This area is extremely popular with OSV users, especially in the eastern and southeastern portions of the area.

The area also includes the Bizz Johnson ski trail, parts of which will not be designated for OSV use. A short segment of trail at its west end will be a designated OSV trail in all alternatives. This OSV area is directly accessible from the communities of Old Station, Chester and Susanville.

This area also contains approximately 92 miles of groomed OSV trails accessed via the Swain Mountain Trailhead on County Road A-21, the Chester-Lake Almanor Staging area on Highway 36, the Fredonyer Trailhead on Highway 36, and the Bogard Trailhead on Highway 44.

**Table 21. Overview of State of California OSV grooming program activity on the Lassen National Forest**

<b>Project Location National Forest (NF) and County</b>	<b>Recreation Facility<sup>9</sup></b>	<b>State of California OSV Program Funded Activity</b>
Lassen NF, Hat Creek Ranger District Shasta County near Latour State Forest and Lassen Volcanic National Park	Ashpan Snowmobile Area	Groom 35 miles of trail, plow 1 trailhead, service 1 restroom, and refuse collection.
Lassen NF, Eagle Lake Ranger District Lassen County, near Eagle Lake (Bogard) and Westwood (Fredonyer)	Bogard and Fredonyer Snowmobile Areas	Groom 160 miles of trail, plow 2 trailheads, service 2 restrooms, and refuse collection
Lassen NF, Almanor Ranger District Butte and Plumas Counties, near Jonesville and Lake Almanor	Jonesville Snowmobile Area	Groom 70 miles of trail, plow 7 miles of road and 1 trailhead
Lassen NF, Almanor Ranger District Plumas and Lassen Counties, near Chester (Swain Mountain) and Tehama County near Mineral (Morgan Summit)	Swain Mountain and Morgan Summit Snowmobile Areas	Groom 137 miles of trail, plow 0.25 mile of road and 3 trailheads, service 2 restrooms, and refuse collection

**Non-Motorized Winter Recreation**

The Lassen National Forest contains three designated wildernesses (78,060 acres), three proposed wilderness areas (61,686 acres); three eligible wild and scenic rivers (84 miles), and six research natural areas. Most of the managed non-motorized lands lie within the primitive (P) and semi-primitive non-motorized (SPNM) ROS classes, which are free of conflicts with motorized activities (USDA Forest Service 2009).

The Lassen has abundant opportunities for cross-country skiing. Several locations on the national forest are closed to motorized vehicles by Forest Order to allow for solitude on designated cross-country ski trails. These trails are designed to challenge a variety of skill levels and are marked from easy to most difficult. They are groomed periodically during the snow season.

Popular cross-country ski trails include the McGowan cross-country ski trail, the Butte Lake Trail, the Bizz Johnson Trail, and Colby Meadows. The Pacific Crest National Scenic Trail (PCT) runs through the center of the Lassen National Forest from north to south. The PCT is closed to motorized OSV use and provides non-motorized winter trail opportunities.

The 106,372-acre Lassen Volcanic National Park (LVNP) is located near the center of the Lassen National Forest. A variety of winter non-motorized activities are available in the park including cross-country skiing, telemarking, snowshoeing, and snowplay. The National Park Service (NPS) offers ranger-led snowshoe trips from the Manzanita Lake area. Throughout the winter, the park highway is plowed to the southwest parking area on the south side of the park and to the Loomis Museum on the north side of the park. Non-motorized access is allowed year-round (USDI National Park Service 2015). The nearest

<sup>9</sup> The only seasonal restrictions occur with regard to wheeled motorized use and grooming – wheeled vehicle use on groomed trails is prohibited from December 26 until March 31.

groomed OSV trails to the LVNP, located on the Lassen National Forest are approximately three-quarters of a mile to the east of the park's southeast corner, and approximately one and one-half miles north of the park's northwest corner.

### **Visitor use**

To determine the potential effects of management alternatives, it is important to understand the characteristics of people who visit and recreate on Lassen National Forest. Responding to the need for improved information about visitors to National Forest System lands, the Forest Service developed a nationwide, systematic monitoring process for estimating annual recreation use: the NVUM program.

The NVUM program was designed to provide statistically reliable estimations of recreation visitation to national forests and grasslands. Through collection and dissemination of information about recreational users and their preferred activities, resource managers can make informed, strategic decisions about the types and amount of recreation opportunities provided on the national forest.

NVUM surveys were conducted on Lassen National Forest during calendar year 2000 and fiscal years 2005 and 2010, the results of which were published in 2001, 2006, and 2010, respectively (USDA Forest Service 2001, 2006, 2010). Surveys collected information about participation in recreation activities, visitor demographics, and spending patterns. Summaries from these surveys are useful to describe recreation use patterns on the national forest. As displayed, these data are only valid at the forest level and cannot be disaggregated to specific sites or locations.

The Lassen serves a largely local client base. Over 43 percent of visits came from people living within 50 miles of the national forest; another 7 percent came from people living 50 to 75 miles away. Most visits are short, day use lasting 6 hours or less. Almost 60 percent are people who visit five times or less per year.

In 2010, the three most reported main activities were fishing (22 percent), viewing natural features (19 percent), and snowmobiling (8 percent). In 2005, the three most reported main activities were hunting (16.4 percent), hiking/walking (15.4 percent), and fishing (13.1 percent). Winter activities were lower during this survey year with cross-country skiing (3.5 percent), downhill skiing (2.3 percent), and snowmobiling (1.2 percent). In 2001, the top primary activities were: fishing (20.9 percent), other non-motorized activities such as swimming, games and sports (14 percent), developed camping (9.2 percent), and driving for pleasure (9 percent). Winter activities were lower with downhill skiing and snowboarding (3.3 percent), snowmobile travel (2 percent), cross-country skiing and snowshoeing (1 percent).

Table 22 shows the estimated visitor use based on the percentage of visitors reporting snowmobiling and cross-country skiing as their main activity.

**Table 22. National visitor use monitoring data for winter activities on the Lassen National Forest**

Year	Activity	Total Annual Lassen National Forest Visits	% Main Activity	Estimated Annual Lassen National Forests Visits based on the % main Activity	Average hours participating in main activity
2010	Snowmobiling	300,000	8.4%	25,200	3.9
2010	Cross-country skiing	300,000	1.8%	5,400	0
2005	Snowmobiling	607,200	1.2%	7,286	4
2005	Cross-country skiing	607,200	3.5%	21,252	2.7
2001	Snowmobiling	656,038	2.0%	13,120	Not reported
2001	Cross-country skiing	656,038	1.0%	6,560	Not reported

\*A National forest visit is defined as the entry of one person upon a national forest to participate in recreation activities for an unspecified period of time. A national forest visit can be composed of multiple site visits. The visit ends when the person leaves the national forest to spend the night somewhere else.

The California Department of Motor Vehicles records OSV registration by county each year. The Lassen National Forest falls within the seven counties shown in table 23.

**Table 23. California OSV registration for counties in Lassen National Forest, 2009 through 2014**

	2009	2010	2011	2012	2013	2014
Butte	1,093	1,054	1,057	991	1,014	955
Lassen	394	364	352	322	315	279
Modoc	41	35	42	39	37	28
Plumas	1,236	1,180	1,111	1,025	1,022	920
Shasta	417	432	471	410	433	399
Siskiyou	508	505	474	472	457	420
Tehama	103	108	111	112	106	110
<b>TOTAL</b>	<b>3,792</b>	<b>3,678</b>	<b>3,618</b>	<b>3,371</b>	<b>3,384</b>	<b>3,111</b>

\*Data from CA State Parks, not official DMV records

Table 24 shows total statewide OSV registrations and out-of-state registrations.

**Table 24. California statewide OSV registration, 2009 through 2014**

	2009	2010	2011	2012	2013	2014
Subtotal	18,542	17,982	17,776	16,956	16,929	16,189
Out of State	260	242	235	244	215	197
<b>Total</b>	<b>18,802</b>	<b>18,224</b>	<b>18,011</b>	<b>17,200</b>	<b>17,144</b>	<b>16,386</b>

\*Data from CA State Parks, not official DMV records

Snowmobile registrations in the Lassen National Forest counties and statewide have remained nearly stable, or declined slightly over the past six years. The State EIR estimated that OSV use would continue to increase at a rate of approximately 4 percent per year, as it had between 1997 and 2009 (California Department of Park and Recreation 2010); however, that has not been the case in recent years.

OSV visitor use varies based on the amount of snowfall and the length of the season. All districts on the Lassen National Forest receive some snow; however, the Front Country, Ishi Wilderness area, Almanor Ranger District, generally does not get sufficient snow for OSV use.

Table 25 is derived from the OSV trailhead survey conducted for the State EIR, and based on data summarized in the State EIR (California Department of Park and Recreation 2010). The table shows the average number of vehicles at trailheads, and the average number of OSVs that would be expected on weekends and holidays versus weekdays. Based on this information, estimated use for the 2015/2016 winter season is 10,020 OSV users forest wide.

**Table 25. Lassen National Forest OSV visitor use**

Location	Day description	Number of vehicles	Number of OSVs*
Forest-wide	Weekend or holiday (approx. 33 per season)	106	212
Forest-wide	Weekday (approx. 65 per season)	21	42
Individual trailheads	Weekend or holiday	15 (average)	30
Individual trailheads	Weekday	3.5	7

Based on 2009 data from California State Draft EIR

\*assumes an average of 2 OSV's per vehicle parked at a trailhead

*Conflicts between Motorized and Non-motorized Winter Experiences*

The 2010 NVUM report indicates that 81.4 percent of visitors to the Lassen National Forest are very satisfied, and 12.2 percent are somewhat satisfied. The satisfaction survey questions did not directly address winter use, however, the NVUM Importance-Performance ratings for Undeveloped General Forest areas that could be relevant to winter recreation include conditions of the environment, parking availability, parking lot condition, feeling of safety and scenery, all were rated “keep up the good work” while signage adequacy was rated as “concentrate here” (USDA Forest Service 2010).

There are occasional OSV incursions in wilderness and adjacent non-motorized areas (reports of OSV trespass into Caribou Wilderness, Lassen Volcanic National Park, and occasionally on designated cross-country ski trails), but law enforcement has determined many of the incursions to be inadvertent. OSV trespass into designated wilderness facilitated by nearby groomed trails could occur and may increase as use increases. There are no other known conflicts between OSV use and other uses on National Forest System land or neighboring Federal lands, no known conflicts among classes of OSVs, and no known areas where use is adversely affecting cultural, tribal, or historic resources (USDA Forest Service 2014).

Conflict between motorized and non-motorized winter users arise due to differing desired recreation experiences, public safety concerns, noise, air quality, and access issues. Public comments received during the scoping period for this project describe conflicts related to (1) displacing visitors who prefer non-motorized recreation opportunities; (2) posing safety concerns for non-motorized users due to the high speed of vehicles on shared trails; (3) creating noise and air quality impacts that lead to the displacement of non-motorized users; (4) quickly consuming untracked powder snow, which reduces a desired backcountry skiing experience; (5) disrupting ski tracks, making the snow surface unsuitable for cross-country skiing; and (6) grooming trails which the State of California’s Over Snow Vehicle Program Draft EIR estimates triples the OSV use on trails to the detriment of non-motorized users.

Motorized winter users expressed concerns regarding additional limitations on use; however, they generally did not describe conflicts with non-motorized users.

Opportunities for quality recreation experiences depend on both the settings (physical, social, and managerial aspects), and on the desired experience of the user. Conflicts occur when one recreationist affects or degrades the experience of another. Many non-motorized recreationists experience conflict with motorized recreationists (Adams and McCool 2010). Conflict can result in displacement or the abandonment of the use of a particular trail or area, or a change in time of use (Adams and McCool 2010).

Both motorized and non-motorized winter recreation activities can be described in three general categories including trail touring, backcountry exploring, and alpine adventure (Snowlands 2014). Trail touring is typically focused on the use of groomed trail systems, where the quality of the groomed trail with moderate climbs and descents is often the most important factor for the recreation experience. Backcountry exploring is focused on cross-country travel away from the groomed trail system with emphasis on travelling and exploring. Alpine adventure is characterized by the challenge of riding through powder snow on steeper slopes. In alpine adventure, backcountry skiers seek the downhill experience, while snowmobilers enjoy the challenge of climbing up (Snowlands 2014).

Quality non-motorized winter recreation experiences are typically characterized by quiet activities such as cross-country skiing or snow-shoeing in a natural environment that is not influenced by the sound, smell of exhaust, or sight of snowmobiles. Areas must be accessible from plowed trailheads, as non-motorized users typically do not travel long distances. Non-motorized visitors spend an average of 2.3 hours on the snow per visit (Rolloff et al. 2009).

Opportunities for quality motorized winter recreation experiences are typically characterized by groomed trail system and open hills for high-marking. Snowmobilers typically have a maximum 80-mile round-trip travel range (California Department of Parks and Recreation 2010). Approximately half of motorized visitors indicated that they would not snowmobile or would snowmobile less if the trails were not groomed (Rolloff et al. 2009). OSV visitors spend an average of 6 hours on the snow per visit. Motorized users are also interested in travelling through and experiencing a natural environment. According to the Lassen National Forest recreation staff, a majority of OSV use on the national forest would fall into the “trail touring” category described above (O’Brien, personal communication 2015).

## Areas Designated Non-motorized under Existing Law or Policy

### *Wilderness*

Three designated wilderness areas on the Lassen National Forest cover approximately 78,240 acres, Caribou Wilderness (20,546 acres), Thousand Lakes Wilderness (16,355 acres), and Ishi Wilderness (41,399 acres). The Ishi Wilderness Area is located in the lower-elevation country that typically does not receive adequate snow for OSV use. Proposed wilderness areas include Heart Lake, Wild Cattle Mountain, Caribou extension, and Mill Creek.

Designated wilderness areas are closed to motorized OSV use by the Wilderness Act of 1964. Proposed Wilderness areas on the Lassen National Forest are closed to OSV use, per forest plan direction, since they fall within the Semi-Primitive Non-motorized ROS class and are managed to maintain their wilderness characteristics. There are groomed OSV trails within one-quarter mile of the south and east boundaries of the Caribou Wilderness and Caribou extension proposed wilderness (approximately six miles) and north of the Mill Creek proposed wilderness (approximately two and one-half miles). There are groomed OSV trails within one-half mile south of Thousand Lakes Wilderness (approximately one-half mile).

*Inventoried Roadless Areas:*

Approximately 169,400 acres of inventoried roadless areas (IRAs) are located within Lassen National Forest. IRAs provide clean drinking water and function as biological strongholds for populations of threatened and endangered species. They provide large, relatively undisturbed landscapes that are important to biological diversity and the long-term survival of many at-risk species. IRAs provide opportunities for dispersed outdoor recreation, opportunities that diminish as open space and natural settings are developed elsewhere. They also serve as bulwarks against the spread of non-native invasive plant species and provide reference areas for study and research (USDA Forest Service 2009).

Roadless area characteristics, as defined in 36 CFR §294.11 – Roadless Area Conservation, Final Rule and evaluated here include the following:

- High-quality or undisturbed soil, water, and air
- Sources of public drinking water
- Diversity of plants and animal communities
- Habitat for threatened, endangered, proposed, candidate, and sensitive species, and for those species dependent on large, undisturbed areas of land
- Primitive, semi-primitive nonmotorized and semi-primitive motorized classes of dispersed recreation
- Reference landscapes
- Natural appearing landscapes with high scenic quality
- Traditional cultural properties and sacred sites
- Other locally identified unique characteristics

Wilderness attributes, as defined at FSH 1909.12 (72.1) and evaluated here include the following:

1. Natural – The extent to which long-term ecological processes are intact and operating
2. Undeveloped – The degree to which the impacts documented in natural integrity are apparent to most visitors
3. Outstanding opportunities for solitude or primitive unconfined recreation – Solitude is a personal, subjective value defined as the isolation from sights, sounds, and presence of others and from developments and evidence of humans. Primitive recreation is characterized by meeting nature on its own terms, without comfort and convenience of facilities.
4. Special features and values – Unique ecological, geographical, scenic, and historical features of an area
5. Manageability – The ability to manage an area for wilderness consideration and maintain wilderness attributes

Table 26 shows the crosswalk between the wilderness attributes identified in Forest Service Handbook 1909.12 and the 1964 Wilderness Act; and the roadless area characteristics defined in the 2001 Roadless Area Conservation Rule (36 CFR §294.11).

**Table 26. Wilderness attributes and roadless characteristics crosswalk**

<b>Wilderness Attributes</b>	<b>Roadless Area Characteristics</b>
<p><b>Natural</b> Ecological systems are substantially free from the effects of modern civilization and generally appear to have been affected primarily by forces of nature</p>	<p>High-quality or undisturbed soil, water, and air; Sources of public drinking water: Diversity of plant and animal communities; Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land; Reference landscapes</p>
<p><b>Undeveloped</b> Degree to which the area is without permanent improvements or human habitation</p>	<p>Natural appearing landscapes with high scenic quality</p>
<p><b>Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation</b> Solitude: opportunity to experience isolation from the sights, sounds, and presence of others from the developments and evidence of humans  Primitive and unconfined recreation: opportunity to experience isolation from the evidence of humans, to feel a part of nature, to have a vastness of scale, and a degree of challenge and risk while using outdoor skills</p>	<p>Primitive, semi-primitive non-motorized and semi-primitive motorized classes of dispersed recreation</p>
<p><b>Special Features and Values</b> Capability of the area to provide other values such as those with geologic, scientific, educational, scenic, historical, or cultural significance</p>	<p>Traditional cultural properties and sacred sites; and Other locally identified unique characteristics.</p>
<p><b>Manageability</b> The ability of the Forest Service to manage an area to meet size criteria and the elements of wilderness</p>	<p>No criteria</p>

There are no groomed OSV trails within the IRAs. A majority of the roadless acreage is closed to cross-country OSV use, per forest plan direction, because the IRAs are within the semi-primitive non-motorized ROS class. However, there are small portions of roadless areas that are within the semi-primitive motorized or roaded natural ROS classes where OSV use could occur, but is not likely due to the proximity of other closed acres and because they are located in areas where low to no OSV use is expected based on the OSV use assumptions (see OSV use potential maps in appendix G of this RDEIS).

Small portions of the following IRAs that fall within the roaded natural or semi-primitive motorized ROS classes are currently open to OSV use, but fall within areas where low to no OSV use is expected: Mayfield, Lava, Timbered Crater, Unnamed IRA near Old Station and East of Hwy 89 (Cinder Butte), Cypress, Snow Mountain, Prospect, Onion Springs, Wild Cattle Mountain, Ishi, Polk Springs, Mill Creek, Cub Creek, Butt Mountain, and Chips Creek.

IRAs with small portions of roaded natural and semi-primitive motorized that are open to OSV use and fall in areas where moderate to high OSV is expected include: Devils Garden, Trail Lake, Black Cinder, and Heart Lake.

### *Wild and Scenic Rivers*

There are three eligible Wild and Scenic Rivers located in the southwest portion of the Lassen National Forest near the Ishi Wilderness and Mill Creek proposed wilderness. They are Mill Creek (five segments having either wild, scenic, or recreational eligibility, 24.0 miles), Deer Creek (seven segments having

either wild, scenic, or recreational eligibility, 22.0 miles) and Antelope Creek (three segments with wild eligibility, North Fork 5.72 miles, south fork 7.05 miles). Most of the eligible Wild and Scenic River corridors are within areas closed to OSV use. There are groomed OSV trails adjacent to the two northernmost segments of Mill Creek with eligibility as a recreational Wild and Scenic River. With the presence of groomed OSV trails, this is an area where OSV use is expected to be high to moderate. The scenic and recreational segments of Deer Creek that are outside of existing OSV closure area fall within an area where low to no OSV use is expected ((see OSV use potential maps in appendix G of this RDEIS).

### *Research Natural Areas*

Grahams Pinery, Soda Ridge, Green Island Lake, Cub Creek, Mayfield, Timbered Carter, and Indian Creek Research Natural Areas are closed to OSV use under existing conditions.

The Lassen LRMP prohibits motorized vehicles within Research Natural Areas, but no formal directive prohibiting such use has been issued for the Black Mountain Research Natural Area. This area covers approximately 520 acres.

No groomed or ungroomed routes are within any of the Research Natural Areas.

### *Pacific Crest National Scenic Trail*

The Lassen National Forest contains 125 miles of the Pacific Crest National Scenic Trail (PCT) that is managed for non-motorized trail uses. The PCT runs roughly through the center of the national forest from north to south.

The PCT was designated in 1968 as one of the first national scenic trails. The PCT (extending from Mexico to Canada) was established to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas which such trails may pass. Along with the Appalachian Trail, the PCT is acknowledged as one of the premier non-motorized trails in the nation (USDA Forest Service 2009).

Most of the PCT on the Lassen National Forest passes through areas that are either closed to OSV use, or within areas where low to no OSV use is expected. Approximately 11 miles of the PCT on the Almanor Ranger District pass through the Jonesville Snowmobile Area with high to moderate OSV use. Groomed OSV trails cross the PCT in three locations (see OSV use potential maps in appendix G of this RDEIS).

Table 27. Resource indicators and measures for the existing condition, alternative 1

Resource Element	Resource Indicator	Measure (Quantify if possible)	Existing Conditions
<b>Motorized Recreation Opportunities – cross-country</b>	Opportunities for motorized winter uses	Total area (acres) open to OSV use	964,030 acres open to public, cross-country OSV use, subject to snow depth restrictions  No minimum snow depth requirement
<b>Motorized Recreation Opportunities – designated snow trails</b>	OSV trail designations	Length of designated OSV trails (miles)	406 miles of groomed, ungroomed, marked and un-marked OSV trails open for OSV use, subject to snow depth restrictions  No minimum snow depth requirement
<b>Motorized Recreation Opportunities – groomed snow trails</b>	OSV trail grooming	Length of groomed OSV trails (miles)	349 miles  12 inch snow depth requirement for grooming
<b>Non-motorized Recreation Opportunities - displacement</b>	Access to desired non-motorized recreation settings and opportunities	Total area (acres) and length of trails (miles) available to non-motorized recreation enthusiasts within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non-motorized winter use,  75,169 acres available for non-motorized recreation within 10 miles of plowed trailheads  44 miles of cross-country ski trails and other non-motorized routes available for non-motorized recreation within 10 miles of plowed trailheads
	Recreation Opportunity Spectrum	Consistency of OSV designations with ROS classes	Motorized OSV use prohibited in Primitive and Semi-Primitive Non-Motorized ROS classes. Motorized OSV use allowed in Semi-Primitive Motorized, Roaded Natural and Rural ROS classes.
<b>Non-motorized Recreation Conflicts - Public Safety</b>	Areas and trails available to non-motorized recreation enthusiasts for quality non-motorized recreation experiences	Total area (acres) closed to OSV use/length of non-motorized trails (miles)	185,983 acres/ six non-motorized trails with a total of 148 miles for non-motorized use.

Resource Element	Resource Indicator	Measure (Quantify if possible)	Existing Conditions
<p><b>Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas</b></p>	<p>Proximity and frequency of OSV designations in relation to designated non-motorized areas</p>	<p>Distance of groomed public OSV snow trails from areas designated as non-motorized under existing law or policy, or number of crossings of linear areas designated as non-motorized under existing law or policy</p>	<p>A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries.</p> <p>Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park's southeast corner, and 1 1/2 miles north of the park's northwest corner.</p> <p>No designated PCT crossing points or corridors, Groomed OSV trails cross PCT in 3 locations.</p> <p>No known conflicts with tribal/spiritual areas, historic areas or populated areas.</p>
	<p>Noise</p>	<p>Total area (acres) potentially affected by noise/total area (acres) closed to winter motorized use</p> <p>Proximity of predicted noise increases above ambient levels in sensitive areas (GIS model for selected points)</p>	<p>964,030 acres open for OSV use and potentially affected by noise/185,983 acres closed to OSV use and available for quiet recreation</p>
	<p>Air Quality</p>	<p>Qualitative/narrative description of potential impacts (with reference to air quality analysis)</p>	<p>Potential short-term impacts to the experience of recreational visitors in the vicinity of OSVs and grooming equipment due to the smell of exhaust emissions (see air quality report).</p>
	<p>Scenery</p>	<p>Qualitative/narrative description of potential visual impacts</p>	<p>Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. The visual evidence of snowmobile use decreases as fresh snow covers the tracks and/or when the snow melts at the end of the season.</p>

Resource Element	Resource Indicator	Measure (Quantify if possible)	Existing Conditions
	Wilderness Attributes	Total area (acres) affected and duration of impact. Qualitative description for wilderness attributes	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries. There are approximately 27,108 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries. The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.
	Roadless Characteristics	Total area (acres) affected and duration of impact. Qualitative description for roadless characteristics	Approximately 72,969 IRA acres open to OSV use.  Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of expected high to moderate OSV use.

## Environmental Consequences

### Alternative 1 – No Action

Under alternative 1, there would be no changes to the existing system of OSV use on trails, and areas within the Lassen National Forest except as prohibited by forest order. In addition, only those seasonal restrictions as specified in the Lassen Forest Plan and contained in existing forest orders would be continued. The 2005 Travel Management Regulation, Subpart C, would not be implemented, and no OSV use map would be produced. By definition, direct and indirect effects (40 CFR §1508.8), and cumulative effects (40 CFR §1508.7) result from the proposed action, and thus, are not germane to the no-action alternative.

#### *Recreation Settings and Opportunities*

In the no-action alternative, opportunities for winter motorized recreation both cross-country and on groomed trails would remain the same as described in the existing conditions. A majority of OSV use on the Lassen National Forest is expected to continue to be along the groomed trail system. There would be no reduction of opportunities or change in location for winter motorized OSV use. Current management requires a minimum snow depth of 12 inches for OSV use, this requirement would continue to limit access to deeper snow at higher elevations when snow depths at trailheads are below 12 inches.

Opportunities for winter non-motorized recreation would also remain the same as described in the existing conditions. OSV use would remain consistent with existing ROS classes, with motorized use prohibited in primitive and semi-primitive non-motorized ROS classes and allowed in semi-primitive motorized, roaded natural, and rural ROS classes.

#### *Conflicts between Motorized and Non-motorized Winter Experiences*

Conflicts between motorized and non-motorized winter experiences on the Lassen are currently minor and infrequent; existing conflicts would continue and may increase as population and visitor use increase.

Non-motorized winter recreation enthusiasts would continue to be displaced in some areas by motorized OSV use, or be unable to access areas for desired quiet, non-motorized experiences away from the sights, sounds, and smells of motorized use, since they would have to travel longer distances through motorized routes and areas than they are physically able to traverse. There are 75,169 acres available for quiet, non-motorized winter activities and 44 miles of cross-country ski trails and other non-motorized trails within 10 miles of plowed trailheads. There are a total of 186,000 acres across the Lassen National Forest available for quiet, non-motorized experiences, where OSV use would not be designated.

**Table 28. Acres available for quality non-motorized winter activities – alternative 1**

<b>OSV Area</b>	<b>Acres available for quiet, non-motorized winter activities (closed to OSV use) within 10 miles of plowed trailheads</b>
Ashpan	15,892
Bogard	676
Fredonyer	1,138
Jonesville	16,181
Morgan Summit	20,785
Swain Mountain	20,498
<b>Total</b>	<b>75,169</b>

Other potential conflicts would continue to occur in some areas, as motorized OSVs consume untracked powder snow that is desired by backcountry skiers, create tracks across the snow surface making skiing difficult, and creating safety concerns in areas where motorized and non-motorized use is occurring at shared trailheads and on shared trails.

*Areas Designated Non-motorized under Existing Law or Policy*

Occasional incursions into adjacent Wilderness areas and non-motorized areas on other Federal lands would continue to occur, and possibly increase as population and visitor use increase.

There are approximately nine miles of groomed OSV trails within one-half mile of Wilderness and proposed wilderness boundaries. There are small portions of four Inventoried Roadless Areas that are open to OSV use in areas where moderate to high OSV use is expected. The closest groomed OSV trails to the LVNP are one and one-half miles north of the park’s northwest corner and three-quarters mile east of the park’s southeast corner.

Ongoing motorized use in close proximity to the designated non-motorized areas temporarily degrades opportunities for solitude near the non-motorized area boundaries, when OSVs are present on the trails. Similarly, there may be temporary impacts to air quality in the vicinity of OSVs, and short-term impacts to scenery when OSV tracks through the snow crisscross the landscape, leaving visual evidence of motorized use. The tracks only remain on the landscape until they are covered by additional snowfall or until the snow melts, and do not cause long-term impacts to scenery or the underlying soils and vegetation (see additional analysis in the applicable resource sections of this analysis).

The PCT would remain non-motorized, as it is currently managed. No OSV crossings of the PCT would be designated; OSVs would be allowed to cross the PCT in any of the areas open to OSV use, as in current conditions, potentially impacting the quiet, non-motorized trail experience when hikers and cross-country skiers encounter OSVs crossing the trail. Along 98.42 miles of the PCT within the Lassen National Forest, there are areas open to OSV use within 500 feet of the trail, potentially impacting the trail experience due to the sights and sounds of OSVs in close proximity to the trail.

## Alternative 2 – Modified Proposed Action

The modified proposed action is described in detail in chapter 2. Alternative 2 would designate 8 discrete, specifically delineated areas for cross-country OSV use, and would allow public, cross-country OSV use on 921,180 acres of NFS lands within the Lassen National Forest when snow depth is adequate for that use to occur. Designated trails where public OSV use would be allowed when snow depth is adequate for that use to occur would total 334 miles. All existing OSV prohibitions applying to areas or trails would continue. Alternative 2 would identify approximately 350 miles of snow trails that would be groomed for public OSV use by the Forest Service's Lassen National Forest Grooming Program. The California State Parks' snow grooming standards would be formally adopted, requiring a minimum of 12 inches of snow depth before grooming could occur.

Alternative 2 would implement a forest-wide snow depth requirement for OSV use that would provide for public safety and natural and cultural resource protection by allowing public, cross-country OSV use in areas designated for OSV use when there is a minimum of 12 inches of snow covering the landscape; and allowing public OSV use on designated snow trails when there are 6 or more inches of snow covering the trail. All but 0.1 mile of snow trails to be designated for public OSV use or identified for OSV grooming in this alternative would overlay an existing paved, gravel, or native surface travel route. These travel routes are trails and roads used by wheeled, motorized vehicles, when allowed, and non-motorized recreation. The exception would be an ungroomed OSV trail designated to cross the Pacific Crest National Scenic Trail through an area adjacent to the Pacific Crest National Scenic Trail that would not be designated for cross-country OSV use. This ungroomed trail would require a minimum of 12 inches of snow for OSV use.

No areas would be designated for OSV use within 500 feet of the Pacific Crest National Scenic Trail on the Lassen National Forest.

Alternative 2 would designate 28 public OSV crossing points of the Pacific Crest National Scenic Trail on trails designated for wheeled, motorized vehicle use when such use is allowed. It would also designate as many as 26 trails to access 26 of the 28 crossing points on the Pacific Crest National Scenic Trail through an area adjacent to the Pacific Crest National Scenic Trail that would not be designated for cross-country OSV use.

Public OSV use would not be designated on approximately 228,847 acres, including all of the approximately 185,983 acres of the Lassen National Forest where public OSV use is currently prohibited, and 42,864 acres of areas currently open to OSV use that would not be designated for OSV use in this alternative

Public OSV use that is inconsistent with the designations and snow depth requirements made under this decision would be prohibited under 36 CFR Part 261.

### *Direct and Indirect Effects - Alternative 2*

#### **Recreation Settings and Opportunities**

Alternative 2 would provide a range of winter motorized and non-motorized recreation opportunities similar to that currently found on the Lassen National Forest. Although the designation of 334 miles of groomed and ungroomed OSV trails is a reduction in the number of miles of trail where OSV use is currently allowed, a majority of the current trails system would be either designated for public OSV use, or are located in areas that would be designated for public, cross-country OSV use in this alternative. Having a clearly designated system of trails and areas where OSV use is allowed and the subsequent production of the OSV use map would improve information available to the public about opportunities for

OSV use. This would assist both motorized and non-motorized recreationists in selecting areas that meet their setting and experience preferences, and therefore, would minimize the potential for conflict.

The proposed OSV designations would be in compliance with existing ROS classes, maintaining a variety of both motorized and non-motorized recreation opportunities available across the forest. Primitive and semi-primitive non-motorized areas would remain closed to OSV use (would not be designated for OSV use), while motorized opportunities would be available in semi-primitive motorized, roaded natural, and rural ROS classes.

There are 42,864 acres of areas currently open to OSV use that would not be designated for OSV use in alternative 2. This is a slight reduction in potential opportunities for cross-country OSV use that would have minor impacts to motorized OSV use opportunities. Additional acres in the Morgan Summit OSV area, located in the southwest corner of Lassen National Forest would not be designated because there is limited access for OSVs due to the proximity to other non-motorized areas including the Ishi Wilderness, Mill Creek Proposed Wilderness, and semi-primitive non-motorized areas within the Ishi and Polk Springs Inventoried Roadless Areas. An area along Deer Creek would not be designated due to the presence of anadromous fish. This area is located in the southwest portion of the forest, and runs along the northwestern boundary of the Cub Creek Inventoried Roadless Area. The impacts of not designating OSV use in the Blacks Mountain Research Natural Area (520 acres within the Black Mountain Experimental Forest on the Eagle Lake Ranger District), in the Bogard OSV area, to be consistent with forest plan management area direction to prohibit motorized vehicles in research natural areas would also be expected to be minor. Not designating the areas described above for OSV use would minimize impacts to resources such as wildlife (as described in the wildlife section), wilderness, inventoried roadless areas, and eligible wild and scenic rivers (described in the Areas Designated Non-motorized under Existing Law or Policy section below), and the natural conditions of the research natural area that are managed for baseline and research purposes (described in the botany section). No OSV use would be designated within 500 feet of the Pacific Crest National Scenic Trail, within 1,840 acres along the southwest shore of Lake Almanor, and within 1,150 acres along the South Shore of Eagle Lake to meet the objective of minimizing impacts on non-motorized recreation opportunities, by eliminating OSV use and reducing the potential for conflict between motorized and non-motorized winter visitors in these areas. Existing OSV prohibitions on non-motorized trails would continue.

Alternative 2 would identify 350 miles of OSV trails for grooming for public use. Although identified for grooming and historically groomed by the Forest Service, approximately 27 miles of groomed trails would not be subject to designation because they are not under National Forest System jurisdiction on the Lassen National Forest. This would represent no change from current management. Alternative 2 would maintain the existing level of groomed trail riding opportunities, which Lassen National Forest staff indicates is adequate to meet existing demand (USDA Forest Service 2014). The State EIR information also shows that Lassen National Forest trailheads have rare or no overflow capacity issues (California Department of Parks and Recreation 2010). Existing OSV support facilities/services (access roads, trailhead parking, toilets, and garbage service) are provided in sufficient quantities to satisfy winter OSV recreation demand (USDA Forest Service 2014), and would continue to do so.

The forest-wide snow depth requirement of 12 inches for areas designated for OSV use would impose restrictions on OSV use, although it is likely that most OSV owners would not ride with less than adequate snow depths to prevent damage to their OSVs. Establishing the forest-wide minimum snow depth for cross-country OSV use would minimize impacts to soil, water, vegetation, and wildlife resources, as described in the relevant sections of this analysis. Allowing public OSV use on designated snow trails when there are 6 or more inches of snow covering the trail would provide improved trail access for OSV users to reach areas of higher terrain with adequate snow depths.

### Conflicts between Motorized and Non-motorized Winter Experiences

Conflicts between motorized and non-motorized winter experiences on the Lassen National Forest are currently minor and infrequent (USDA Forest Service 2014); however, conflicts between motorized and non-motorized uses that do currently exist would likely continue with designation of a similar OSV trail system. Conflict may increase as population and visitor use increase.

Motorized use has inherent conflicts with non-motorized users who are typically seeking a quiet recreation setting that is not influenced by the sight, sound, or exhaust smell of motorized vehicles. There are also inherent conflicts in that motorized OSVs travel much faster and farther than non-motorized users. OSV use may impact the setting for non-motorized users by making tracks through the snow that often crisscross the landscape, leaving visual evidence of motorized use. The tracks only remain on the landscape until they are covered by additional snowfall or until the snow melts, and do not cause long-term impacts to scenery or the underlying soils and vegetation (see additional analysis in the applicable resource sections of this analysis). OSV tracks can interfere with cross-country skiing by causing ruts in the trails, and since OSVs travel faster and farther than non-motorized users, they often “consume” the fresh powder slopes, limiting opportunities for backcountry skiers who are seeking similar opportunities on snow covered slopes (Snowlands 2014).

Occasional incursions into adjacent wilderness areas and non-motorized areas on other Federal lands would continue to occur, and possibly increase as population and visitor use increase. Monitoring to determine the need for additional education or enforcement actions would be implemented. Monitoring is also a requirement of participation in the State OSV grooming program.

Non-motorized winter recreation enthusiasts would continue to be displaced in some areas by motorized OSV use, or be unable to access areas for desired quiet, non-motorized experiences away from the sights, sounds, and smells of motorized use, since they would have to travel longer distances through motorized routes and areas than they are physically able to traverse. However, there are 85,706 acres available for quiet, non-motorized winter activities, and 44 miles of cross-country ski trails and other non-motorized trails within 10 miles of plowed trailheads. This is a 10,537-acre increase over existing conditions. There are a total of 228,847 acres across the Lassen National Forest available for quiet, non-motorized experiences, where OSV use would not be designated.

**Table 29. Acres available for quality non-motorized winter activities – alternative 2**

<b>OSV Area</b>	<b>Acres available for quiet, non-motorized winter activities (closed to OSV use) within 10 miles of plowed trailheads</b>
Ashpan	15,893
Bogard	713
Fredonyer	1,138
Jonesville	19,625
Morgan Summit	26,530
Swain Mountain	21,807
<b>Total</b>	<b>85,706</b>

Other potential conflicts would continue to occur in some areas, as motorized OSVs consume untracked powder snow that is desired by backcountry skiers, create tracks across the snow surface making skiing difficult, and creating safety concerns in areas where motorized and non-motorized use is occurring at shared trailheads and on shared trails.

There are no known conflicts occurring between different classes of OSV use. Snowcats are used for grooming OSV trails. The grooming operations are conducted during the night or during low use timeframes if possible to avoid conflicts with day use. Since snowcats groom the OSV trails, the trails would be wide enough to accommodate larger tracked OSVs in addition to snowmobiles; however, there is currently very little use by larger tracked OSVs on the Lassen National Forest. Public comments indicated concern with emerging trends in OSVs such as snow bikes (motorcycles that are converted to OSVs by installing a single ski/track conversion kit) and other changing technology that allow OSVs to travel faster, farther, and in more confined spaces. The proposed OSV area and trail designations would apply to public use of all OSV's that meet the definition of an OSV, whether on a single ski, double ski, or track. The trails and areas proposed for designation were found to be suitable for OSV use, subject to snow-depth restrictions for protection of natural resources.

Monitoring of trailheads and groomed trail areas for user conflicts and public safety concerns would be implemented. If monitoring indicates that conflicts are occurring, the Forest Service would consider implementing site-specific controls on the Lassen National Forest as necessary (such as speed limits, segregated access points for motorized and non-motorized use, increased visitor information or increased on-site management presence).

#### **Areas Designated Non-motorized under Existing Law or Policy**

The existing OSV prohibitions in designated wilderness areas, semi-primitive non-motorized areas, and research natural areas would continue, protecting these areas from OSV impacts.

Over-snow vehicle use would not be designated in the southwest portion of the forest (within the Morgan Summit OSV area) and would provide further protection from potential OSV impacts to the Ishi Wilderness, Mill Creek Proposed Wilderness, and semi-primitive non-motorized areas within the Ishi and Polk Springs Inventoried Roadless Areas. This would maintain or enhance the wilderness attributes and roadless characteristics of naturalness, high-quality or undisturbed soil, water, and air, and outstanding opportunities for solitude. Not designating OSV use in the southwestern portion of the forest would also provide further protection to Antelope Creek and Mill Creek eligible wild and scenic river corridors.

There are groomed OSV trails within one-quarter mile of the south and east boundaries of the Caribou Wilderness and Caribou extension proposed wilderness (approximately six miles) and north of the Mill Creek proposed wilderness (approximately two and one-half miles). There are groomed OSV trails within one-half mile south of Thousand Lakes Wilderness (approximately one-half mile). The presence of these groomed trails in close proximity to wilderness and proposed wilderness may temporarily impact outstanding opportunities for solitude, when OSVs are present on the trails. Allowing OSV use adjacent to wilderness and proposed wilderness does not, however, reduce the wilderness potential of these areas. Most statewide wilderness acts include what has become known as “buffer zone preclusion language” such as

*Congress does not intend that the designation of wilderness areas ... lead to the creation of protective perimeters or buffer zones around each wilderness area. The fact that nonwilderness activities or uses can be seen or heard from areas within the wilderness shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area. (Kelson and Lilieholm 1999).*

Virtually identical language has been included in 30 other wilderness statutes enacted since 1980 (Gorte 2011). This concept is also supported by Forest Service Manual 2320.3 that directs consideration of uses on both sides of wilderness boundaries, but states

*Do not maintain buffer strips of undeveloped wildland to provide an informal extension of wilderness. Do not maintain internal buffer zones that degrade wilderness values.*

Small portions of several IRAs that fall within the semi-primitive motorized or roaded natural ROS class would remain open for OSV use, low to no OSV use is expected in most of these areas, and little to no impacts to the roadless characteristics are anticipated. The small portions of the following IRAs that are open to OSV use, are in areas where moderate to high OSV use is anticipated, including: Devils Garden, Trail Lake, Black Cinder, and Heart Lake IRAs. The roadless characteristics of high-quality or undisturbed soil, water, and air, and solitude associated with semi-primitive non-motorized recreation opportunities may be temporarily impacted when OSVs are present.

Designated crossings of the PCT would minimize potential motorized impacts along the trail and would enhance the quiet, non-motorized experience while accommodating motorized access to OSV areas and maintaining OSV loop riding opportunities. Using the wheeled vehicle trails designated in Subpart B for off-highway vehicle use as PCT crossings would limit motorized disturbance to areas of the trail that already contain motorized vehicle trails. The frequency of designated crossings would be consistent with the ROS class through which the trail passes, based on PCT management direction, and would ensure consistency with recreation settings along the trail.

A majority of the PCT mileage on the Lassen National Forest passes through NFS lands that are either closed to OSV use, or areas where little to no OSV use is anticipated. Alternative 2 does not designate any area within 500 feet of the Pacific Crest National Scenic Trail for OSV use, except at designated crossing points and on designated trails running across that non-designated area allowing access to the designated PCT crossing points. Having no OSV area designations within 500 feet of the trail, would maintain quiet, non-motorized trails opportunities along the entire Lassen National Forest portion of the PCT and reduce the potential for conflicts between motorized and non-motorized users along the trail.

Formalizing the closure of the Blacks Mountain Research Natural Area to OSV use would be in compliance with the Lassen Forest Plan standard that prohibits motorized vehicles in research natural areas.

**Table 30. Resource indicators and measures for alternative 2 direct and indirect effects**

Resource Element	Resource Indicator	Measure (Quantify if possible)	Alternative 2
<b>Motorized Recreation Opportunities – cross-country</b>	Opportunities for motorized winter uses	Total area (acres) open to OSV use, percent change	921,180 acres open to public cross-country OSV use, subject to snow depth restrictions, a 4.4 percent decrease from existing conditions.  12 inch snow depth requirement
<b>Motorized Recreation Opportunities – designated snow trails</b>	OSV trail designations	Length of designated OSV trails (miles), percent change	334 miles of designated OSV snow trails, subject to snow depth restrictions, 17.7 percent decrease from existing conditions (however a majority of current trail system is designated or in OSV open areas).  6 inch or more snow depth on snow trails overlaying roads and trails; 12 inch snow depth on 0.1 mile of trail not overlaying roads or trails.
<b>Motorized Recreation Opportunities – groomed snow trails</b>	OSV trail grooming	Length of groomed OSV trails (miles), percent change	349 miles, no change  12 inch snow depth requirement for grooming
<b>Non-motorized Recreation Opportunities - displacement</b>	Access to desired non-motorized recreation settings and opportunities	Total area (acres) and length of trails (miles) available to non-motorized recreation enthusiasts within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non-motorized winter use,  85,706 acres available for non-motorized recreation within 10 miles of plowed trailheads  44 miles of cross-country ski trails and other non-motorized trails available within 10 miles of plowed trailheads
	Recreation Opportunity Spectrum	Consistency of OSV designations with ROS classes	Motorized OSV use prohibited in Primitive and Semi-Primitive Non-Motorized ROS classes. Motorized OSV use allowed in Semi-Primitive Motorized, Roaded Natural and Rural ROS classes.
<b>Non-motorized Recreation Conflicts - Public Safety</b>	Areas and trails available to non-motorized recreation enthusiasts for quality non-motorized recreation experiences	Total area (acres) closed to OSV use/length of non-motorized trails (miles), percent change	228,847 acres, a 23 percent increase/ six non-motorized trails with a total of 148 miles for non-motorized use.

Resource Element	Resource Indicator	Measure (Quantify if possible)	Alternative 2
<p><b>Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas</b></p>	<p>Proximity and frequency of OSV designations in relation to designated non-motorized areas</p>	<p>Distance of groomed public OSV snow trails from areas designated as non-motorized under existing law or policy, or number of crossings of linear areas designated as non-motorized under existing law or policy</p>	<p>A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries.</p> <p>Lassen Volcanic National Park: Groomed OSV trails ¼ mile east of the park’s southeast corner, and 1 1/2 miles north of the park’s northwest corner.</p> <p>No areas designated open to OSVs within 500 feet of the PCT; 28 designated PCT crossing points.</p> <p>No known conflicts with tribal/spiritual areas, historic areas or populated areas.</p>
	<p>Noise</p>	<p>Total area (acres) potentially affected by noise/total area (acres) closed to winter motorized use Proximity of predicted noise increases above ambient levels in sensitive areas (GIS model for selected points)</p>	<p>921,180 acres open for OSV use and potentially affected by noise/228,847 acres closed to OSV use and available for quiet recreation</p>
	<p>Air Quality</p>	<p>Qualitative/narrative description of potential impacts (with reference to air quality analysis)</p>	<p>Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions. Slightly fewer acres open to OSV use than in existing conditions (see air quality report).</p>
	<p>Scenery</p>	<p>Qualitative/narrative description of potential visual impacts</p>	<p>Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. Fewer acres open to cross-country OSV use, and associated visual impacts than in existing conditions. The visual evidence of snowmobile use decreases as fresh snow covers the tracks and/or when the snow melts at the end of the season</p>
	<p>Wilderness Attributes</p>	<p>Total area (acres) affected and duration of impact. Qualitative description for wilderness attributes</p>	<p>Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries. There are approximately 21,266 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries, The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.</p>

Resource Element	Resource Indicator	Measure (Quantify if possible)	Alternative 2
<b>Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas (continued)</b>	Roadless Characteristics	Total area (acres) affected and duration of impact. Qualitative description for roadless characteristics	Approximately 59,746 IRA acres open to OSV use. Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of expected high to moderate OSV use.

## *Cumulative Effects – Alternative 2*

### **Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis**

Past, present, and reasonably foreseeable projects in the area include vegetation management (including timber sales, fire salvage, and restoration projects), livestock grazing, prescribed burns, and recreation. There are many on-going and scheduled projects identified on the Lassen National Forest (appendix H) which may increase the management presence forest-wide.

### **Recreation Settings and Opportunities**

The OSV route designations and restrictions increase the management presence across the forest, slightly impacting the managerial component of the forest setting. This could result in cumulative impacts when added to other ongoing and future Forest Service projects that place limitations or temporary restrictions on the recreating public.

The trailhead and parking lot plowing activities associated with the OSV trail grooming program would also increase the presence of management personnel in the area; however, this is not a change from existing conditions.

There are four current vegetation management projects that overlap groomed OSV trails in the Jonesville OSV area (Lost, Yellow, Ursa, and Castle Timber Sale areas). Vegetation management activities, in addition to OSV use, and OSV grooming activities occurring at the same time would cumulatively impact the recreation setting due to the increased presence of people and vehicles in the area. Vegetation management and fire salvage projects adjacent to groomed OSV trails and in areas open to cross-country OSV use may temporarily enhance opportunities for cross-country OSV use by removing trees that would otherwise obstruct OSV riding. Vegetation treatment, in addition to OSV grooming could cumulatively enhance OSV opportunities in this area.

### **Conflicts between Motorized and Non-Motorized Winter Experiences**

Non-motorized winter visitors to the Lassen National Forest could experience noise from OSV use in areas and on trails designated for OSV use under this alternative, in addition to other noise such as snow grooming equipment, vehicles on roads, log trucks, heavy equipment associated with vegetation management projects, and aircraft that may be in the same area at the same time, cumulatively impacting the quiet recreation experience in the short term.

### **Areas Designated Non-motorized under Existing Law or Policy**

OSV use is prohibited in certain areas designated by law, and the forest plan, such as wilderness, proposed wilderness on the Lassen National Forest, there are no known potential cumulative impacts associated with the OSV prohibitions, which are in compliance with the relevant management direction for specific areas designated as non-motorized under existing law or policy. Illegal encroachment by OSVs into areas not designated for OSV use could occur, potentially adding to other ongoing future activities impacting these areas and causing cumulative impacts, but would be monitored and dealt with as a law enforcement issue.

## **Alternative 3**

Alternative 3 is described in detail in chapter 2. Alternative 3 was developed to address the non-motorized recreational experience significant issue. Alternative 3 would designate eight discrete, specifically delineated areas for cross-country OSV use. These areas would encompass 833,990 acres of National Forest System lands within the Lassen National Forest when snow depth is adequate for that use to occur. It includes components of the modified proposed action with several additions. OSV use would not be designated in additional areas that are important for non-motorized recreation, including the Butte Lake

area (OSV use allowed on designated trails only) north of Lassen Volcanic National Park; areas below 3,500 feet on the Lassen National Forest; the Fredonyer-Goumaz area(OSV use allowed on designated trails only) between highways 36 and 44; the McGowen Lake area (north of Mineral, East of Rd. 17); the Colby Mountain area; the areas along the southwest shore of Lake Almanor and along the south shore of Eagle Lake; and the Willard Hill area.

Designated trails where public OSV use would be allowed when snow depth is adequate for that use to occur would total 383 miles. All existing OSV prohibitions applying to areas or trails would continue. Alternative 3 would identify approximately 349 miles of snow trails that would be groomed for public OSV use by the Forest Service’s Lassen National Forest Grooming Program. The minimum snow depth for trail grooming would be 18 inches.

Alternative 3 would allow public OSV use on designated snow trails generally when there are 6 or more inches of snow covering the trail where site review determines there would be no damage to underlying resources. The minimum snow depth for OSV use in areas designated for public, cross-country OSV use would be 12 inches.

Public OSV use would not be designated on approximately 316,048 acres, including all of the approximately 185,983 acres of the Lassen National Forest where public OSV use is currently prohibited, and 130,065 acres of areas currently open to OSV use that would not be designated for OSV use in this alternative

Public OSV use that is inconsistent with the designations and snow depth requirements made under this decision would be prohibited under 36 CFR Part 261.

No PCT crossing points would be designated. OSV use would be allowed adjacent to, and across the PCT in accordance with OSV area designations. The trail itself would remain non-motorized.

### *Direct and Indirect Effects - Alternative 3*

#### **Recreation Settings and Opportunities**

Alternative 3 would not designate as many areas for OSV use as alternative 2, and would also designate some areas where motorized OSVs are restricted to designated trails. With additional areas not designated for OSV use and restricting OSVs to trails only, the opportunities for non-motorized use (in areas not influenced by the sights, sounds and exhaust smells of OSV use) would be enhanced.

Proposed OSV designations would be consistent with existing ROS classes, maintaining a variety of both motorized and non-motorized recreation opportunities available across the forest. Primitive and semi-primitive non-motorized areas would remain closed to OSV use, while motorized opportunities would be available in semi-primitive motorized, roaded natural, and rural ROS classes. The additional areas where OSV use would not be designated are located primarily within the roaded natural ROS class, this would not formally change the ROS class, but would reduce the influence of motorized OSV use within these areas and help minimize impacts to non-motorized winter visitors.

The areas where OSV use would not be designated, including areas south of Lassen Volcanic National Park in the Morgan Summit and Jonesville areas, along the southwest shore of Lake Almanor, the south shore of Eagle Lake, and Willard Hill areas, and the restriction of OSVs to designated trails in the Swain Mountain area north of Lassen Volcanic National Park would reduce opportunities for motorized OSV use to some extent. However, grooming 349 miles of OSV trails would maintain the current level of groomed OSV trail riding opportunities.

The forest-wide snow depth requirement of 12 inches for areas designated for OSV use would impose limitations on OSV use, although it is likely that most OSV owners would not ride with less than adequate snow depths to prevent damage to their OSVs. Allowing use on trails with at least 6 inches of snow would be slightly less restrictive than alternative 2 and would provide additional opportunities for OSVs to access higher terrain and legal snow depths.

### **Conflicts between Motorized and Non-motorized Winter Experiences**

Although conflicts are currently minimal on the Lassen National Forest, alternative 3 would provide more areas where OSV use would not be designated, enhancing opportunities for non-motorized experiences, and reducing the potential for conflict since there would be greater separation of motorized and non-motorized uses.

The areas where OSV use would not be designated below 3,500 feet would reduce potential conflicts with designated non-motorized areas, including Wilderness, proposed wilderness, and IRA resources in the southwest portion of the forest, as described in alternative 2. This would also eliminate OSV use from other areas of the forest below 3,500 feet that seldom receive adequate snow depths, thus minimizing the potential for OSV use with inadequate snow depths. Alternative 3 would minimize conflicts between motorized and non-motorized winter users in areas that are popular and suitable for non-motorized uses.

The restriction of OSV use to trails in the Butte Lake and Fredonyer-Goumaz areas would provide an opportunity to minimize impacts on non-motorized recreation experience while also maintaining access and opportunities for motorized OSV use. Not designating OSV use in the area north of the Caribou Wilderness and south of the Heart Lake and Wild Cattle Mountain Proposed Wilderness areas would also help to minimize potential impacts from the sights and sounds of OSVs to quiet, non-motorized areas and to Lassen Volcanic National Park.

Non-motorized winter recreation enthusiasts would continue to be displaced in some areas by motorized OSV use, or be unable to access areas for desired quiet, non-motorized experiences away from the sights, sounds, and smells of motorized use, since they would have to travel longer distances through motorized routes and areas than they are physically able to traverse. However, there would be 122,774 acres available for quiet, non-motorized winter activities and 44 miles of cross-country ski trails and other non-motorized trails within 10 miles of plowed trailheads. This would be a 47,605-acre increase over existing conditions. There would be a total of 316,048 acres across the Lassen National Forest available for quiet, non-motorized experiences, where OSV use would not be designated.

**Table 31. Acres available for quality non-motorized winter activities – alternative 3**

OSV Area	Acres available for quiet, non-motorized winter activities (closed to OSV use) within 10 miles of plowed trailheads
Ashpan	15,892
Bogard	952
Fredonyer	1820
Jonesville	21,415
Morgan Summit	34,093
Swain Mountain	48,602
<b>Total</b>	<b>122,774</b>

Otherwise, alternative 3 effects would be the same as described for alternative 2.

**Areas Designated Non-motorized under Existing Law or Policy**

Not designating OSV use in the area north of the Caribou Wilderness and south of the Heart Lake and Wild Cattle Mountain Proposed Wilderness Areas would help to minimize potential impacts from the sights and sounds of OSVs to quiet, non-motorized areas.

This alternative would not designated OSV use in a portion of the Swain Mountain area north of Lassen Volcanic National Park. This would minimize motorized impacts, such as loss of opportunities for solitude when OSVs are present, and impacts to natural scenery due to visual evidence of OSV tracks in the snow, on the Caribou Wilderness, the Caribou extension proposed wilderness, Prospect IRA, and Lassen Volcanic National Park, and would minimize potential impacts from OSV encroachment into Lassen Volcanic National Park.

OSV use of the Pacific Crest National Scenic Trail itself would continue to be prohibited; however, motorized use adjacent to, and across the Pacific Crest National Scenic Trail could continue to impact the quiet, non-motorized trail experience. There are areas designated open to OSV use within 500 feet of the Pacific Crest National Scenic Trail along 85.42 miles of the trail on the Lassen National Forest.

Otherwise, alternative 3 would be the same as alternative 2 in regard to areas designated as non-motorized under existing law or policy.

**Table 32. Resource indicators and measures for alternative 3 direct and indirect effects**

<b>Resource Element</b>	<b>Resource Indicator</b>	<b>Measure (Quantify if possible)</b>	<b>Alternative 3</b>
<b>Motorized Recreation Opportunities – cross-country</b>	Opportunities for motorized winter uses	Total area (acres) open to OSV use, percent change	833,990 acres open to public cross-country OSV use, subject to snow depth restrictions, a 13.5 percent decrease from existing conditions.  12 inch snow depth requirement
<b>Motorized Recreation Opportunities – designated snow trails</b>	OSV trail designations	Length of designated OSV trails (miles), percent change	383 miles of designated OSV snow trails, subject to snow depth restrictions. 5.6 percent decrease from existing conditions (however a majority of the current trail system is designated or in OSV open areas)  6 inches where site review determines there would be no damage to underlying resources
<b>Motorized Recreation Opportunities – groomed snow trails</b>	OSV trail grooming	Length of groomed OSV trails (miles), percent change	349 miles, no change  18 inch snow depth requirement for grooming
<b>Non-motorized Recreation Opportunities - displacement</b>	Access to desired non-motorized recreation settings and opportunities	Total area (acres) and length of trails (miles) available to non-motorized recreation enthusiasts within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non-motorized winter use,  122,774 acres available for non-motorized recreation within 10 miles of plowed trailheads  72 miles of cross-country ski trails and other non-motorized trails available within 10 miles of plowed trailheads
	Recreation Opportunity Spectrum	Consistency of OSV designations with ROS classes	Motorized OSV use prohibited in Primitive and Semi-Primitive Non-Motorized ROS classes. Motorized OSV use allowed in Semi-Primitive Motorized, Roaded Natural and Rural ROS classes.
<b>Non-motorized Recreation Conflicts - Public Safety</b>	Areas and trails available to non-motorized recreation enthusiasts for quality non-motorized recreation experiences	Total area (acres) closed to OSV use/length of non-motorized trails (miles), percent change	316,048 acres, a 41.2 percent increase/ six non-motorized trails with a total of 148 miles for non-motorized use.

Resource Element	Resource Indicator	Measure (Quantify if possible)	Alternative 3
<b>Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas</b>	Proximity and frequency of OSV designations in relation to designated non-motorized areas	Distance of groomed public OSV snow trails from areas designated as non-motorized under existing law or policy, or number of crossings of linear areas designated as non-motorized under existing law or policy	A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries  Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park's southeast corner, and 1 1/2 miles north of the park's northwest corner.  No designated PCT crossing points, groomed OSV trails cross PCT in 3 locations. OSV open areas within 500 feet of PCT along 85.42 miles.  No known conflicts with tribal/spiritual areas, historic areas or populated areas.
	Noise	Total area (acres) potentially affected by noise/total area (acres) closed to winter motorized use  Proximity of predicted noise increases above ambient levels in sensitive areas (GIS model for selected points)	833,990 acres open for OSV use and potentially affected by noise/316,048 acres closed to OSV use and available for quiet recreation
	Air Quality	Qualitative/narrative description of potential impacts (with reference to air quality analysis)	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions. Fewer acres open to OSV use than in existing conditions and alternative 2 (see air quality report).
	Scenery	Qualitative/narrative description of potential visual impacts	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. Fewer acres open to cross-country OSV use, and associated visual impacts than in existing conditions or alternative 2. The visual evidence of snowmobile use decreases as fresh snow covers the tracks and/or when the snow melts at the end of the season

Resource Element	Resource Indicator	Measure (Quantify if possible)	Alternative 3
	Wilderness Attributes	Total area (acres) affected and duration of impact. Qualitative description for wilderness attributes	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries. There are approximately 19,173 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries. The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.
<b>Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas (continued)</b>	Roadless Characteristics	Total area (acres) affected and duration of impact. Qualitative description for roadless characteristics	Approximately 58,291 IRA acres open to OSV use. Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of expected high to moderate OSV use.

### *Cumulative Effects – Alternative 3*

The cumulative effects of alternative 3 would be the same as described for alternative 2.

### **Alternative 4**

Alternative 4 is described in detail in chapter 2. Alternative 4 was developed to address the motorized recreational opportunities significant issue. This alternative would designate 8 discrete, specifically delineated areas for cross-country OSV use. These areas would encompass 954,450 acres.

Alternative 4 would designate 380 miles of OSV snow trails. This would represent a reduction in the number of miles of trail where OSV use is currently allowed. However, a majority of the current trail system would be either designated for public OSV use or are located in areas that would be designated for public, cross-country OSV use in this alternative. Alternative 4 would identify 349 miles of snow trails for grooming, as in the existing conditions.

In addition to areas where OSV use is already prohibited on the Lassen National Forest, alternative 4 would not designate OSV use in the Blacks Mountain RNA, and the area south of Lassen Volcanic National Park (North of Mineral, East of Rd. 17).

There would be no defined snow depth in areas designated for cross-country OSV travel or on designated OSV trails. OSV use would be allowed only when forest staff determine that conditions are sufficient to allow OSV use while protecting underlying resources. This would be determined by a combination of weather station data, observations at trailheads by staff, and when the groomers decide conditions are right to commence grooming. Seasonal opening and closing would be announced through Public Service announcements, on information kiosks at trailheads and via the forest website. The minimum snow depth for trail grooming to occur would be 12 inches.

OSV use would be allowed below 3,500 feet when there is adequate snow depth to prevent damage to underlying surface resources.

This alternative would groom the same snow trails for OSV use as the modified proposed action.

The same PCT crossing points as in alternative 2 would be designated. OSV use would be allowed adjacent to the PCT. The trail itself would remain non-motorized. There are areas designated open to OSV use within 500 feet of the PCT along 97.68 miles of the PCT on the Lassen National Forest.

### *Direct and Indirect Effects - Alternative 4*

#### **Recreation Settings and Opportunities**

Alternative 4 would allow OSV use on more acres than alternatives 2 and 3, and slightly fewer acres than in alternative 1. Allowing use of OSVs below 3,500 feet would enhance OSV opportunities when snow depths are adequate for use in that area. There would be no defined snow depth in areas designated for cross-country OSV travel or on designated OSV trails. OSV use would be allowed only when forest staff determine that conditions are sufficient to allow OSV use while protecting underlying resources. This would be determined by a combination of weather station data, observations at trailheads by staff, and when the groomers decide conditions are right to commence grooming. Seasonal opening and closing would be announced through Public Service announcements, on information kiosks at trailheads and via the forest website. Having no defined snow depth would provide improved public trail access for OSV users from trailheads to deeper snow areas and allow motorized users access to higher elevations and adequate snow depths. This would enhance OSV opportunities, while also protecting resources.

The proposed OSV designations would comply with existing ROS classes, maintaining a variety of both motorized and non-motorized recreation opportunities available across the national forest. Primitive and semi-primitive non-motorized areas would remain closed to OSV use, while motorized opportunities would be available in semi-primitive motorized, roaded natural and rural ROS classes.

### **Conflicts between Motorized and Non-motorized Winter Experiences**

Non-motorized winter recreation enthusiasts would continue to be displaced in some areas by motorized OSV use, or be unable to access areas for desired quiet, non-motorized experiences away from the sights, sounds, and smells of motorized use, since they would have to travel longer distances through motorized routes and areas than they are physically able to traverse. However, there would be 81,259 acres available for quiet, non-motorized winter activities and 44 miles of cross-country ski trails and other non-motorized trails within 10 miles of plowed trailheads. This would be a 6,090-acre increase over existing conditions. There would be a total of 195,580 acres across the Lassen National Forest available for quiet, non-motorized experiences, where OSV use would not be designated.

**Table 33. Acres available for quality non-motorized winter activities – alternative 4**

<b>OSV Area</b>	<b>Acres available for quiet, non-motorized winter activities (closed to OSV use) within 10 miles of plowed trailheads</b>
Ashpan	15,892
Bogard	676
Fredonyer	1,138
Jonesville	16,987
Morgan Summit	26,068
Swain Mountain	20,498
<b>Total</b>	<b>81,259</b>

Otherwise, alternative 4 effects would be the same as described for alternative 2.

### **Areas Designated Non-motorized under Existing Law or Policy**

Alternative 4 would be the same as alternative 2 in regard to areas designated as non-motorized under existing law and policy, with the exception of the area below 3,500 feet and the limitation to designated trails in the area south of Lassen Volcanic National Park in the Swain Mountain and Morgan Summit areas. Allowing use in areas below 3,500 feet in the southwestern portion of the Lassen National Forest would not provide additional protection from OSV use near wilderness, proposed wilderness, and IRAs, or from OSV use near Antelope and Mill Creek eligible wild and scenic river corridors; however, a majority of the corridors would be located in areas that are closed to OSVs under existing conditions, or are in areas where low to no OSV use is expected. Restrictions to designated trails south of Lassen Volcanic National Park would minimize impacts from OSV encroachment into the Heart Lake and Wild Cattle Mountain proposed wilderness areas, and Lassen Volcanic National Park.

**Table 34. Resource indicators and measures for alternative 4 direct and indirect effects**

<b>Resource Element</b>	<b>Resource Indicator</b>	<b>Measure (Quantify if possible)</b>	<b>Alternative 4</b>
<b>Motorized Recreation Opportunities – cross-country</b>	Opportunities for motorized winter uses	Total area (acres) open to OSV use, percent change	954,450 acres open to public cross-country OSV use, subject to snow depth restrictions, a 1 percent decrease from existing conditions.  Depth necessary to avoid resource damage
<b>Motorized Recreation Opportunities – designated snow trails</b>	OSV trail designations	Length of designated OSV trails (miles), percent change	380 miles of OSV snow trails, subject to snow depth restrictions. 6.4 percent decrease from existing conditions (however a majority of the current trail system is designated or in OSV open areas)  Depth necessary to avoid resource damage
<b>Motorized Recreation Opportunities – groomed snow trails</b>	OSV trail grooming	Length groomed OSV trails (miles), percent change	349 miles, no change  12 inch snow depth requirement for grooming
<b>Non-motorized Recreation Opportunities – displacement</b>	Access to desired non-motorized recreation settings and opportunities	Total area (acres) and length of trails (miles) available to non-motorized recreation enthusiasts within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non-motorized winter use,  81,259 acres available for non-motorized recreation within 10 miles of plowed trailheads  44 miles of cross-country ski trails and other non-motorized trails available within 10 miles of plowed trailheads
	Recreation Opportunity Spectrum	Consistency of OSV designations with ROS classes	Motorized OSV use prohibited in Primitive and Semi-Primitive Non-Motorized ROS classes. Motorized OSV use allowed in Semi-Primitive Motorized, Roaded Natural and Rural ROS classes.
<b>Non-motorized Recreation Conflicts – Public Safety</b>	Areas and trails available to non-motorized recreation enthusiasts for quality non-motorized recreation experiences	Total area (acres) closed to OSV use/length of non-motorized trails (miles), percent change	195,580 acres, 4.9 percent increase/ six non-motorized trails with a total of 148 miles for non-motorized use.

Resource Element	Resource Indicator	Measure (Quantify if possible)	Alternative 4
<p><b>Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas</b></p>	<p>Proximity and frequency of OSV designations in relation to designated non-motorized areas</p>	<p>Distance of groomed public OSV snow trails from designated non-motorized areas, or number of crossings of linear areas designated as non-motorized under existing law or policy</p>	<p>A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries</p> <p>Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park’s southeastern corner, and 1 1/2 miles north of the park’s northwestern corner.</p> <p>No designated PCT crossing points. 97.68 miles of the PCT are within 500 feet of an area designated for OSV use.</p> <p>No known conflicts with tribal/spiritual areas, historic areas or populated areas.</p>
	<p>Noise</p>	<p>Total area (acres) potentially affected by noise/total area (acres) closed to winter motorized use</p> <p>Proximity of predicted noise increases above ambient levels in sensitive areas (GIS model for selected points)</p>	<p>954,450 acres open for OSV use and potentially affected by noise/195,580 acres closed to OSV use and available for quiet recreation</p>
	<p>Air Quality</p>	<p>Qualitative/narrative description of potential impacts (with reference to air quality analysis)</p>	<p>Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions. Slightly fewer acres open to OSV use than in existing conditions (see air quality report).</p>
	<p>Scenery</p>	<p>Qualitative/narrative description of potential visual impacts</p>	<p>Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. Slightly fewer acres open to cross-country OSV use, and associated visual impacts than in existing conditions. The visual evidence of snowmobile use decreases as fresh snow covers the tracks and/or when the snow melts at the end of the season</p>
	<p>Wilderness Attributes</p>	<p>Total area (acres) affected and duration of impact. Qualitative description for wilderness attributes</p>	<p>Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries. There are approximately 25,575 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries, The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.</p>

Resource Element	Resource Indicator	Measure (Quantify if possible)	Alternative 4
<b>Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas (continued)</b>	Roadless Characteristics	Total area (acres) affected and duration of impact. Qualitative description for roadless characteristics	Approximately 72,681 IRA acres open to OSV use.  Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of expected high to moderate OSV use.

### *Cumulative Effects – Alternative 4*

The cumulative effects of alternative 4 would be the same as described for alternative 2.

### **Alternative 5**

Alternative 5 is described in detail in chapter 2. Alternative 5 was developed to address the non-motorized recreational experience significant issue. Alternative 5 would designate 6 discrete, specifically delineated areas for cross-country OSV use. These areas would encompass 633,360 acres. Alternative 5 would designate 390 miles of OSV snow trails. This would represent a reduction in the number of miles of trail where OSV use is currently allowed. However, a majority of the current trail system would be either designated for public OSV use or are located in areas that would be designated for public, cross-country OSV use in this alternative. Alternative 5 would identify 349 miles of snow trails for grooming, as in the existing conditions.

The minimum snow depth for snow trail grooming would be 12 inches. The minimum snow depth for public OSV use on designated snow trails would be 12 inches. The minimum snow depth for OSV use in areas designated for public, cross-country OSV use would be 12 inches. No areas below the elevation of 3,500 feet would be designated for OSV use. No winter deer range would be designated for OSV use. For the Bogard Area this would include the small area located between the 3,500-foot and winter deer range restrictions.

### *Direct and Indirect Effects - Alternative 5*

#### **Recreation Settings and Opportunities**

Impacts to recreation settings and opportunities would be similar to those described in alternative 3, and would further enhance opportunities for quiet non-motorized winter activities due to fewer acres being designated for OSV use. Alternative 5, however, would require a minimum snow depth of 12 inches for use of OSV trails, potentially reducing opportunities to reach adequate snow depths at higher elevations.

#### **Conflicts between Motorized and Non-motorized Winter Experiences**

Non-motorized winter recreation enthusiasts would continue to be displaced in some areas by motorized OSV use, or be unable to access areas for desired quiet, non-motorized experiences away from the sights, sounds, and smells of motorized use, since they would have to travel longer distances through motorized routes and areas than they are physically able to traverse. However, there would be 166,463 acres available for quiet, non-motorized winter activities and 44 miles of cross-country ski trails and other non-motorized trails within 10 miles of plowed trailheads. This would be a 91,294-acre increase over existing conditions. There would be a total of 510,540 acres across the Lassen National Forest available for quiet, non-motorized experiences, where OSV use would not be designated.

**Table 35. Acres available for quality non-motorized winter activities – alternative 5**

OSV Area	Acres available for quiet, non-motorized winter activities (closed to OSV use) within 10 miles of plowed trailheads
Ashpan	15,893
Bogard	1,253
Fredonyer	3,027
Jonesville	42,524
Morgan Summit	40,699
Swain Mountain	63,067
<b>Total</b>	<b>166,463</b>

**Areas Designated Non-motorized under Existing Law or Policy**

**Table 36. Resource indicators and measures for alternative 5 direct and indirect effects**

Resource Element	Resource Indicator	Measure (Quantify if possible)	Alternative 5
<b>Motorized Recreation Opportunities – cross-country</b>	Opportunities for motorized winter uses	Total area (acres) open to OSV use, percent change	633,360 acres open to public cross-country OSV use, subject to snow depth restrictions, a 33 percent decrease from existing conditions.  12 inch snow depth requirement
<b>Motorized Recreation Opportunities – designated snow trails</b>	OSV trail designations	Length of designated OSV trails (miles), percent change	390 miles of OSV snow trails, subject to snow depth restrictions. 3.9 percent decrease from existing conditions (however a majority of the current trail system is designated or in OSV open areas)  12 inch snow depth requirement
<b>Motorized Recreation Opportunities – groomed snow trails</b>	OSV trail grooming	Length groomed OSV trails (miles), percent change	349 miles, no change  12 inch snow depth requirement for grooming
<b>Non-motorized Recreation Opportunities – displacement</b>	Access to desired non-motorized recreation settings and opportunities	Total area (acres) and length of trails (miles) available to non-motorized recreation enthusiasts within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non-motorized winter use,  166,463 acres available for non-motorized recreation within 10 miles of plowed trailheads  44 miles of cross-country ski trails and other non-motorized trails available within 10 miles of plowed trailheads
	Recreation Opportunity Spectrum	Consistency of OSV designations with ROS classes	Motorized OSV use prohibited in Primitive and Semi-Primitive Non-Motorized ROS classes. Motorized OSV use allowed in Semi-Primitive Motorized, Roaded Natural and Rural ROS classes.

Resource Element	Resource Indicator	Measure (Quantify if possible)	Alternative 5
<b>Non-motorized Recreation Conflicts – Public Safety</b>	Areas and trails available to non-motorized recreation enthusiasts for quality non-motorized recreation experiences	Total area (acres) closed to OSV use/length of non-motorized trails (miles), percent change	510,540 acres, 63.6 percent increase/ six non-motorized trails with a total of 148 miles for non-motorized use.
<b>Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas</b>	Proximity and frequency of OSV designations in relation to designated non-motorized areas	Distance of groomed public OSV snow trails from designated non-motorized areas, or number of crossings of linear areas designated as non-motorized under existing law or policy	<p>A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries</p> <p>Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park’s southeast corner, and 1 1/2 miles north of the park’s northwest corner.</p> <p>28 designated PCT crossing points. No areas designated for OSV use within 500 feet of the PCT.</p> <p>No known conflicts with tribal/spiritual areas, historic areas or populated areas.</p>
	Noise	<p>Total area (acres) potentially affected by noise/total area (acres) closed to winter motorized use</p> <p>Proximity of predicted noise increases above ambient levels in sensitive areas (GIS model for selected points)</p>	633,360 acres open for OSV use and potentially affected by noise/510,540 acres closed to OSV use and available for quiet recreation
	Air Quality	Qualitative/narrative description of potential impacts (with reference to air quality analysis)	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions. Substantially fewer acres open to OSV use than in existing conditions (see air quality report).
	Scenery	Qualitative/narrative description of potential visual impacts	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. Substantially fewer acres open to cross-country OSV use, and associated visual impacts than in existing conditions. The visual evidence of snowmobile use decreases as fresh snow covers the tracks and/or when the snow melts at the end of the season

Resource Element	Resource Indicator	Measure (Quantify if possible)	Alternative 5
	Wilderness Attributes	Total area (acres) affected and duration of impact. Qualitative description for wilderness attributes	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries. There are approximately 17,257 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries. The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.
<b>Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas (continued)</b>	Roadless Characteristics	Total area (acres) affected and duration of impact. Qualitative description for roadless characteristics	Approximately 83,411 IRA acres open to OSV use.  Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of expected high to moderate OSV use.

*Cumulative Effects – Alternative 5*

The cumulative effects of alternative 5 would be the same as described for alternative 2.

**Summary**

**Degree to Which the Purpose and Need for Action is Met**

All of the action alternatives (alternatives 2, 3, 4, and 5) equally meet the purpose and need to effectively manage OSV use by identifying a manageable system of OSV trails and areas per Subpart C of the Travel Management Regulation and to identify OSV trails for grooming to provide a high-quality OSV trail system.

**Degree to Which the Alternatives Address the Issues**

Table 37 provides a comparison of the alternatives and the degree to which the alternatives address the recreation-related issues.

**Table 37. Summary comparison of how the alternatives address the key issues**

Resource Element	Resource Indicator/Measure	Alternative 1 No Action	Alternative 2 Modified Proposed Action	Alternative 3	Alternative 4	Alternative 5
<b>Motorized Recreation Opportunities – cross-country</b>	Opportunities for motorized winter uses/total area (acres) and percent change	964,030 acres open to public, cross-country OSV use, subject to snow depth restrictions  No minimum snow depth requirement	921,180 acres open to public cross-country OSV use, subject to snow depth restrictions, a 4.4 percent decrease from existing conditions.  12 inch snow depth requirement	833,990 acres open to public cross-country OSV use, subject to snow depth restrictions, a 13.5 percent decrease from existing conditions.  12 inch snow depth requirement	954,450 acres open to public cross-country OSV use, subject to snow depth restrictions, a 1 percent decrease from existing conditions.  Depth necessary to avoid resource damage	633,360 acres open to public cross-country OSV use, subject to snow depth restrictions, a 33 percent decrease from existing conditions.  12 inch snow depth requirement
<b>Motorized Recreation Opportunities – designated snow trails</b>	OSV trail designations, length of trails (miles) and percent change	406 miles of groomed, ungroomed, marked and un-marked OSV trails open for OSV use, subject to snow depth restrictions  No minimum snow depth requirement	334 miles of designated OSV snow trails, subject to snow depth restrictions, 17.7 percent decrease from existing conditions (however a majority of the current trail system is designated or in OSV open areas).  6 inch or more snow depth on snow trails overlaying roads and trails;  12 inch snow depth on 0.1 mile of trail not overlaying roads or trails.	383 miles of designated OSV snow trails, subject to snow depth restrictions. 5.6 percent decrease from existing conditions (however a majority of the current trail system is designated or in OSV open areas).  6 inches where site review determines there would be no damage to underlying resources	380 miles of designated OSV snow trails, subject to snow depth restrictions. 6.4 percent decrease from existing conditions (however a majority of the current trail system is designated or in OSV open areas)  Depth necessary to avoid resource damage	390 miles of OSV snow trails, subject to snow depth restrictions. 3.9 percent decrease from existing conditions (however a majority of the current trail system is designated or in OSV open areas)  12 inch snow depth requirement

Resource Element	Resource Indicator/Measure	Alternative 1 No Action	Alternative 2 Modified Proposed Action	Alternative 3	Alternative 4	Alternative 5
<b>Motorized Recreation Opportunities – groomed snow trails</b>	OSV trail grooming, length of trails (miles), percent change	349 miles  12 inch snow depth requirement for grooming	349 miles, no change 12 inch snow depth requirement for grooming	349 miles, no change 18 inch snow depth requirement for grooming	349 miles, no change 12 inch snow depth requirement for grooming	349 miles, no change 12 inch snow depth requirement for grooming
<b>Non-motorized Recreation Opportunities – displacement</b>	Access to desired non-motorized recreation settings and opportunities  Total area (acres) and length of trails (miles) available to non-motorized recreation enthusiasts within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non-motorized winter use,  75,169 acres available for non-motorized recreation within 10 miles of plowed trailheads  44 miles of cross-country ski trails and other non-motorized routes available for non-motorized recreation within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non-motorized winter use,  85,706 acres available for non-motorized recreation within 10 miles of plowed trailheads  44 miles of cross-country ski trails and other non-motorized trails available within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non-motorized winter use,  122,774 acres available for non-motorized recreation within 10 miles of plowed trailheads  44 miles of cross-country ski trails and other non-motorized trails available within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non-motorized winter use,  81,259 acres available for non-motorized recreation within 10 miles of plowed trailheads  44 miles of cross-country ski trails and other non-motorized trails available within 10 miles of plowed trailheads	Six plowed trailheads provide access for motorized and non-motorized winter use,  166,463 acres available for non-motorized recreation within 10 miles of plowed trailheads  44 miles of cross-country ski trails and other non-motorized trails available within 10 miles of plowed trailheads
	Recreation Opportunity Spectrum/Consistency with ROS class	Consistent	Consistent	Consistent – with enhanced opportunities for non-motorized recreation experiences	Consistent – with enhanced opportunities for motorized recreation experiences	Consistent – with substantially enhanced opportunities for non-motorized recreation experiences

Resource Element	Resource Indicator/Measure	Alternative 1 No Action	Alternative 2 Modified Proposed Action	Alternative 3	Alternative 4	Alternative 5
<b>Non-motorized Recreation Conflicts – Public Safety</b>	Total area (acres) and length of trails (miles) available to non-motorized recreation enthusiasts for quality non-motorized recreation experiences	185,983 acres closed to OSV use, a total of 148 miles for non-motorized use.	228,847 acres, a 23 percent increase/ six non-motorized trails with a total of 148 miles for non-motorized use.	316,048 acres, a 41.2 percent increase/ six non-motorized trails with a total of 148 miles for non-motorized use.	195,580 acres, 4.9 percent increase/ six non-motorized trails with a total of 148 miles for non-motorized use.	510,540 acres, 63.6 percent increase/ six non-motorized trails with a total of 148 miles for non-motorized use.
<b>Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas</b>	Proximity and frequency of OSV designations in relation to designated non-motorized areas  Distance of groomed public OSV snow trails from areas designated as non-motorized under existing law or policy, or number of crossings of linear areas designated as non-motorized under existing law or policy	A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries.  Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park's southeast corner, and 1 1/2 miles north of the park's northwest corner.  No designated PCT crossing points. 98.42 miles of the PCT are within 500 feet of an area designated for OSV use.	A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries.  Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park's southeast corner, and 1 1/2 miles north of the park's northwest corner.  28 designated PCT crossing points. No areas designated for OSV use within 500 feet of the PCT.  No known conflicts with tribal/spiritual areas, historic areas or populated areas.	A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries  Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park's southeast corner, and 1 1/2 miles north of the park's northwest corner.  No designated PCT crossing points. 85.42 miles of the PCT are within 500 feet of an area	A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries  Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park's southeast corner, and 1 1/2 miles north of the park's northwest corner.  No designated PCT crossing points. 97.68 miles of the PCT are within 500 feet of	A total of approximately 9 miles of groomed OSV trails within 1/2 mile of the Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries  Lassen Volcanic National Park: Groomed OSV trails ¾ mile east of the park's southeast corner, and 1 1/2 miles north of the park's northwest corner.  28 designated PCT crossing points. No areas

Resource Element	Resource Indicator/Measure	Alternative 1 No Action	Alternative 2 Modified Proposed Action	Alternative 3	Alternative 4	Alternative 5
		No known conflicts with tribal/spiritual areas, historic areas or populated areas.		designated for OSV use.  No known conflicts with tribal/spiritual areas, historic areas or populated areas.	an area designated for OSV use.  No known conflicts with tribal/spiritual areas, historic areas or populated areas.	designated for OSV use within 500 feet of the PCT.  No known conflicts with tribal/spiritual areas, historic areas or populated areas.
	Noise  Total area (acres) potentially affected by noise/total area (acres) closed to winter motorized use	964,030 acres open to OSV use, potentially affected by noise; 185,983 acres closed to OSV use, available for quiet recreation.	921,180 acres open to OSV use, potentially affected by noise; 228,847 acres closed to OSV use, available for quiet recreation.	833,990 acres open to OSV use, potentially affected by noise; 316,048 acres closed to OSV use, available for quiet recreation.	954,450 acres open to OSV use, potentially affected by noise; 195,580 acres closed to OSV use, available for quiet recreation.	633,360 acres open to OSV use, potentially affected by noise; 510,540 acres closed to OSV use, available for quiet recreation
<b>Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas (continued)</b>	Air Quality  Qualitative/narrative description of potential impacts (with reference to air quality analysis	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions (see air quality report).	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions. Slightly fewer acres open to OSV use than in existing conditions (see air quality report).	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions. Fewer acres open to OSV use than in existing conditions and alternative 2 (see air quality report).	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions. Slightly fewer acres open to OSV use than in existing conditions (see air quality report).	Potential short-term impacts to the experience of recreational visitors in the vicinity of OSV and grooming equipment due to the smell of exhaust emissions. Substantially fewer acres open to OSV use than in existing conditions (see air quality report).

Resource Element	Resource Indicator/Measure	Alternative 1 No Action	Alternative 2 Modified Proposed Action	Alternative 3	Alternative 4	Alternative 5
	Scenery  Qualitative/narrative description of potential visual impacts	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. The visual evidence of snowmobile use decreases as fresh snow covers the tracks and/or when the snow melts at the end of the season.	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. Fewer acres open to cross-country OSV use, and associated visual impacts than in existing conditions. The visual evidence of snowmobile use decreases as fresh snow covers the tracks and/or when the snow melts at the end of the season	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. Fewer acres open to cross-country OSV use, and associated visual impacts than in existing conditions or Alt. 2. The visual evidence of snowmobile use decreases as fresh snow covers the tracks and/or when the snow melts at the end of the season	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. Slightly fewer acres open to cross-country OSV use, and associated visual impacts than in existing conditions. The visual evidence of snowmobile use decreases as fresh snow covers the tracks and/or when the snow melts at the end of the season	Cross-country OSV use creates temporary tracks in the snow that crisscross the landscape. Substantially fewer acres open to cross-country OSV use, and associated visual impacts than in existing conditions. The visual evidence of snowmobile use decreases as fresh snow covers the tracks and/or when the snow melts at the end of the season
<b>Non-motorized Recreation Conflicts – Solitude, Air Quality, Scenery, Designated non-motorized areas (continued)</b>	Wilderness Attributes  Total area (acres) affected and duration of impact. Qualitative description for wilderness attributes	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries.  There are approximately 27,108 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries, The duration of the	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries.  There are approximately 21,266 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries, The duration of the potential impacts would be short-term, during the winter while snow depth is	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries.  There are approximately 19,173 acres open to OSV use within ½ mile of designated and proposed wilderness boundaries, The	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries.  There are approximately 25,575 acres open to OSV use within ½ mile of designated and proposed	Opportunities for solitude may be temporarily affected due to the sights and sounds of OSVs near the wilderness or proposed wilderness boundaries.  There are approximately 17,257 acres open to OSV use within ½ mile of designated and

Resource Element	Resource Indicator/Measure	Alternative 1 No Action	Alternative 2 Modified Proposed Action	Alternative 3	Alternative 4	Alternative 5
		potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.	adequate for OSVs to access the area.	duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.	wilderness boundaries, The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.	proposed wilderness boundaries, The duration of the potential impacts would be short-term, during the winter while snow depth is adequate for OSVs to access the area.
	Roadless Characteristics Total area (acres) affected and duration of impact. Qualitative description for roadless characteristics	Approximately 72,969 IRA acres open to OSV use.  Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of expected high to moderate OSV use.	Approximately 59,746 IRA acres open to OSV use.  Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of expected high to moderate OSV use.	Approximately 58,291 IRA acres open to OSV use.  Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of expected high to moderate OSV use.	Approximately 72,681 IRA acres open to OSV use.  Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of expected high to moderate OSV use.	Approximately 83,411 IRA acres open to OSV use.  Opportunities for solitude are temporarily affected in portions of four roadless areas that are within areas of expected high to moderate OSV use.

## Summary of Environmental Effects

### Recreation Settings and Opportunities

All action alternatives would provide the same level of groomed motorized OSV trail opportunities. Cross-country travel, and use of OSV trails would be limited by minimum snow depth requirements for all action alternatives; however, alternative 4 would provide the least restrictive snow depth, described as, the depth necessary to avoid resource damage. Alternative 2 would allow use of OSV trails with a 6-inch minimum snow depth and alternative 3 provides some flexibility in the snow depth requirements for trails where site review determines there would be no damage to underlying resources. This flexibility would allow OSV access to higher elevations and adequate snow depths. Alternative 4 would provide the most access for motorized OSV use forest-wide, compared to alternatives 2 and 3. Alternative 5 provides the least access for motorized OSV use forest-wide.

Alternatives 3 and 5 would enhance opportunities for quiet, non-motorized recreation with additional areas where OSV use would not be designated, and areas where OSV use would be allowed only on designated OSV trails, while maintaining the existing level of groomed OSV trail opportunities.

Alternative 2 would maintain OSV opportunities most similar to the existing conditions on the Lassen National Forest.

### Conflicts between Motorized and Non-Motorized Uses

All action alternatives would minimize conflicts between motorized and non-motorized uses to some degree by designating a clear system of OSV trails and areas, and development of the subsequent OSV use maps that would allow visitors to choose areas to recreate that would best meet their expectations and desired settings.

Alternative 3 would substantially minimize conflicts between motorized and non-motorized uses by designating fewer acres for OSV use, and designating two areas where OSVs would be restricted to designated OSV trails. Alternative 5 would enhance the quiet, non-motorized recreation experience to the greatest extent of all alternatives, by designating the least amount of acres for OSV use. These designations would provide separate areas for non-motorized recreation that would not be influenced by the noise, smell of exhaust and presence of OSVs. Alternatives 3 and 5 also would enhance public safety for non-motorized users by providing areas that would be separated from the influence of OSVs.

Alternative 4 would provide the most acres open to OSV use, and therefore, would have the potential for continued or increased conflict with non-motorized users in the future, with the exception of one area where OSVs would be restricted to the designated OSV trail. Alternative 4 would also enhance public safety for non-motorized users in this area.

### Areas Designated Non-motorized under Existing Law or Policy

Potential impacts to areas designated as non-motorized under existing law or policy related to the groomed OSV trail system, such as encroachment into wilderness, proposed wilderness, and adjacent Federal lands, would be the same for all action alternatives, since all alternatives would provide the same level of groomed motorized snow trail opportunities. Alternatives 2, 3, and 5 would provide slightly more protection for the Ishi Wilderness, Mill Creek Proposed Wilderness, semi-primitive non-motorized areas within the Ishi and Polk Springs Inventoried Roadless Areas, and Antelope and Mill Creek eligible wild and scenic river corridors, since OSV use would not be designated in the southwestern portion of the forest, and areas below 3,500 feet in elevation. Alternatives 3 and 5 would minimize potential impacts to wilderness and proposed wilderness areas to the greatest extent with the additional areas where OSV use

would not be designated north of Caribou Wilderness and south of the Heart Lake and Wild Cattle Mountain Proposed Wilderness Areas. Not designating OSV use in these areas would also help to minimize potential impacts from the sights and sounds of OSVs to quiet, non-motorized areas within Lassen Volcanic National Park.

Alternative 4 would include restrictions to designated trails in the areas south of Lassen Volcanic National Park that would minimize impacts from OSV encroachment into the Heart Lake and Wild Cattle Mountain proposed wilderness areas, and Lassen Volcanic National Park.

Alternatives 2 and 5 do not designate any OSV areas within 500 feet of the PCT, and designate 28 crossing points of the PCT, both alternatives would minimize potential conflicts between motorized and non-motorized users along the PCT. Alternatives 2 and 5 would comply with the direction in the PCT Comprehensive Plan regarding management of the PCT and would maintain non-motorized opportunities and quiet settings along the trail. In alternatives 3 and 4, the PCT trail itself would remain non-motorized, however there would be no restrictions for OSVs crossing the trails in OSV open areas, potentially leading to conflicts between motorized and non-motorized users along the trail.

In all action alternatives, wilderness areas, semi-primitive non-motorized areas and research natural areas would be closed to OSV use.

## **Compliance with LRMP and Other Relevant Laws, Regulations, Policies and Plans**

Alternative 1, no action, would not comply with Subpart C of the Travel Management Regulation that requires designation of trails, and areas on NFS lands to provide for over-snow vehicle use. Alternative 1 would not implement the management area direction from the Lassen Forest Plan to prohibit motorized use in the Blacks Mountain Research Natural Area.

Alternatives 2, 3, 4, and 5 would comply with Subpart C of the Travel Management Regulation and the Lassen Forest Plan.

## **Other Relevant Mandatory Disclosures**

### **Short-term Uses and Long-term Productivity**

Short-term uses will not affect the long-term productivity of recreation resources.

### **Unavoidable Adverse Effects**

Allowing motorized OSV use, which is an acceptable use of NFS lands, unavoidably affects non-motorized or quiet opportunities in some areas, as discussed in the analysis related to conflicts between motorized and non-motorized winter experiences.

### **Irreversible and Irretrievable Commitments of Resources**

OSV trail and area designations are not irreversible and irretrievable commitments of resources.

# Transportation Resources

## Introduction

This analysis considers and discloses potential effects to infrastructure and roads (safety, traffic, affordability, jurisdiction, and the underlying forest transportation system) that could result from four unique action alternatives designed to implement Subpart C of the Travel Management Regulations (36 CFR 212). These regulations require designating roads, trails and areas for OSV use.

This analysis also addresses other actions included in the alternatives, including identification of snow trails for grooming for snowmobile use.

This analysis will provide a comparison of alternatives that would result in varying levels of snowmobile use.

Engineering and roads are not directly related to the purpose and need nor directly connected to significant issues identified during the scoping process. Significant issues identified include:

- Motorized recreation opportunities
- Non-motorized recreation opportunities

## Relevant Laws, Regulations, and Policy

### Laws

*National Forest Roads and Trails Act of October 13, 1964, as amended (16 U.S.C. 532-538)*

This act authorizes road and trail systems for the national forests. It also authorizes granting of easements across NFS lands, construction and financing of maximum economy roads (FSM 7705), and imposition of requirements on road users for maintaining and reconstructing roads, including cooperative deposits for that work.

*Annual Department of the Interior, Environment, and Related Agencies Appropriations Act*

This act appropriates funds for the Forest Service's road and trail programs.

*Organic Administration Act of 1897 (16 U.S.C. 551).*

This act authorizes the regulation of national forests.

*National Trails System Act of October 2, 1968 (16 U.S.C. 1241-1249)*

This act established the National Trails System and authorizes planning, right-of-way acquisition, and construction of trails established by Congress or the Secretary of Agriculture.

### Federal Regulations

*Code of Federal Regulations*

- 36 CFR 212 (Forest Service travel management)
- 36 CFR 251 (Land Uses)
- 36 CFR 261 (Prohibitions)
- Forest Service Manual & Handbooks
- FSM 7700 Travel Management
- FSM 7730 Transportation System Operation and Maintenance

- FSH 7709.55 Chapter 10- Travel Planning for Designations
- FSH 7709.59 Chapter 20- Traffic Management

### State Direction

- California Snowmobile Trail Grooming (1997 Grooming Standards)
- Over Snow Vehicle Program Final Environmental Impact Report, Program Years 2010 – 2020 (State of California, Dept. of Parks and Recreation)
- California OSV laws

## Lassen National Forest Land and Resource Management Plan

### Forest-wide Standards and Guidelines

#### FACILITIES

- Provide a stable and cost-efficient road system through appropriate construction, reconstruction, maintenance
  - Maintain all roads and related structures to protect resources of adjacent areas; meet contractual and legal obligations, and provide an efficient transportation system
- Provide a stable and cost-efficient trail system through appropriate construction, re-construction, maintenance
  - Meet current objectives for trail management and use of all designated hiking, equestrian, off-highway vehicle, and over-snow trails.
  - Maintain all trails and related structures to: protect the recreation amenities of adjacent areas, provide reasonable access, be an efficient transportation system; and provide various levels according to type and volume of use
  - Modify parts of the Forest Development Trail System as needed to meet changing use demands
  - Construct, reconstruct, and maintain each trail to satisfy reasonable environmental and economic criteria
- Provide administrative sites and facilities that effectively and cost-efficiently serve the public and the Forest Service workforce

### *Sierra Nevada Forest Plan Amendment*

- No applicable direction

## Topics and Issues Addressed in this Analysis

### Purpose and Need

One purpose of this project is to effectively manage OSV use on the Lassen National Forest to provide access, ensure that OSV use occurs when there is adequate snow, promote the safety of all users, enhance

public enjoyment, minimize impacts to natural and cultural resources, and minimize conflicts among the various uses.

There is a need to provide a manageable, designated OSV system of trails and areas within the Lassen National Forest that is consistent with and achieves the purposes of the Forest Service Travel Management Rule at 36 CFR part 212. This action responds to direction provided by the Forest Service's Travel Management Rule at 36 CFR part 212 and subpart C of the Travel Management Rule, as proposed.

A second purpose of this project is to identify those designated National Forest System OSV trails where grooming for OSV use would occur as required by the settlement agreement between the Forest Service and Snowlands Network, et al. Under the terms of the settlement agreement, the Forest Service is required to complete the appropriate NEPA analysis to identify snow trails for grooming on the Lassen National Forest. This action would identify snow trails for grooming.

The settlement agreement also requires analyzing ancillary activities such as the plowing of related parking lots and trailheads as part of the effects analysis. If determined to be relevant and useful for the analysis of cumulative impacts, the cumulative impacts of these activities would be analyzed.

Based on the above purpose and need, transportation and engineering are not directly related; however, the Forest transportation system does include over-snow vehicle trails, and many of the trails are located atop underlying NFS roads. Therefore, the effects to engineering and roads will be analyzed here.

### Resource Indicators and Measures

- Measurement Indicator 1: Public Safety and Traffic - For each alternative display/discuss the effects on public safety. Discuss the proposed changes to the trail system and effects it would have to motor vehicle operators and other users of the trail system. Note any instances where the proposed designation would allow operation of motor vehicles in a manner inconsistent with State law.
- Measurement Indicator 2: Affordability –For each alternative display/discuss how over-snow uses and grooming would affect the total cost of maintaining the Forest Transportation System (FTS) that would be open to motor vehicle use. Include the annual maintenance changes associated with making the changes to the system. This analysis will not involve road maintenance costs associated with standard wheeled motor vehicles.
- Measurement Indicator 3: Effects to underlying NFS roads and trails, including wear and tear that may potentially affect wheeled motor vehicle use.

This analysis uses qualitative indicators and measures, due to the nature of the resource and scope/scale of the alternatives.

## Methodology

### Information Sources

The Forest Transportation Atlas was the primary data used, along with professional expertise. The atlas is primarily composed of roads and motorized trail information as contained in geographic information system (GIS) spatial data and Forest Service Infrastructure (INFRA) tabular data. In addition, the proposed over-snow vehicle route network for designation, by alternative (GIS data) were included. Last of all, the existing NFS roads and OSV-related engineering facilities, including snow parks, warming huts, parking areas (GIS data) were considered.

All distance figures are approximate values based on the Forest Transportation Atlas (including spatial GIS data and tabular INFRA data) and are limited to the accuracy of those sources which includes

measurements from GIS, GPS, field instruments and aerial photography. Mileages have been updated throughout the planning process as better information has been made available and may change slightly with additional field verification and project implementation.

### Assumptions

- All OSV users would follow applicable laws and designations as described under each alternative.
- All proposed and analyzed OSV trails would be located where the Forest Service has jurisdiction.

### Spatial and Temporal Context for Effects Analysis

The affected spatial area where direct, indirect, and cumulative transportation effects may be caused by proposed activities involves the project area (Lassen National Forest).

The temporal boundaries for transportation effects from the proposed activities are indefinite, as long as snow conditions exist to provide for the designations as described under each alternative.

## Affected Environment

### Existing Condition

The existing system of available OSV trails and areas on the Lassen National Forest is the culmination of multiple agency decisions over recent decades. Currently, the Forest Service requires 12 or more inches of snow on the ground to operate an OSV on the Lassen National Forest. Although 12 inches of snow may exist at a given time in many higher elevation areas, there may be less than 12 inches of snow at trailheads, which under current rules, would leave areas with 12 or more inches of snow inaccessible to OSV use. All snow trails are located on existing dirt, gravel, or paved trails or roads. These trails and roads are used in the summer for highway vehicles, off-highway vehicles, and non-motorized recreation. Snow grooming currently is allowed when there is a minimum snow depth of 12 inches.

The following summarizes how the Forest Service currently manages OSV use on the approximately 1,050,020-acre Lassen National Forest:

- There are 2,952 miles of currently groomed, ungroomed, marked, and unmarked snow trail open to public OSV and non-motorized use as shown on the 2005 Lassen National Forest Winter Recreation Guide (project record). These trails overlie roads and trails designated for wheeled vehicle use and are within areas currently open to OSV use. Approximately 406 miles of these trails are maintained for OSV use through signage, snow trail grooming, or both.
- Approximately 349 miles of groomed OSV trails are open to OSV use. This includes 27 miles of snow trail not under Forest Service jurisdiction;
- Approximately 964,030 acres of NFS land is open to off-trail cross-country OSV use; and
- Approximately 185,980 acres of NFS land is closed to OSV use.

### Desired Condition

The desired condition involves providing a stable and cost-efficient road system through appropriate construction, reconstruction, maintenance; providing a stable and cost-efficient trail system through appropriate construction, reconstruction, maintenance; and providing administrative sites and facilities that effectively and cost-efficiently serve the public and the Forest Service workforce.

## Environmental Consequences

### Alternative 1 – No Action

Under alternative 1, there would be no changes to the existing OSV use on roads, trails, and areas within the Lassen National Forest except as prohibited by Forest Order. In addition, only those seasonal restrictions as specified in the Lassen Forest Plan and contained in existing Forest Orders would be continued. The Travel Management Regulations, Subpart C, would not be implemented, and no OSV use map would be produced.

#### *Direct and Indirect Effects – Alternative 1*

**Table 38. Resource indicators and measures for alternative 1**

Resource Element	Resource Indicator	Measure	Alternative 1
Safety	Public Safety & Traffic	Qualitative effects to motor vehicle operators and other users of the trail system	The current Lassen National Forest Winter Recreation Guide map provides adequate information to maintain a reasonable level of public safety and avoid traffic conflicts
Cost	Affordability	Qualitative effects to the total cost of maintaining the Forest transportation system (FTS) that would be open to motor vehicle use	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.
Transportation property	Effects to underlying NFS roads and trails	Wear and tear that may affect wheeled motor vehicle use	12 or more inches of snow for grooming and 12 inches for cross-country and trail and road OSV use requirement provides more than adequate protection of underlying roads and trails.

### Alternative 2 – Proposed Action

Alternative 2 proposes to designate NFS trails and areas on NFS lands for OSV use within the Lassen National Forest where snowfall depth is adequate for that use to occur. The responsible official would designate OSV use as allowed, restricted, or prohibited on administrative units or Ranger Districts, or parts of administrative units or Ranger Districts of the Lassen National Forest. Areas where off-trail cross-country OSV use would be allowed would cover 921,180 acres. Existing OSV prohibitions applying to areas or trails would continue.

Alternative 2 would require 12 inches of snow depth for snow grooming and cross-country OSV use, and require 6 inches of snow depth for OSV use on snow trails with underlying roads and trails.

A total of 350 miles of groomed snow trails are proposed for public OSV use. A total of 334 miles of NFS snow trails would be designated for public OSV use.

Trails would be groomed to a minimum width of 10 feet and typically up to 14 feet wide. Trails would be groomed up to 30 feet wide in the more heavily used areas such as near trailheads. Groomed trail width is determined by variety of factors such as width of the underlying road bed, width of grooming tractor, heavy two-way traffic on the trail, and trail corners. Trail width would not be groomed beyond width of underlying roadbed. Where the terrain allows, main ingress and egress trails that connect to the trailhead would be groomed to 18 feet wide or greater to facilitate the added traffic.

*Direct and Indirect Effects - Alternative 2***Table 39. Resource indicators and measures for alternative 2**

<b>Resource Element</b>	<b>Resource Indicator</b>	<b>Measure</b>	<b>Alternative 2</b>
Safety	Public Safety & Traffic	Qualitative effects to motor vehicle operators and other users of the trail system	The over-snow vehicle use map would provide adequate information to maintain a reasonable level of public safety and avoid traffic conflicts; the map and information would also improve understanding of allowed uses and prohibitions.
Cost	Affordability	Qualitative effects to the total cost of maintaining the Forest transportation system (FTS) that would be open to motor vehicle use	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.
Transportation property	Effects to underlying NFS roads and trails	Wear and tear that may affect wheeled motor vehicle use	12-inch snow depth for grooming and general cross-country OSV use and 6-inch snow depth for OSV use on underlying routes requirement would provide adequate protection of underlying roads, trails and other resources.

*Cumulative Effects – Alternative 2**Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis (applicable to all action alternatives)*

- Bald Fire Salvage and Restoration
- Jellico Fire Salvage and Restoration
- Tamarack Fire Salvage
- Dutch Fire Salvage
- Castle Timber Sale
- Lassen Day Salvage Sale
- Lost Timber Sale
- Urfa Timber Sale
- Yellow Modified Contract Timber Sale
- Various ongoing grazing allotments
- Big Meadows Powerline Improvement Project CE
- Big Springs Project CE
- Chips Creek Bridge CE
- Grizzly Restoration Project EA
- High Lakes Motorized Trail Re- routes and Staging Area Improvements EA
- Ridge Project CE

- Rocks Restoration EA
- Storrie Aquatic Organism Passage (AOP) Project CE
- Moonlight Hand Thinning Project CE
- Re-issuance of Eagle Lake Rec Area Special Use Permit (Concessionaire) CE
- Rust Resistant Sugar Pine Maintenance CE
- Bailey Creek Aquatic Organism Passage (AOP) Project CE
- Big Lake Restoration Project CE
- Halls Flat Windthrow Project EA
- Hat Creek Valley Powerline Spur CE
- Plum Restoration Project EA

**Table 40. Resource indicators and measures for alternative 2 cumulative effects**

Resource Element	Resource Indicator	Measure	Alternative 2
Safety	Public Safety & Traffic	Qualitative effects to motor vehicle operators and other users of the trail system	Negligible cumulative effects; use of temporary closures for logging and forest operations activities would eliminate conflicts.
Cost	Affordability	Qualitative effects to the total cost of maintaining the Forest transportation system (FTS) that would be open to motor vehicle use	Negligible cumulative effects.
Transportation property	Effects to underlying NFS roads and trails	Wear and tear that may affect wheeled motor vehicle use	Negligible cumulative effects; use of temporary closures and proper use of snow plowing requirements for logging and forest operations activities would minimize cumulative effects.

### Alternative 3

Alternative 3 proposes to designate NFS trails and areas on NFS lands for OSV use within the Lassen National Forest where snowfall depth is adequate for that use to occur. The responsible official would designate OSV use as allowed, restricted, or prohibited on administrative units or ranger districts, or parts of administrative units or ranger districts of the Lassen National Forest. Areas where off-trail cross-country OSV use would be allowed would cover 833,990 acres.

Alternative 3 would require 18 inches of snow depth for snow grooming, require 12 inches of snow depth for cross-country OSV use, and require 6 inches of snow depth for OSV use on snow trails with underlying roads and trails. A total of 349 miles of snow trails would be groomed for public OSV use. A total of 383 miles of NFS snow trails would be designated for public OSV use.

Trails would be groomed to a minimum width of 10 feet and typically up to 14 feet wide. Trails would be groomed up to 30 feet wide in the more heavily used areas such as near trailheads. Groomed trail width is determined by variety of factors such as width of the underlying road bed, width of grooming tractor, heavy two-way traffic on the trail, and trail corners. Trail width would not be groomed beyond width of

underlying roadbed. Where the terrain allows, main ingress and egress trails that connect to the trailhead would be groomed to 18 feet wide or greater to facilitate the added traffic.

*Direct and Indirect Effects - Alternative 3*

**Table 41. Resource indicators and measures for alternative 3**

Resource Element	Resource Indicator	Measure	Alternative 3
Safety	Public Safety & Traffic	Qualitative effects to motor vehicle operators and other users of the trail system	The over-snow vehicle use map would provide adequate information to maintain a reasonable level of public safety and avoid traffic conflicts; this would also improve understanding of allowed uses and prohibitions.
Cost	Affordability	Qualitative effects to the total cost of maintaining the Forest transportation system (FTS) that will be open to motor vehicle use	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.
Transportation property	Effects to underlying NFS roads and trails	Wear and tear that may affect wheeled motor vehicle use	18 inches snow depth for grooming, 12 inches for general cross-country OSV use and 6 inches snow depth for OSV use on underlying routes requirements would provide adequate protection of underlying roads, trails and resources.

*Cumulative Effects – Alternative 3*

**Table 42. Resource indicators and measures for alternative 3 cumulative effects**

Resource Element	Resource Indicator	Measure	Alternative 3
Safety	Public Safety & Traffic	Qualitative effects to motor vehicle operators and other users of the trail system	Negligible cumulative effects; use of temporary closures for logging and forest operations activities would eliminate conflicts.
Cost	Affordability	Qualitative effects to the total cost of maintaining the FTS that will be open to motor vehicle use	Negligible cumulative effects.
Transportation property	Effects to underlying NFS roads and trails	Wear and tear that may affect wheeled motor vehicle use	Negligible cumulative effects; use of temporary closures and proper use of snow plowing requirements for logging and forest operations activities would minimize cumulative effects.

## Alternative 4

Alternative 4 proposes to designate NFS trails and areas on NFS lands for OSV use within the Lassen National Forest where snowfall depth is adequate for that use to occur. The responsible official would designate OSV use as allowed, restricted, or prohibited on administrative units or ranger districts, or parts of administrative units or ranger districts of the Lassen National Forest. Areas where off-trail cross-country OSV use would be allowed would cover 954,450 acres.

Alternative 4 would require 12 inches of snow depth for snow grooming. The minimum snow depth for public OSV use on designated snow trails and on cross-country OSV use areas would be the depth necessary to avoid underlying resource damage.

A total of 380 miles of NFS snow trails would be designated for public OSV use. A total of 349 miles of trails would be groomed for public OSV use.

Trails would be groomed to a minimum width of 10 feet and typically up to 14 feet wide. Trails would be groomed up to 30 feet wide in the more heavily used areas such as near trailheads. Groomed trail width is determined by variety of factors such as width of the underlying road bed, width of grooming tractor, heavy two-way traffic on the trail, and trail corners. Trail width would not be groomed beyond width of underlying roadbed. Where the terrain allows, main ingress and egress trails that connect to the trailhead would be groomed to 18 feet wide or greater to facilitate the added traffic.

### *Direct and Indirect Effects - Alternative 4*

**Table 43. Resource indicators and measures for alternative 4**

<b>Resource Element</b>	<b>Resource Indicator</b>	<b>Measure</b>	<b>Alternative 4</b>
Safety	Public Safety & Traffic	Qualitative effects to motor vehicle operators and other users of the trail system	The over-snow vehicle use map would provide adequate information to maintain a reasonable level of public safety and avoid traffic conflicts; this would also improve understanding of allowed uses and prohibitions.
Cost	Affordability	Qualitative effects to the total cost of maintaining the FTS that will be open to motor vehicle use	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.
Transportation property	Effects to underlying NFS roads and trails	Wear and tear that may affect wheeled motor vehicle use	12-inch minimum snow depth for grooming and the minimum snow depth necessary to avoid underlying resource damage requirements for OSV cross-country designated use areas, roads and trails would provide adequate protection of underlying roads and trails and other resources.

*Cumulative Effects – Alternative 4***Table 44. Resource indicators and measures for alternative 4 cumulative effects**

<b>Resource Element</b>	<b>Resource Indicator</b>	<b>Measure</b>	<b>Alternative 4</b>
Safety	Public Safety & Traffic	Qualitative effects to motor vehicle operators and other users of the trail system	Negligible cumulative effects; use of temporary closures for logging and forest operations activities would eliminate conflicts.
Cost	Affordability	Qualitative effects to the total cost of maintaining the FTS that will be open to motor vehicle use	Negligible cumulative effects.
Transportation property	Effects to underlying NFS roads and trails	Wear and tear that may affect wheeled motor vehicle use	Negligible cumulative effects; use of temporary closures and proper use of snow plowing requirements for logging and forest operations activities would minimize cumulative effects.

**Alternative 5**

The responsible official would designate OSV use as allowed, restricted, or prohibited on administrative units or ranger districts, or parts of administrative units or ranger districts of the Lassen National Forest. Off-trail cross-country OSV use would be allowed on six designated areas, 633,360 acres.

Alternative 5 would require 12 inches minimum snow depth for trail grooming, on designated NFS trail OSV use and on cross-country public OSV use areas. Minimum snow depth requirements for OSV use would avoid underlying resource damage.

A total of 393 miles of NFS snow trails would be designated for public OSV use, 350 miles of trails would be groomed for public OSV use.

Trails would be groomed to a minimum width of 10 feet and typically up to 14 feet wide. Trails would be groomed up to 30 feet wide in the more heavily used areas such as near trailheads. Groomed trail width is determined by variety of factors such as width of the underlying road bed, width of grooming tractor, heavy two-way traffic on the trail, and trail corners. Trail width would not be groomed beyond width of underlying roadbed. Where the terrain allows, main ingress and egress trails that connect to the trailhead would be groomed to 18 feet wide or greater to facilitate the added traffic.

*Direct and Indirect Effects - Alternative 5*

**Table 45. Resource indicators and measures for alternative 5**

<b>Resource Element</b>	<b>Resource Indicator</b>	<b>Measure</b>	<b>Alternative 5</b>
Safety	Public Safety & Traffic	Qualitative effects to motor vehicle operators and other users of the trail system	The over-snow vehicle use map would provide adequate information to maintain a reasonable level of public safety and avoid traffic conflicts; this would also improve understanding of allowed uses and prohibitions.
Cost	Affordability	Qualitative effects to the total cost of maintaining the Forest transportation system (FTS) that will be open to motor vehicle use	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.
Transportation property	Effects to underlying NFS roads and trails	Wear and tear that may affect wheeled motor vehicle use	12 inches minimum snow depth requirement for grooming, designated public cross-country OSV use areas and on designated trails (on roads and trails) would avoid underlying resource damage and would provide adequate protection of underlying roads, trails and other resources.

*Cumulative Effects – Alternative 5*

**Table 46. Resource indicators and measures for alternative 5 cumulative effects**

<b>Resource Element</b>	<b>Resource Indicator</b>	<b>Measure</b>	<b>Alternative 5</b>
Safety	Public Safety & Traffic	Qualitative effects to motor vehicle operators and other users of the trail system	Negligible cumulative effects; use of temporary closures for logging and forest operations activities would eliminate conflicts.
Cost	Affordability	Qualitative effects to the total cost of maintaining the Forest transportation system (FTS) that will be open to motor vehicle use	Negligible cumulative effects.
Transportation property	Effects to underlying NFS roads and trails	Wear and tear that may affect wheeled motor vehicle use	Negligible cumulative effects; use of temporary closures and proper use of snow plowing requirements for logging and forest operations activities would minimize cumulative effects.

## Summary

### Summary of Environmental Effects

Table 47 is a summary of effects for each alternative.

**Table 47. Summary comparison of environmental effects to transportation and engineering resources**

Resource Element	Indicator/ Measure	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Safety	Public Safety & Traffic	The current Lassen National Forest Winter Recreation Guide map provides adequate information to maintain a reasonable level of public safety and avoid traffic conflicts	The over-snow vehicle use map would provide adequate information to maintain a reasonable level of public safety and avoid traffic conflicts; this would also improve understanding of allowed uses and prohibitions.	The over-snow vehicle use map would provide adequate information to maintain a reasonable level of public safety and avoid traffic conflicts; this would also improve understanding of allowed uses and prohibitions.	The over-snow vehicle use map would provide adequate information to maintain a reasonable level of public safety and avoid traffic conflicts; this would also improve understanding of allowed uses and prohibitions.	The over-snow vehicle use map would provide adequate information to maintain a reasonable level of public safety and avoid traffic conflicts; this would also improve understanding of allowed uses and prohibitions
Cost	Affordability	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.	Minor effects (minor costs) due to over-snow vehicle use for access roads to popular parking and staging areas.
Transportation property	Effects to underlying NFS roads and trails	12 or more inches of snow for grooming and 12 inches or more for general cross-country OSV use areas and on trails or roads requirement provides more than adequate protection of underlying roads and trails.	12 inches minimum snow depth for grooming and general cross-country OSV use, and 6 inches for OSV use on underlying routes requirement would provide adequate protection of underlying roads and trails.	18 inches minimum snow depth for grooming, 6 inch minimum snow depth for use on underlying roads and trails and 12 inch minimum snow depth for OSV cross-country use area requirement would provide adequate protection of underlying roads and trails.	12 inch minimum snow depth for grooming. The minimum snow depth necessary to avoid underlying resource damage requirements on roads, trails and cross-country OSV use areas would provide protection of underlying roads and trails.	12 inches minimum snow depth requirement for grooming, designated public cross-country OSV use areas and on designated trails would provide protection of underlying roads and trails.

## **Compliance with LRMP and Other Relevant Laws, Regulations, Policies and Plans**

Alternatives 2, 3, 4 and 5 are compliant with all applicable direction, since they all involve production of a motor vehicle use map as required in Subpart C of the travel management regulations (36 CFR 212).

Alternative 1 does not involve production of a motor vehicle use map as required in Subpart C of the travel management regulations. Alternative 1 is otherwise compliant with applicable direction.

## **Noise**

This analysis considers and discloses the potential acoustic impacts of sound related to the following proposed actions:

- Designating roads, trails and areas for over-snow vehicle (OSV) use
- Identifying snow trails for grooming for OSV use

This analysis compares alternatives that would result in varying levels of snowmobile use on the Lassen National Forest.

## **Relevant Laws, Regulations, and Policy**

### **Regulatory Framework**

#### *National Forest Management Act*

Specifically for off-highway vehicle management, the National Forest Management Act (NFMA) requires that this use be planned and implemented to protect land and other resources, promote public safety, and minimize conflicts with other uses of the NFS lands. NFMA also requires that a broad spectrum of forest and rangeland-related outdoor recreation opportunities be provided that respond to current and anticipated user demands.

#### *Sierra Nevada Forest Plan Amendment*

The Sierra Nevada Forest Plan Amendment established standards and guidelines specific to wheeled motor vehicle travel off of designated routes, trails, and limited OHV use areas. Unless otherwise restricted by current forest plans or other specific area standards and guidelines or Forest Orders, cross-country travel by OSVs would continue (Forest-wide Standard and Guideline number 69 (USDA Forest Service 2009b)).

#### *Land and Resource Management Plan*

The Lassen National Forest Land and Resource Management Plan (LRMP or forest plan) provides standards and guidelines for areas that are relevant to this noise analysis as follows:

## **Forest Goals:**

### Wilderness and Further Planning Areas

- a. Protect Wilderness character in designated and recommended wilderness

## **Standards and Guidelines:**

### 15. Recreation

(a)(3). Manage recreation according to the Recreation Opportunity Spectrum (ROS) classes described in the ROS User's Guide, as specified in Appendix J [of the Forest Plan], and the Management Prescriptions. Refer to the separate ROS Map for the distribution of ROS classes throughout the forest.

(b)(6) Minimize user conflicts by specifying allowable winter use on certain roads and trails (for example cross-country ski trails, snowmobile-only trails or winter 4-wheel drive only).

## **Desired Condition**

The desired outcome of this OSV use designation process is a manageable, designated OSV system of trails and areas within the Lassen National Forest, which is consistent with and achieves the purposes of the Forest Service Travel Management Rule at 36 CFR Part 212, Subpart C. The system of trails and areas would provide access, ensure that OSV use occurs when there is adequate snow, promote the safety of all users, enhance public enjoyment, minimize impacts to natural and cultural resources, and minimize conflicts among the various uses.

## **Management Area**

The following management areas are relevant to providing both motorized recreation opportunities, and quiet non-motorized recreation opportunities.

### M – Semi-Primitive Motorized Recreation

This prescription is derived from the ROS class of semi-primitive motorized (SPM) (see Appendix J of the LRMP for the definition of this class). It is intended to facilitate dispersed, motorized recreation, such as snowmobiling, four-wheel driving, and motorcycling, in areas essentially undisturbed except for the presence of four-wheel drive roads and trails. Non-motorized activities such as hiking, fishing, hunting, picnicking, and cross-country skiing are also possible. Motorized travel may be seasonally prohibited or restricted to designated routes to protect other resources. (LRMP 4-60)

### N – Semi-Primitive Non-Motorized Recreation:

This prescription is derived from the ROS class of semi-primitive non-motorized (SPNM) (See Appendix J of the LRMP for the definition of this class). It is intended to facilitate dispersed recreation such as hiking, mountain bicycling, horseback riding, hunting, and cross-country skiing in unroaded, essentially undisturbed areas outside of existing and proposed wilderness areas. Motorized recreation is prohibited (LRMP 4-63).

Prohibit motorized recreation, including four wheel driving, motorcycling, and snowmobiling (LRMP 4-64)

### S – Special Areas

Recreation: 2. Prohibit motorized vehicles within Research Natural Areas (LRMP 4-68)

Wild and Scenic Rivers: 1. Allow public recreation and other resource use activity based on the recommended category of each river segment. (LRMP 4-69)

#### W – Wilderness Prescription

The prescription specifies management direction in accordance with the Wilderness Act of 1964, assuming no permanent or long-lasting evidence of human use. Motorized and mechanized equipment is prohibited (LRMP 4-76).

#### Special Area Designations

Special Area Designations within the Lassen National Forest that are relevant to the noise analysis include Wilderness, proposed wilderness, Inventoried Roadless Areas, and National Trails.

#### Federal Law

The proposed OSV designations will be reviewed to determine their consistency with the following applicable laws, regulations and policies:

- Wilderness Act of 1964 and applicable Wilderness Implementation Plans
- National Trails System Act of 1968 (P.L. 90-543) and the Pacific Crest National Scenic Trail Comprehensive Plan (USDA Forest Service 1982)
- 36 CFR §261.20 which prohibits use of a motorized vehicle on the Pacific Crest National Scenic Trail without a special-use authorization
- 2001 Roadless Area Final Rule (36 CFR Part 294)
- 2005 Travel Management Rule – Subpart C (36 CFR Parts 212 and 261) as amended in 2015 - Use by Over Snow Vehicles (Travel Management Rule)

#### Executive Orders

Executive Order 11644 of February 8, 1972, as amended by Executive Order 11989 of May 24, 1977, and by Executive Order 12608 of September 9, 1987, requires certain Federal agencies, including the Forest Service, to “ensure that the use of off-road vehicles on public lands [is] controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands.”

#### State and Local Law

California Vehicle Code (CVC) Section 27200 – regulates noise emitted by vehicles.

CVC Section 27203 limits noise at 82 dBA for snowmobiles manufactured after 1972. Noise levels generated by OSVs are further limited through manufacturer restrictions. Snowmobiles produced since February 1, 1975 and certified by the Snowmobile Safety and Certification Committee’s independent testing company emit no more than 78 dBA from a distance of 50 feet while traveling at full throttle when tested under the Society of Automotive Engineers (SAE) J192 procedures. Additionally, those produced after June 30, 1976 and certified by the Snowmobile Safety and Certification Committee’s independent testing company emit no more than 73 dBA at 50 feet while traveling at 15 mph when tested under SAE J1161 procedures (California Department of Parks and Recreation 2010).

OSV use on county roads and NFS lands are subject to the state standards described above. The Lassen LRMP does not identify standards and guidelines regulating noise emissions of forest activities (California Department of Parks and Recreation 2010).

## Topics and Issues Addressed in This Analysis

### Non-Significant Issues

#### *Noise Impacts*

Designating snow trails and areas for public OSV use and grooming snow trails for public OSV use have the potential to generate anthropogenic noise and increase noise levels above ambient levels in the short term. This has the potential to adversely impact wildlife species that are sensitive to this sort of disturbance as well as the experience of the recreational user who values solitude and quiet recreational opportunities.

#### **Measurement Indicators**

Potential effects from noise are analyzed using the following indicator measures:

- Opportunities for motorized winter uses – Size of areas (acres) open to public, cross-country OSV use; percentage change compared to current management;
- OSV designations – Length of snow trails (miles), groomed and ungroomed, designated and identified for public OSV use.

The GIS noise model will consider:

- Proximity of predicted noise increases above ambient levels in sensitive areas to include:
  - ◆ Points along the Pacific Crest National Scenic Trail
  - ◆ OSV trails near Wilderness areas;
  - ◆ OSV trails near communities;
  - ◆ OSV trails brought forward by the public as concern areas during scoping (Butte Lake area);
  - ◆ Plowed OSV trailheads

**Table 48. Resource indicators and measures for assessing effects**

<b>Resource Element</b>	<b>Resource Indicator</b>	<b>Measure (Quantify if possible)</b>	<b>Used to address: Purpose and Need (P/N), or Issue?</b>	<b>Source (LRMP S&amp;G<sup>10</sup>; law or policy, BMPs<sup>11</sup>, etc.)?</b>
<b>Noise</b>	Opportunities for motorized winter uses	Size of areas (acres) open to public, cross-country OSV use; percentage change compared to current management;	Issue	Minimization Criteria: 36 CFR §212.55(b)(3): Consider effects on the following with the objective of minimizing: Conflicts between motor vehicle use and existing or proposed recreational uses of NFS lands or neighboring Federal lands; and (4) Conflicts among different classes of motor vehicle uses of NFS lands or neighboring Federal lands. In addition, the responsible official shall consider: (5) Compatibility of motor vehicle use with existing conditions in populated areas, taking into account sound, emissions, and other factors.
	OSV designations	Length of snow trails (miles), groomed and ungroomed, designated and identified for public OSV use.	Issue	

**Methodology**

This analysis uses SPreAD-GIS (Version 2.0), an ArcGIS toolbox for modeling the propagation of engine noise in a wildland setting. SPreAD-GIS is based on the System for the Prediction of Acoustic Detection, a model developed by the Forest Service and Environmental Protection Agency to predict and plan for recreation opportunities in national forests. Input data includes commonly available datasets including:

- Digital elevation model (DEM)
- Land cover
- Local weather conditions (average air temperature, relative humidity, wind speed and direction for given season)
- Sound source characteristics (from a table of built in source types)
- Ambient sound conditions (a tool is available to estimate this based on land cover and a table of background sound for various environmental conditions.)

**Spatial Context:**

- Forest Boundary

**Effects Timeframe:**

- Short-term effects occur within one year.
- Long-term effects occur up to 20 years.

<sup>10</sup> Standard and Guideline

<sup>11</sup> Best Management Practices

## Affected Environment

### Existing Condition

The Forest Service has a well-developed winter recreation program on the Lassen National Forest that emphasizes snowmobile use. There are 2,952 miles of currently groomed, ungroomed, marked, and unmarked snow trail open to public OSV and non-motorized use as shown on the 2005 Lassen National Forest Winter Recreation Guide (project record). These trails overlie roads and trails designated for wheeled vehicle use and are within areas currently open to OSV use. Approximately 406 miles of these trails are maintained for OSV use through signage, snow trail grooming, or both.

For over 30 years, the Forest Service, Pacific Southwest Region, in cooperation with the California Department of Parks and Recreation (California State Parks) Off-highway Motor Vehicle Division has enhanced winter recreation, and more specifically, snowmobiling recreation by maintaining NFS trails (snow trails) by grooming snow for snowmobile use. Plowing of local access roads and trailhead parking lots, grooming trails for snowmobile use, and light maintenance of facilities (e.g., restroom cleaning, garbage collection) are the essential elements of the OSV program that keep the national forests open for winter recreation use.

The groomed OSV trail systems on the Hat Creek, Eagle Lake, and Almanor Ranger Districts are described in detail in the Recreation section of this analysis.

### Noise

The sounds associated with OSV use and the ancillary activities of operating plowing and grooming equipment associated with the winter OSV activities may be interpreted as noise with potential impacts to other recreational uses, and wildlife resources. These effects are specifically addressed in the Recreation and Wildlife sections of this analysis.

Sound is a physical phenomenon, a vibration in the air that can be measured. Noise is an interpretation of sound, or a sound that has characteristics that may irritate or annoy a listener, interfere with a listener's activity, or in some other way be distinguished as unwanted (Harrison et al. 1980).

The acoustic impact of sound can be determined by measuring the inherent characteristics of the sound and considering that in conjunction with the setting in which the sound is heard and the individual attributes of the listener. Whether sounds are determined to be acceptable, or are interpreted as noise depends on the values and desires of the person making the judgement (Harrison et al. 1980).

As noted in the Recreation section of this analysis, conflict between motorized and non-motorized winter users arise due to differing desired recreation experiences, public safety concerns, noise, air quality, and access issues. Public comments received during the scoping period for this analysis describe conflicts related to the creation of noise and air quality impacts that lead to the displacement of non-motorized users.

Areas of specific concern to non-motorized users who are typically seeking a quiet recreation setting that is not influenced by the sight, sound, or exhaust smell of motorized vehicles include cross-country ski trails, the Pacific Crest National Scenic Trail, the Butte Lake area, Wilderness, proposed wilderness and semi-primitive non-motorized ROS classes.

Generally, human related sounds are more appropriate toward the rural and roaded end of the ROS spectrum and less toward the semi-primitive non-motorized and primitive end of the ROS spectrum (Harrison et al. 2008). ROS classes are described in the Recreation section of this analysis.

### **Sound Propagation**

Sound is measured by amplitude (decibels, dB) that determine loudness, frequency (Hertz, Hz) that determine pitch, and duration of the sound.

As sound waves travel away from the source, they lose energy (amplitude decreases). Several factors influence how far the sound will travel. Spherical spreading loss refers to the fact that a sound's loudness decreases as the distance between the source and the listener increases. Atmospheric absorption loss refers to sound waves being transferred to, or absorbed by, the atmosphere. This varies with air temperature, elevation, relative humidity, vegetation and ground cover. Long distance loss refers to refraction of sound due to varying air temperatures or wind directions and diffraction or scattering of sound waves around a barrier (Harrison et al. 1980).

Background or ambient sound levels influence how noticeable a given sound may be, and the setting in which it is heard influences how appropriate that sound may be.

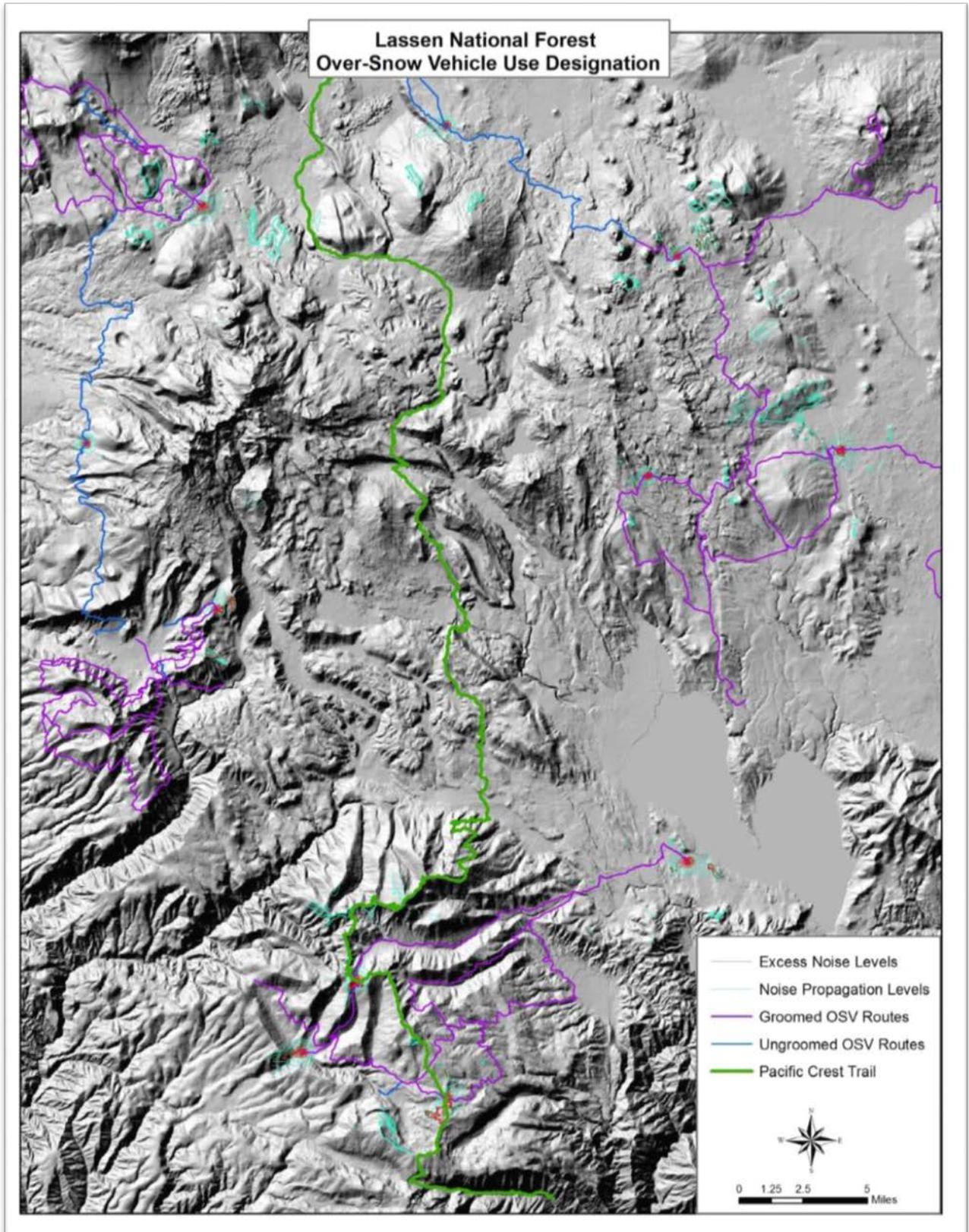


Figure 11. Lassen National Forest OSV sound propagation

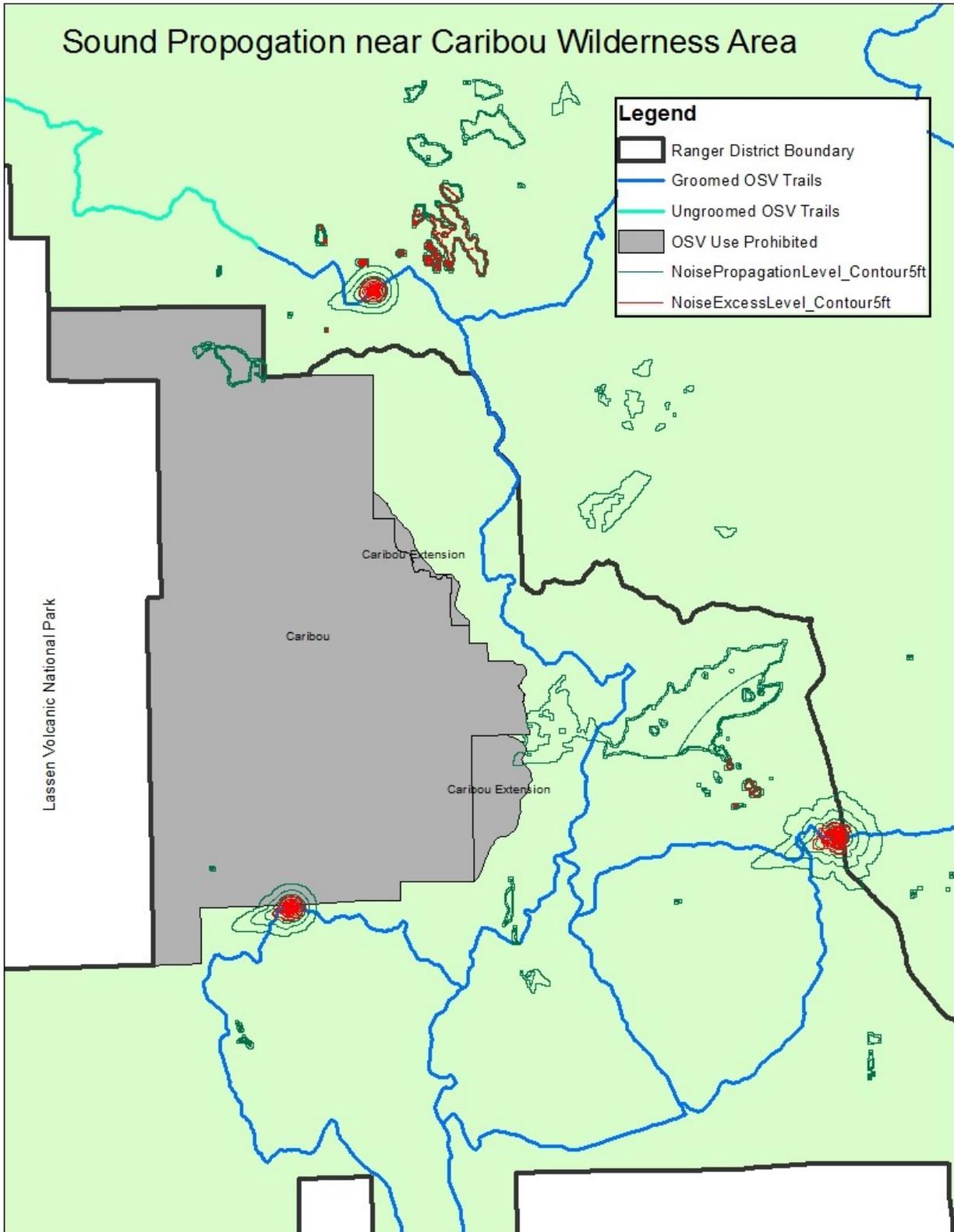


Figure 12. OSV Sound propagation near Caribou Wilderness Area

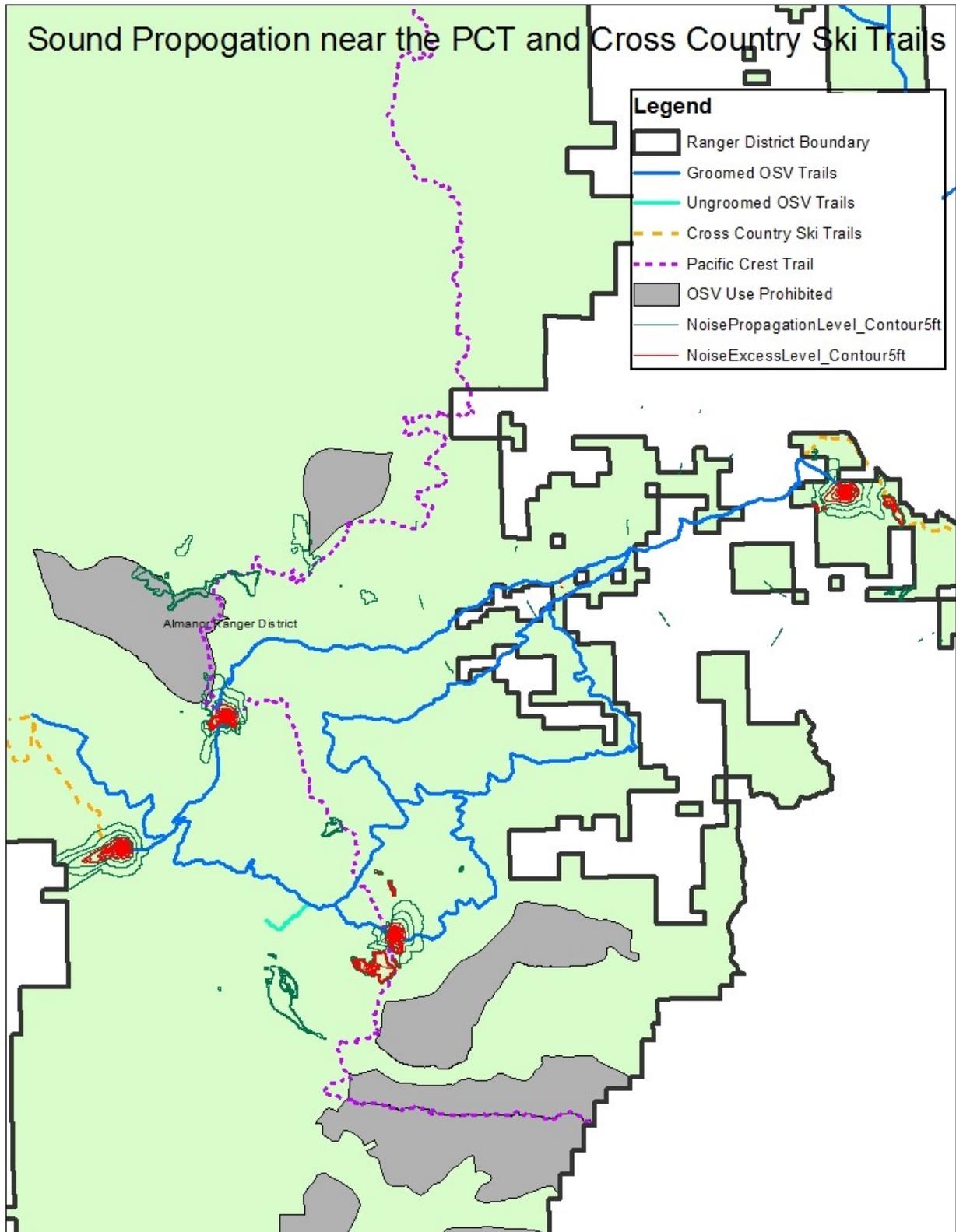


Figure 13. OSV sound propagation near PCT and Cross-Country Ski Trails

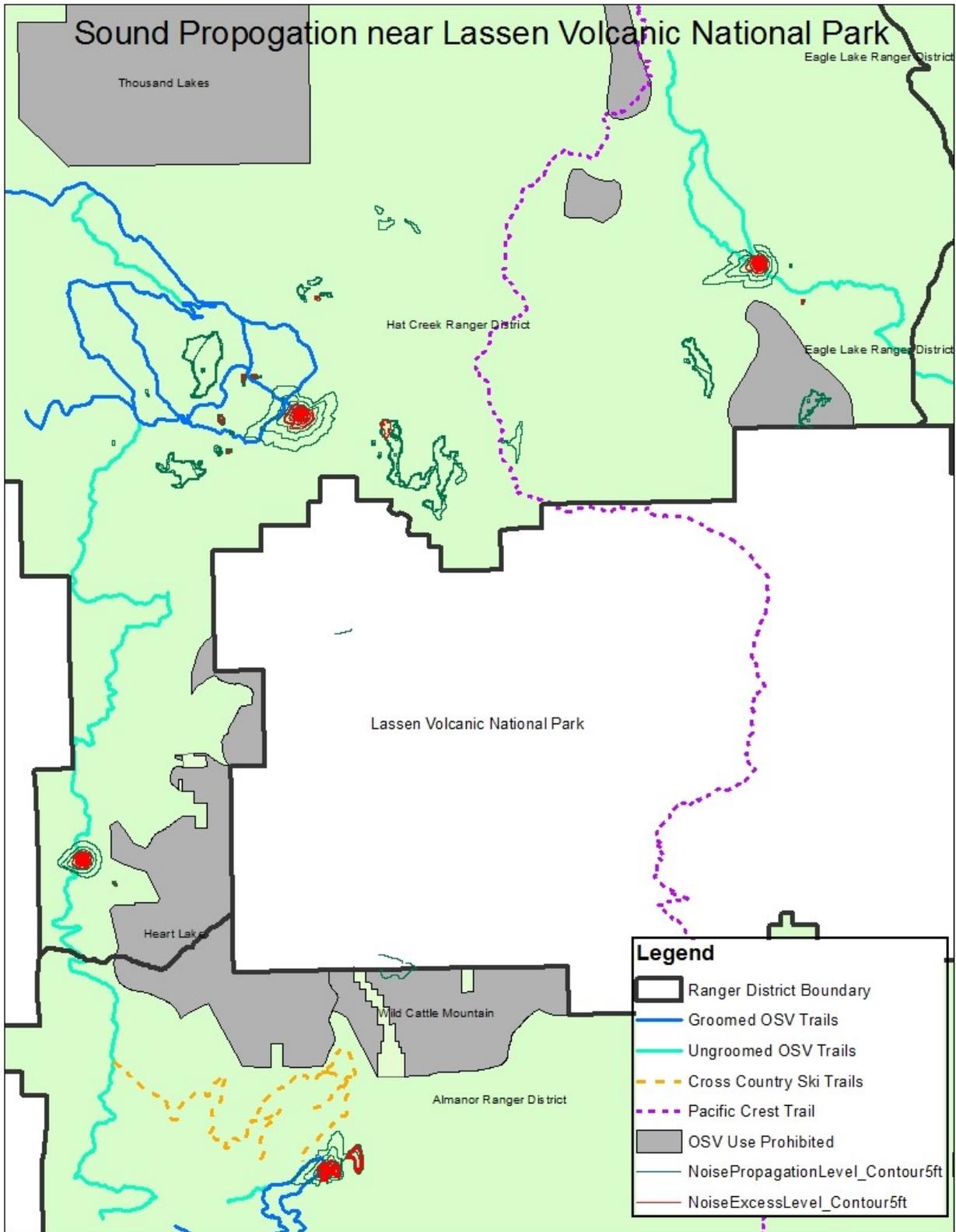


Figure 14. OSV sound propagation near Lassen Volcanic National Park

**Table 49. Resource indicators and measures for the existing conditions and alternative 1**

<b>Resource Element</b>	<b>Resource Indicator (Quantify if possible)</b>	<b>Measure (Quantify if possible)</b>	<b>Existing Condition</b>
Noise	Opportunities for motorized winter uses	Size of areas (acres) open to public, cross-country OSV use	964,030 acres open to public, cross-country OSV use
	OSV designations	Length of snow trails (miles), groomed and ungroomed, designated and identified for public OSV use.	406 miles of groomed and ungroomed trails identified for OSV use/349 miles groomed for OSV use

## Environmental Consequences

### Alternative 1 – No Action

Under alternative 1, there would be no changes to the existing system of OSV use on roads, trails, and areas within the Lassen National Forest except as prohibited by Forest Order. In addition, only those seasonal restrictions as specified in the Lassen Forest Plan and contained in existing forest orders would be continued. The 2005 Travel Management Rule, subpart C, would not be implemented, and no OSV use map would be produced. By definition, direct and indirect effects (40 CFR §1508.8), and cumulative effects (40 CFR §1508.7) result from the proposed action, and thus are not germane to the no-action alternative.

#### *Noise*

Under the no-action alternative, 964,030 acres would remain open to OSV use and the associated influence of OSV noise. Noise sources of multiple OSVs and vehicles would be concentrated at plowed OSV trailheads, and more dispersed along groomed trails. Of the 964,030 acres open to OSV use, only approximately 304,820 acres are anticipated to have high to moderate OSV use levels (see maps in appendix G of this RDEIS) and the associated potential noise impacts.

Conflicts between motorized and non-motorized winter experiences on the Lassen are currently minor and infrequent, existing conflicts would continue and may increase as population and visitor use increase.

Occasional incursions into adjacent wilderness areas and non-motorized areas on other Federal lands would continue to occur, and possibly increase as population and visitor use increase. Ongoing OSV use near designated non-motorized areas could result in short-term impacts to solitude. OSV use across, and adjacent to the PCT would continue, with the potential for ongoing noise related impacts to non-motorized trail users, when OSVs are present near the trail.

### Alternative 2 – Proposed Action

#### *Mitigation Measures to Address the Minimization Criteria*

The modified proposed action is described in detail in chapter 2. Alternative 2 would designate eight discrete, specifically delineated areas for cross-country OSV use, and would allow public, cross-country OSV use on 921,180 acres of NFS lands within the Lassen National Forest when snow depth is adequate for that use to occur. Designated trails where public OSV use would be allowed when snow depth is adequate for that use to occur would total 334 miles. All existing OSV prohibitions applying to areas or trails would continue. Alternative 2 would identify approximately 350 miles of snow trails that would be groomed for public OSV use by the Forest Service's Lassen National Forest Grooming Program. The California State Parks' snow grooming standards would be formally adopted, requiring a minimum of 12 inches of snow depth before grooming could occur.

Alternative 2 would implement a forest-wide snow depth requirement for OSV use that would provide for public safety and natural and cultural resource protection by allowing public, cross-country OSV use in areas designated for OSV use when there is a minimum of 12 inches of snow covering the landscape; and allowing public OSV use on designated snow trails when there are 6 or more inches of snow covering the trail. All snow trails to be designated for public OSV use or identified for OSV grooming in all alternatives would overlay an existing paved, gravel, or native surface travel route. These travel routes are trails and roads used by wheeled, motorized vehicles, when allowed, and non-motorized recreation.

No areas would be designated for OSV use within 500 feet of the Pacific Crest National Scenic Trail on the Lassen National Forest.

Alternative 2 would designate 28 public OSV crossing points of the Pacific Crest National Scenic Trail on trails designated for wheeled, motorized vehicle use when such use is allowed.

Public OSV use would not be designated (would be prohibited) on approximately 228,847 acres, including all of the approximately 185,983 acres of the Lassen National Forest where public OSV use is currently prohibited, and 42,864 acres of areas currently open to OSV use that would not be designated for OSV use in this alternative

Public OSV use that is inconsistent with the designations and snow depth requirements made under this decision would be prohibited under 36 CFR Part 261.

#### *Direct and Indirect Effects - Alternative 2*

Under alternative 2, 921,180 acres would remain open (designated) for OSV use and the associated influence of OSV noise. Noise sources of multiple OSVs and vehicles would be concentrated at plowed OSV trailheads, and more dispersed along groomed trails and in open areas. Of the 921,180 acres that would be designated for OSV use, only 304,820 acres are anticipated to have high to moderate OSV use levels (see maps in appendix G of this RDEIS) and the associated potential noise impacts.

Using average environmental factors for the winter season on the Lassen National Forest and the SPreAD-GIS model, the map in figure 11 shows the anticipated sound propagation away from point source sound locations along OSV trails. The trail points represent a snapshot in time, and were selected based on their proximity to important non-motorized trails and areas. OSV sound source points shown on figure 11 include the plowed OSV trailheads, points where OSV trails are near cross-country ski trails, designated Wilderness areas, and Lassen Volcanic National Park, and points where OSV trails cross the Pacific Crest National Scenic Trail. The noise propagation contour lines on the map show how the OSV sound is expected to spread out from the source location given unique environmental, vegetation, and terrain conditions. The map also shows excess noise levels where the introduced OSV noise would be in excess of ambient sound conditions.

As shown in figure 12, OSV noise along the groomed OSV trails near the Wilderness boundary may be heard from within the Wilderness area. This represents a short term disturbance to opportunities for solitude. This impact would be temporary and short-term as the OSV passes by on the trail.

Figure 13 shows the extent of potential noise impacts from OSV trails crossing the PCT, and near several non-motorized cross-country ski trails. The experience of non-motorized users along the PCT in the vicinity of OSV crossings would be temporarily impacted by noise from OSVs. Since 28 PCT crossings would be designated in this alternative, the potential for noise impacts is confined to the area near the designated crossings. Quiet recreation opportunities would be maintained on the rest of the trail by not designating areas for OSV use within 500 feet of the trail. This would reduce the influence of noise that may be experienced under existing conditions. Potential noise impacts to cross-country ski trails are

generally concentrated near the plowed trailheads and less as both motorized and non-motorized users move away from the trailhead.

Figure 14 shows the extent of potential noise impacts at several points, near popular non-motorized recreation areas.

Additionally, in alternative 2, OSV use would be prohibited, and opportunities for solitude and quiet, non-motorized experiences would be enhanced in the following areas: portions of the Morgan Summit area in the southwest corner of Lassen National Forest that are not designated because there is limited access for OSVs due to the proximity to other non-motorized areas including the Ishi Wilderness, Mill Creek Proposed Wilderness, and semi-primitive non-motorized areas within the Ishi and Polk Springs Inventoried Roadless Areas. The Deer Creek Anadromous Fish area that would run along the northwestern boundary of the Cub Creek Inventoried Roadless Area, the area along the southwest shore of Lake Almanor, and the area along the South Shore of Eagle Lake.

Ongoing monitoring for user conflicts would consider the influence of noise on recreational experiences. Site specific sound modeling with the SPreAD-GIS program may be useful to analyze individual areas if future conflicts are identified through monitoring. The sound propagation model would help determine appropriate actions to help mitigate the conflicts related to noise.

**Table 50. Resource indicators and measures for alternative 2 direct/indirect effects**

<b>Resource Element</b>	<b>Resource Indicator (Quantify if possible)</b>	<b>Measure (Quantify if possible)</b>	<b>Alternative 2 Direct/Indirect Effects</b>
Noise	Opportunities for motorized winter uses	Size of areas (acres) open to public, cross-country OSV use; percentage change compared to current management;	921,180 acres open to OSV use, a 4.5 percent decrease from existing conditions.
	OSV designations	Length of snow trails (miles), groomed and ungroomed, designated and identified for public OSV use	345 miles of designated OSV trails/350 miles groomed OSV trails

*Cumulative Effects – Alternative 2*

**Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis**

Past, present, and reasonably foreseeable projects in the project area include vegetation management (including timber sales, fire salvage, and restoration projects), livestock grazing, prescribed burns, and recreation. There are many on-going and scheduled projects identified on the Lassen National Forest which may increase the management presence across the forest.

**Noise**

The trailhead and parking lot plowing activities and OSV trail grooming activities would increase the noise associated with motorized vehicles in the forest setting; however, this would not be a change from existing conditions. Parking lot plowing would continue to occur during the day when OSV use also typically occurs, so the sounds generated by each activity could be cumulative. OSV trail grooming generally occurs at night when very few or no OSVs are operating, therefore the noise impacts from trail grooming would be less likely to be cumulative with other motor vehicle sounds, but may be more noticeable since the ambient sound conditions are typically quieter during the night.

Non-motorized winter visitors to the Lassen National Forest could experience noise from OSVs, in addition to other noise such as snow plows, vehicles on roads, and aircraft that may be in the same area at the same time, cumulatively impacting the quiet recreation experience in the short term.

### Alternative 3

Alternative 3 is described in detail in chapter 2. Alternative 3 was developed to address the non-motorized recreational experience significant issue. Alternative 3 would designate eight discrete, specifically delineated areas for cross-country OSV use. These areas would encompass 833,990 acres of NFS lands within the Lassen National Forest when snow depth is adequate for that use to occur. It includes components of the modified proposed action with several additions. OSV use would not be designated in additional areas that are important for non-motorized recreation, including the Butte Lake area (OSV use restricted to trail only) north of LVNP; areas below 3,500 feet on the Lassen National Forest; the Fredonyer-Goumaz area (OSV use restricted to trail only) between highways 36 and 44; the McGowen Lake area (North of Mineral, East of Rd. 17); the Colby Mountain area; and areas along the southwest shore of Lake Almanor, and the south shore of Eagle Lake; and the Willard Hill area.

Designated trails where public OSV use would be allowed when snow depth is adequate for that use to occur would total 383 miles. All existing OSV prohibitions applying to areas or trails would continue. Alternative 3 would identify approximately 349 miles of snow trails that would be groomed for public OSV use by the Forest Service's Lassen National Forest Grooming Program. The minimum snow depth for trail grooming would be 18 inches.

Alternative 3 would allow public OSV use on designated snow trails generally when there are 6 or more inches of snow covering the trail. The minimum snow depth for OSV use in areas designated for public, cross-country OSV use would be 12 inches.

Public OSV use would not be designated (would be prohibited) on approximately 316,048 acres, including all of the approximately 185,983 acres of the Lassen National Forest where public OSV use is currently prohibited, and 130,065 acres of areas currently open to OSV use that would not be designated for OSV use in this alternative

Public OSV use that is inconsistent with the designations and snow depth requirements made under this decision would be prohibited under 36 CFR Part 261.

No PCT crossing points would be designated. OSV use would be allowed adjacent to, and across the PCT in accordance with OSV area designations. The trail itself would remain non-motorized.

#### *Direct and Indirect Effects - Alternative 3*

Noise impacts associated with the groomed and ungroomed OSV trail system in alternative 3 would be slightly more than alternative 2 with 383 miles of designated OSV trails.

Alternative 3 would prohibit OSV use on more acres than alternative 2, and would designate areas where motorized OSVs are restricted to designated trails. With additional areas closed or restricted to OSVs, the opportunities for non-motorized use (in areas not influenced by the sights, sounds and exhaust smells of OSV use) would be enhanced.

In addition to the areas described in alternative 2, OSV use would not be designated, and opportunities for solitude and quiet, non-motorized experiences would be enhanced in the following areas: areas below 3,500 feet, the McGowen Lake area, the Colby Mountain area, areas along the southwest shore of Lake Almanor and the south shore of Eagle Lake, and the Willard Hill area, and the restriction to trails in the Butte Lake and Fredonyer-Goumaz areas. Not designating areas for OSV use north of Caribou Wilderness

(Butte Lake) and south of the Heart Lake and Wild Cattle Mountain Proposed Wilderness Areas (McGowen) would also help to minimize potential impacts from the sights and sounds of OSVs to solitude and quiet, non-motorized areas and to Lassen Volcanic National Park.

Potential impacts from OSV noise would continue along the PCT, as described in alternative 1.

**Table 51. Resource indicators and measures for alternative 3 direct/indirect effects**

<b>Resource Element</b>	<b>Resource Indicator (Quantify if possible)</b>	<b>Measure (Quantify if possible)</b>	<b>Alternative 3 Direct/Indirect Effects</b>
Noise	Opportunities for motorized winter uses	Size of areas (acres) open to public, cross-country OSV use; percentage change compared to current management	833,990 acres open to OSV use, a 13.5 percent reduction from existing conditions.
	OSV designations	Length of snow trails (miles), groomed and ungroomed, designated and identified for public OSV use	383 miles of designated OSV trails/349 miles of groomed OSV trails

### Alternative 4

Alternative 4 is described in detail in chapter 2. Alternative 4 was developed to address the motorized recreational opportunities significant issue. This alternative would designate eight discrete, specifically delineated areas for cross-country OSV use. These areas would encompass 954,450 acres.

Alternative 4 would designate 380 miles of OSV snow trails. This would represent a reduction in the number of miles of trail where OSV use is currently allowed. However, a majority of the current trail system would be either designated for public OSV use or are located in areas that would be designated for public, cross-country OSV use in this alternative. Alternative 4 would identify 349 miles of snow trails for grooming, as in the existing conditions.

In addition to areas where OSV use is already prohibited on the Lassen National Forest, alternative 4 would not designate OSV use in the Blacks Mountain RNA, and the McGowen Lake area(North of Mineral, East of Rd. 17).

There would be no defined snow depth in areas designated for cross-country OSV travel or on designated OSV trails. OSV use would be allowed only when forest staff determine that conditions are sufficient to allow OSV use while protecting underlying resources. This would be determined by a combination of weather station data, observations at trailheads by staff, and when the groomers decide conditions are right to commence grooming. Seasonal opening and closing would be announced through Public Service announcements, on information kiosks at trailheads and via the forest website. The minimum snow depth for trail grooming to occur would be 12 inches.

OSV use would be allowed below 3,500 feet when there is adequate snow depth to prevent damage to underlying surface resources.

This alternative would groom the same snow trails for OSV use as the modified proposed action.

No PCT crossing points would be designated. OSV use would be allowed adjacent to, and across the PCT. The trail itself would remain non-motorized. There are areas designated open to OSV use within 500 feet of the PCT along 97.68 miles of the PCT on the Lassen National Forest.

*Direct and Indirect Effects - Alternative 4*

Alternative 4 would allow OSV use on more acres than alternative 3, and slightly more acres than alternative 2. Allowing use of OSVs below 3,500 feet would enhance OSV opportunities when snow depths are adequate for use in that area, and with this use, additional acres would be subject to potential noise impacts from OSV use.

Potential impacts from OSV noise would continue along the PCT, as described in alternative 1.

Otherwise, noise impacts associated with the groomed and ungroomed OSV trail system in alternative 4 would be the same as alternative 2.

**Table 52. Resource indicators and measures for alternative 4 direct/indirect effects**

<b>Resource Element</b>	<b>Resource Indicator (Quantify if possible)</b>	<b>Measure (Quantify if possible)</b>	<b>Alternative 4 Direct/Indirect Effects</b>
Noise	Opportunities for motorized winter uses	Size of areas (acres) open to public, cross-country OSV use; percentage change compared to current management	954,450 acres open to OSV use, a 1 percent reduction from existing conditions.
	OSV designations	Length of snow trails (miles), groomed and ungroomed, designated and identified for public OSV use	380 miles of designated OSV trails/349 miles of groomed OSV trails

**Alternative 5**

Alternative 5 is described in detail in chapter 2. Alternative 5 was developed to address the non-motorized recreational experience significant issue. Alternative 5 would designate six discrete, specifically delineated areas for cross-country OSV use. These areas would encompass 633,360 acres. Alternative 5 would designate 393 miles of OSV snow trails. This would represent a reduction in the number of miles of trail where OSV use is currently allowed. However, a majority of the current trail system would be either designated for public OSV use or are located in areas that would be designated for public, cross-country OSV use in this alternative. Alternative 5 would identify 350 miles of snow trails for grooming, as in the existing conditions.

The minimum snow depth for snow trail grooming would be 12 inches. The minimum snow depth for public OSV use on designated snow trails would be 12 inches. The minimum snow depth for OSV use in areas designated for public, cross-country OSV use would be 12 inches. No areas below the elevation of 3,500 feet would be designated for OSV use. No winter deer range would be designated for OSV use. For the Bogard Area this would include the small area located between the 3,500-foot and winter deer range restrictions.

*Direct and Indirect Effects - Alternative 5*

Alternative 5 would allow OSV use on fewer acres than any other alternative, enhancing opportunities for quiet winter recreation.

Potential impacts from OSV noise would be the same as described in alternative 2.

Otherwise, noise impacts associated with the groomed and ungroomed OSV trail system in alternative 4 would be the same as alternative 2.

**Table 53. Resource indicators and measures for alternative 5 direct and indirect effects**

Resource Element	Resource Indicator (Quantify if possible)	Measure (Quantify if possible)	Alternative 5 Direct and Indirect Effects
Noise	Opportunities for motorized winter uses	Size of areas (acres) open to public, cross-country OSV use; percentage change compared to current management	633,360 acres open to OSV use, a 34 percent reduction from existing conditions.
	OSV designations	Length of snow trails (miles), groomed and ungroomed, designated and identified for public OSV use	390 miles of designated OSV trails/349 miles of groomed OSV trails

## Summary

### Degree to Which the Purpose and Need for Action is Met

All of the action alternatives (alternatives 2, 3, 4, and 5) would equally meet the purpose and need to effectively manage OSV use by identifying a manageable system of OSV trails and areas per Subpart C of the Travel Management Rule and to identify OSV trails for grooming to provide a high-quality OSV trail system.

### Degree to Which the Alternatives Address the Issues

Table 54 provides a comparison of the alternatives and the degree to which the alternatives address the noise-related issues.

**Table 54. Summary comparison of how the alternatives address the issues**

Issue	Indicator/Measure	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Noise	Opportunities for motorized winter uses	964,030 acres open to OSV use and potentially affected by noise	921,180 acres open to OSV use and potentially affected by noise, a 4.5 percent decrease from existing conditions	833,990 acres open to OSV use and potentially affected by noise, a 13.4 percent decrease from existing conditions	954,450 acres open to OSV use and potentially affected by noise, a 0.5 percent decrease from existing conditions	633,360 acres open to public cross-country OSV use, subject to snow depth restrictions, a 34 percent decrease from existing conditions.
	Size of areas (acres) open to public, cross-country OSV use; percentage change compared to current management	185,983 acres closed to OSV use and available for quiet recreation	228,847 acres closed to OSV use and available for quiet recreation, a 23 percent increase from existing conditions	316,048 acres closed to OSV use and available for quiet recreation, a 41.2 percent increase from existing conditions	195,580 acres closed to OSV use and available for quiet recreation, a 4.9 percent increase from existing conditions	510,540 acres closed to OSV use and available for quiet recreation, a 63.6 percent increase from existing conditions

Issue	Indicator/Measure	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	OSV designations Length of snow trails (miles), groomed and ungroomed, designated and identified for public OSV use	405 miles designated /349 miles groomed	334 miles designated /349 miles groomed	383 miles designated /349 miles groomed	380 miles designated /349 miles groomed	390 miles designated/ 349 miles groomed

### Summary of Environmental Effects

All action alternatives would provide the same level of groomed motorized OSV trail opportunities, and therefore the same degree of potential noise impacts associated with groomed trail use. Cross-country travel, and use of OSV trails would be limited by minimum snow depth requirements for all action alternatives; however, alternative 4 would provide the least restrictive snow depth, described as, the depth necessary to avoid resource damage. Alternatives 2 would allow use of OSV trails with a 6-inch minimum snow depth and alternative 3 provides some flexibility in the snow depth requirements for trails where site review determines there would be no damage to underlying resources. This flexibility would allow OSV access to higher elevations and adequate snow depths. Alternative 4 would provide the most access for motorized OSV use forest-wide, compared to alternatives 2 and 3. Alternative 5 provides the least access for motorized OSV use forest-wide.

Alternatives 3 and 5 would enhance opportunities for quiet, non-motorized recreation with the designation of areas where OSVs would be prohibited, or restricted to designated OSV trails, while maintaining the existing level of groomed OSV trail opportunities.

Alternative 2 would maintain OSV opportunities most similar to the existing conditions on the Lassen National Forest.

### Compliance with LRMP and Other Relevant Laws, Regulations, Policies and Plans

Alternative 1, no action, would not comply with Subpart C of the Travel Management rule that requires designation of roads, trails, and areas on NFS lands to provide for over-snow vehicle use. Alternative 1 would not implement the management area direction from the Lassen LRMP to prohibit motorized use in the Blacks Mountain Research Natural Area.

Alternatives 2, 3, 4, and 5 would comply with Subpart C of the Travel Management rule and the Lassen LRMP.

### Other Relevant Mandatory Disclosures

#### Short-term Uses and Long-term Productivity

Short term uses would not affect the long-term productivity of recreation resources.

#### Unavoidable Adverse Effects

Allowing motorized OSV use, which is an acceptable use of NFS lands would unavoidably affect non-motorized or quiet opportunities in some areas, as discussed in the analysis related to conflicts between motorized and non-motorized winter experiences.

## Irreversible and Irrecoverable Commitments of Resources

OSV trail and area designations would not be irreversible and irretrievable commitments of resources.

## Soils

This section analyzes the potential impacts (direct, indirect and cumulative effects) of the designation of trails and areas for over-snow vehicle (OSV) use on the soil resource by alternative within the Lassen National Forest. The Lassen National Forest is approximately 1,150,020 acres in size with approximately 2,952 miles of NFS OSV trails with 350 miles of those trails groomed. Approximately 964,030 acres of the forest are open to OSV cross-country travel. This report includes:

- Analysis Methods and Scale;
- Affected Environment; and
- Environmental Consequences, including direct, indirect, and cumulative effects in light of past, present, and reasonably foreseeable future events

The Lassen National Forest OSV management program would comply with the Lassen National Forest LRMP and the Region 5 Soil Quality Standards for long-term soil productivity. The design criteria and monitoring for each alternative would ensure that there are no adverse effects to the soil resource.

## Relevant Laws, Regulations, and Policy

### Regulatory Framework

#### *Land and Resource Management Plan*

The Lassen National Forest Land and Resource Management Plan (LRMP) provides standards and guidelines for activities on the forest including OSV management.

- ◆ LRMP Standards and Guidelines pertinent to OSV management (USDA Forest Service 1993: Chapter 4):
  - Prevent irreversible losses of soil productivity: Assess impacts of proposed projects on the soil resource and take appropriate mitigative action.
    - The areal extent of detrimental soil disturbance will not exceed 15 percent of the area dedicated to growing vegetation
    - Soil cover is sufficient to prevent the rate of accelerated soil erosion from exceeding the rate of soil formation
    - Soil porosity and bulk density are at least 90 percent of the measurements found under undisturbed or natural conditions
    - Organic matter is present in amounts sufficient to prevent significant short- or long-term nutrient cycle deficits
  - Field verify existing reconnaissance soil resource inventory data for each ground-disturbing project
  - Conduct detailed soil surveys for all project areas that have an erosion hazard rating of “high” or “very high,” landslides or unstable areas, potential revegetation or regeneration problems, active erosion or a significant potential to contribute to cumulative degradation of water quality

- Retain ground-covering litter, duff and vegetation on at least 90 percent of non-rocky riparian areas, except when removal is needed to improve vegetative diversity or wildlife habitat
  - Rehabilitate areas of significant soil degradation caused by off-highway vehicles. Close trails and areas to motorized use if necessary to protect soils.
  - Map the occurrence of unstable Eocene non-marine deposits and granitic soils prior to ground-disturbing activities.
- ◆ Monitor and take necessary actions to prevent damage to meadows and soils in the high Lakes area.

### **Desired Condition**

The desired condition for soils is that soil productivity and water quality remain high on the forest.

### *Regional Direction*

#### **Pacific Southwest Region Soil Management Handbook Supplement (Pacific Southwest Region FSH Supplement No. 2509.18-95-1)**

This supplement establishes regional soil quality analysis standards. The analysis standards address three basic elements for the soil resource: (1) soil productivity (including soil loss, porosity and organic matter), (2) soil hydrologic function, and (3) soil buffering capacity. The analysis standards are to be used for areas growing vegetation. They are not applied to lands with other dedicated uses, such as developed campgrounds, administrative facilities, or in this case, the actual land surface of routes authorized for travel by OSVs. This standard does apply to cross-country OSV travel.

### *Federal Law*

#### **National Forest Roads and Trails Act of 1964 (78 Stat. 1089; 16 U.S.C. 532-538)**

Section 1 of the National Forest Roads and Trails Act states “Congress hereby finds and declares that the construction and maintenance of an adequate system of roads and trails within and near the national forests and other lands administered by the Forest Service is essential.” This system of roads is needed “to provide for intensive use, protection, development, and management of these lands under principles of multiple use and sustained yield of products and services.” (16 U.S.C. 532)

Section 2 of this act states, “The Secretary is authorized, under such regulations as he may prescribe, subject to provisions of this Act, to grant permanent or temporary easements for specified periods or otherwise for road rights-of-way (1) over national forest lands administered by the Forest Service.” (16 U.S.C. 533).

Implicit in this legal direction is Forest Service authority to withdraw lands from vegetation production and related soil productivity on the national forest for dedication to road and trail corridors for transportation and access uses.

#### **National Environmental Policy Act of 1969**

This report was developed using the principal elements from the National Environmental Policy Act (NEPA) of 1969 and the regulations for implementing the procedural provisions of the NEPA from the Council on Environmental Quality (40 CFR Parts 1500-1508) and Regulation 36 CFR Part 220.

### **National Forest Management Act of 1976 (90 Stat. 2949; 16 U.S.C. 1608)**

Section 8(b) of the National Forest Management Act states, “any road constructed on land of the National Forest System in connection with a timber contract or other lease shall be designed with the goal of reestablishing vegetation cover on the roadway and areas where vegetation cover has been disturbed by the construction of the road, within ten years after the termination of the contract, permit, or lease.” This section of the act further states, “Such action shall be taken unless it is determined that the road is needed for use as a part of the National Forest Transportation System.”

This legal direction states that lands no longer needed for, and dedicated to, transportation or access uses should be returned to a vegetated state. Implicit in this legal direction is Forest Service responsibility to recover soil productivity on these lands, to the extent that vegetation can be re-established. Type and degree of soil recovery necessary for re-establishment of vegetation would depend on site-specific conditions and land management objectives for that area.

Section 8(c) of this act states “Roads constructed on NFS lands shall be designed to standards appropriate for the intended uses, considering safety, cost of transportation, and impacts on land resources.”

## **Topics and Issues Addressed in This Analysis**

### **Issues**

Designating snow trails and areas for OSV use has the potential to result in ground disturbance and snow compaction, and this can directly, indirectly, and/or cumulatively adversely impact soil and water resources through soil compaction, erosion, and displacement.

Snowmobiles, when operated cross-country instead of on designated trails, have the potential for more widespread impacts from ground disturbance (similar in nature to summer motorized use if there is inadequate snow cover). These potential effects are highly dependent on location, particularly areas of thin snow cover, and the amount and timing of use.

Snowmobiles, when operated on designated NFS roads and designated NFS trails without adequate snow cover have the potential to also result in soil compaction, erosion, and displacement and decreased water quality, as described above.

### *Resolution*

This issue will be carried forward through effects analysis in this report. Measurement indicators will be used to compare and contrast alternatives in the environmental impact statement (EIS) and minimization criteria will be applied to reduce the impacts to the soil resource.

We addressed this issue by developing an alternative to the proposed action that includes establishing a uniform 12-inch minimum snow depth for all uses, with some exceptions and added clarification to all alternatives (via project design criteria and monitoring measures) regarding how snow depths would be measured, enforced, and used as guidelines to ensure resource impacts are minimized.

This minimum snow depth would minimize the likelihood of adverse impacts to soil and water resources from OSV use.

### **Other Resource Concerns**

No other resource concerns were identified by the public.

## Resource Indicators and Measures

Soil productivity and soil stability are the two soil resource indicators (table 55).

**Table 55. Resource indicators and measures for assessing soil effects**

Resource Element	Resource Indicator	Measure (Quantify if possible)
Soil Productivity and Soil Stability	OSV use on sensitive soils including wet meadows, areas with potential low stability and areas with potential erosion hazards.	Acres of cross-country travel open to OSV use on sensitive soils
Soil Stability	Minimum snow depths on trails	Inches of snow
Soil Productivity	Minimum snow depths for cross-country travel	Inches of snow
Soil Productivity	Total area open to OSV use	Acres open to cross-country OSV travel

## Methodology and Information Sources

We analyzed soil resources within the project area using geographic information system (GIS) data, soils survey data, corporate soils data layers including the geology and geomorphology layers for the Lassen National Forest, a variety of reports and assessments of OSV impacts, and professional experience and judgement using scientific literature on OSV impacts. We consulted the Lassen National Forest Soil Scientist to help determine where the sensitive soils might be located on the forest.

### Incomplete and Unavailable Information

We performed no field observations and collected no site-specific soils information to support this analysis. Very little monitoring information is available on OSV impacts to the soil resource. The Forest Service does monitor OSV use on the Lassen National Forest, but no specific soils monitoring has been conducted. Assessments of soil resource impacts of OSV use were primarily based on the scientific literature.

To determine where potential sensitive soils might be located on the forest, we used the soils survey data and other corporate GIS layers to determine where wet meadow soils, soils with low stability, and soils with erosion potential might be located. The Forest Service does not have a specific meadows layer or slope stability layer for the Lassen National Forest.

### Spatial and Temporal Context for Effects Analysis

#### *Direct/Indirect and Cumulative Effects Boundaries*

The spatial boundaries for analyzing the direct, indirect, and cumulative effects to the soil resource are the area of land managed by the Lassen National Forest.

The short-term temporal boundary for analyzing the direct, indirect, and cumulative effects to the soil resource is 1 year; the long-term temporal boundary is 10 years because climate changes, unforeseeable future projects, and other factors make assumptions beyond this timeframe speculative.

## Affected Environment

### Existing Condition

The majority of precipitation occurs on the Lassen National Forest from about late October to early May. At elevations above 5,000 feet, the majority of precipitation occurs as snow, and very little rainfall occurs

during the summer months. The amount of annual precipitation ranges from about 16 inches along the eastern boundary and the northern Little Valley area, to 80 or 90 inches in and around Lassen Volcanic National Park, Philbrook Reservoir, and Snow Mountain. The median annual precipitation is approximately 30 to 50 inches. East of the Lassen National Forest boundary is high desert country with only 6 to 10 inches of annual precipitation.

The Lassen National Forest has diverse vegetation because of its wide ranges in precipitation and elevation. In the upper elevations, white pine, red and white fir, and manzanita grow well. Lodgepole pine, willow, alder, and ceanothus, snowbrush, and grasses can also be found at this elevation. The lower elevations typically see various oaks (blue, live, and black), grasses, and ceanothus, along with ponderosa pine and Jeffrey pine.

### *Soils and Geology*

Soil resources on the Lassen National Forest are varied with a diversity of parent materials present. About 85 percent of the forest is volcanic in origin including basalt, rhyolite, andesite, cinders, and ash parent materials. These soils are generally coarser-textured soils, but with good water-holding capacity and abundant nutrients. The southern 15 percent of the forest is derived from non-volcanic parent materials including granitics, metamorphic and sedimentary rocks of different ages. These soil types tend to be less productive and are more prone to erosion, especially on steeper slopes. Tertiary age gravelly sediments are also present on the southern portion of the forest and these soil types are more prone to slope instability and landslides. Lassen National Forest soils are included and described in the Tehama County soil survey (USDA Soil Conservation Service and Forest Service 1967) and the Soil Survey of Lassen National Forest Area, California (Kliwer 1994).

Elevations throughout the forest range from 2,500 to 8,700 feet. The western and southern sections are composed of gentle to steep slopes; the northern and eastern sections have larger swaths of gently sloping and flatter stretches of land. The higher elevation portions of the forest were glaciated in the last ice age.

The soils are grouped into 224 soil map units within 41 taxonomic groups.

### **Soil Productivity**

Soil productivity is important to maintain. Soil organic matter and soil porosity are two indicators of soil productivity. The importance of soil organic matter cannot be overstated (Jurgensen et al. 1997). This organic component contains a large reserve of nutrients and carbon, and it is dynamically alive with microbial activity. The character of forest soil organic matter influences many critical ecosystem processes, such as the formation of soil structure, which in turn influences soil gas exchange, soil water infiltration rates, and soil water-holding capacity. Soil organic matter is also the primary location of nutrient recycling and humus formation, which enhances soil cation exchange capacity and overall fertility. Organic matter including the forest floor and large woody material are essential for maintaining ecosystem function by supporting moderate soil temperatures, improved water availability and biodiversity (Page-Dumroese et al. 2010).

Soil porosity refers to the amount and character of void space within the soil. In a “typical” soil, approximately 50 percent of the soil volume is void space. Pore space is lost primarily through mechanical compaction. Three fundamental processes are negatively impacted by compromised soil pore space:

- Gas exchange;
- Soil water infiltration rates; and

- Water-holding capacity.

### **Gas Exchange**

Soil oxygen is fundamental to all soil biologic activity. Roots, soil fauna, and fungi all respire, using oxygen while releasing carbon dioxide. When gas exchange is compromised, biologic activity is also compromised. Maintaining appropriate soil biologic activity is paramount when considering long-term forest vitality.

### **Soil Water Infiltration Rates**

Severely compacted soils do not allow appropriate water infiltration, leading to overland flow and associated erosion, sediment delivery, spring flooding, and low summer flows.

Soil productivity within the Lassen National Forest could be most affected by OSV use within sensitive soil types including wet meadow areas and soils that are prone to erosion. Wet meadows are located on approximately 1 percent of the Lassen National Forest (approximately 13,759 acres). Maintaining a minimum snow depth to not disturb the organic matter at the soil surface or compact the soil and reduce soil porosity are essential to reducing the effects of OSV use on the soil resource in these sensitive areas.

### **Soil Stability**

Non-marine sediments in the southern part of the forest, as well as some granitic slopes, can be unstable when slopes are steep (over 35 percent). Generally, the instability and slumping only occurs when soils are excavated deeper than 2 feet. These soil types make up about 6 percent of the forest. These areas generally have a moderate stability hazard, with less than 2 percent of the soils having a high or very high stability hazard. Most of the remaining portions of the forest have low-relief volcanic topography where the stability hazard is low. Old landslides are present within the project area on approximately 2 percent of the forest (28,818 acres). None of the actual proposed snowmobile trails (groomed or ungroomed) occur on any mapped landslide deposits.

Some smaller portions of the granitic soils on steep slopes and some small areas of poorly consolidated rhyolite are the areas on the forest with potential erosion hazards when soils have no vegetation present. These soil types are found on approximately 4 percent of the project area (64,101 acres).

Existing roads also have the potential for soil erosion (Cacek 1989). The dominant processes in roaded areas are surface erosion from bare soil areas of roads, including the cutslope, fillslope, and travelway. Snow cover on roads is an important component in reducing risks of erosion from roads due to OSV use.

## **Environmental Consequences**

### **Alternative 1 – No Action**

#### *Direct and Indirect Effects*

Current OSV use would continue on 964,030 acres of the Lassen National Forest under the no-action alternative. And, 2,952 miles of currently groomed, ungroomed, marked and unmarked snow trails would be open to public OSV use. Under this alternative, there would be no minimum enforced snow depth to travel on trails or cross country. Minimum snow depth prior to grooming would be between 12 inches of snow and approximately 350 miles of snow trails would be groomed for public OSV use.

### **Soil Productivity**

Incidental direct effects of OSV use on and off trails could include compaction, rutting, and disturbance of the forest floor and organic matter within the soil in low snow areas. Although snowmobiles generally have low ground pressure, the tracks on snowmobiles could potentially churn soil and cause compaction with repeated travel over areas with low snow conditions (Baker and Buthmann 2005; Gage and Cooper 2009). This type of incidental contact with the soil surface or low snow conditions would likely occur during the fall or spring season, would more likely be found on ridges that are windy and exposed or on south-facing slopes, and would be very limited. Repeated compaction of snow can also alter soil temperatures potentially changing or reducing microbial activity, but some research has shown that with repeated compaction, soil temperatures were not affected (Gage and Cooper 2009; Keller et al. 2004).

Currently, grooming generally occurs when there is 12 inches of snow on trails, meaning that there is little to no chance that soil would be exposed on groomed OSV trails. A 12-inch snow depth off trails has been observed to be adequate for cross-country travel and to mitigate and eliminate contact with soil surface, compaction, or rutting or disturbance of organic matter on ungroomed trails (USDA FSH 2509.25 for Region 2). Under the no-action alternative, however, there would be no minimum snow depth for travel over trails or cross-country travel, so soil resource damage would be likely as described above.

Soils within the Lassen National Forest that may be most prone to compaction and rutting include the soils located within the wet meadows. These soils tend to have more soil moisture for longer periods throughout the year with finer soil textures. Monitoring of wet meadow areas would ensure that 12 inches of snow is adequate to protect these sensitive soil types that cover approximately 1 percent of the forest.

Moderate snowpack levels have been shown to minimize the potential compaction from OSV use (Gage and Cooper 2009). With adequate snow depth, on-trail and off-trail OSV use would have minimal to no impact on the soil resource and would not likely lead to any loss of soil productivity.

### **Soil Stability**

With adequate snow depths, cross-country OSV use is unlikely to affect soil stability. There are approximately 28,818 acres with landslide potential. Landslides within the Lassen National Forest are generally caused by excavating soil to a depth greater than 2 feet. OSV use on these soils would not lead to excavated soils and would likely be widely spread out throughout the forest versus concentrated on landslide prone areas. Even with concentrated use on sites where landslide potential is high, OSV use would not likely cause landslides.

Cross-country use of OSVs could have a small effect on ground disturbance that could lead to erosion, especially on soils derived from granitic or rhyolitic parent materials (approximately 64,101 acres). Depending on site-specific factors including slope, aspect, elevation, level of use, and weather conditions, trails and off-trail riding on steep slopes could contribute to erosion (Baker and Buthmann 2005; Olliff et al. 1999). Adequate snowpack would likely mitigate the potential for erosion on these sites. Also, OSV operators generally avoid traveling over bare soil because it can damage their machines.

### *Trail Grooming*

Trail grooming occurs over an NFS road or trail. Adequate snowpack is present on the trail prior to grooming and grooming is not likely to cause impacts to the soil resource on trails or roads.

**Table 56. Resource indicators and measures for alternative 1**

Resource Element	Resource Indicator (Quantify if possible)	Measure (Quantify if possible)	Alternative 1
Soil Productivity and Soil Stability	OSV use on sensitive soils (Meadow soils, erosive soils, low stability soils)	Acres of cross-country travel open to OSV use on sensitive soils	53,902
Soil Stability	Minimum Snow Depths on trails	Inches of snow	No minimum
Soil Productivity	Minimum snow depths for cross-country travel	Inches of snow	No minimum
Soil Productivity	Total area open to OSV use	Acres open to cross-country OSV travel	964,030

### Alternatives 2 (Proposed Action), 3, 4, and 5

Table 57 provides a summary of the different alternatives proposed.

**Table 57. Alternative comparisons**

OSV Management	Alternative 1 No Action: Current OSV Management	Alternative 2 Proposed Action	Alternative 3	Alternative 4	Alternative 5
<b>National Forest System (NFS) Lands within the Lassen National Forest (Acres)</b>	1,150,020	1,150,020	1,150,020	1,150,020	1,150,020
<b>OSV Use Allowed:</b>					
<ul style="list-style-type: none"> <li>Designated OSV Areas (Acres)</li> </ul>	964,030	921,180	833,990	954,450	633,360
<ul style="list-style-type: none"> <li>Designated OSV Trails (Miles)</li> </ul>	0	334	383	380	390
<ul style="list-style-type: none"> <li>OSV Trails Open but not Designated (Miles)</li> </ul>	2,952	2,519	2,209	2,544	544
<b>Minimum Snow Depth for OSV Use on Designated Trails (Inches)</b>	12	6 inches on snow trails overlaying roads and trails 12 inches on 0.1 mile of trail not overlaying roads or trails	6 inches on snow trails overlaying roads and trails	The depth necessary to avoid underlying resource damage	12
<b>Minimum Snow Depth for Cross-country OSV Use (Inches)</b>	12	12	12	The depth necessary to avoid underlying resource damage	12

### Direct and Indirect Effects

The potential direct and indirect effects for these alternatives are similar to the no-action alternative except that the no-action alternative has more acreage open to cross-country OSV use along with no

minimum enforced snow depth for OSV use on trails or cross-country and has the potential to have the most impacts to the soil resource. Also, under alternatives 2 and 3, OSV use can occur on existing roads and trails with a minimum snow depth of 6 inches instead of 12 inches, which could lead to localized soil disturbance where there is repeated use at lower snow depths. The effects of snow plowing and trail grooming would be similar to those effects described under the no-action alternative above.

*Soil Productivity*

Impacts of OSV use on soil productivity would be similar to the impacts described under the no-action alternative. No new trail or road construction would occur under any of the alternatives. Because OSV use would occur with sufficient amounts of snow to protect the soil resource, there would not likely be soil disturbance including compaction or the disturbance of organic matter including forest floor litter and large woody debris present on the soil surface. Existing regulations would allow the issuance of a closure order if snow cover had the potential to become inadequate during the open season. During times of the year when snowpack is potentially more variable, there could be incidental indirect effects including some minor ground disturbance in low-snow areas. Under alternative 2, the acres open to cross-country OSV travel on sensitive soils would be similar as under the no-action alternative, but that acreage would decrease under alternatives 3, 4 and 5 (table 58). Alternative 5 would have the least impact on sensitive soils and soil productivity overall because the least acreage would be open to potential cross-county OSV travel within the Lassen National Forest.

*Soil Stability*

Impacts of OSV use on soil stability would be similar to the impacts described under the no-action alternative. OSV use would not increase landslide potential on low stability sites across the forest. Erosion would likely not increase with adequate snow cover, although there is slightly more potential to have exposed bare soil on trails and roads under alternatives 2 and 3, because the minimum snow depth for OSV travel on existing roads and trails is reduced to 6 inches of unpacked snow. Monitoring under these alternatives is important to determine the site-specific effects of a reduced minimum snow depth on the soil resource. The minimum snow depth in alternative 4 would avoid damage to underlying soils.

**Table 58. Resource indicators and measures for alternatives 2, 3, and 4 direct and indirect effects**

Resource Element	Resource Indicator (Quantify if possible)	Measure (Quantify if possible)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Soil Productivity and Soil Stability	OSV use on sensitive soils (meadow soils, erosive soils, low stability soils)	Acres (%) of cross-country open to OSV use on sensitive soils	52,964 (6%)	40,590 (5%)	53,507 (6%)	33,221 (5%)
Soil Stability	Minimum Snow Depths on trails	Inches of snow	6 inches on snow trails overlaying roads and trails	6 inches on snow trails overlaying roads and trails	The depth necessary to avoid underlying resource damage	12
Soil Productivity	Minimum snow depths for cross-country travel	Inches of snow	12	12	The depth necessary to avoid underlying resource damage	12

Resource Element	Resource Indicator (Quantify if possible)	Measure (Quantify if possible)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Soil Productivity	Total area open to OSV use	Acres open to cross-country OSV travel	921,180	833,990	954,450	633,360

## Cumulative Effects

### *Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis*

Cumulative effects include a discussion of the combined, incremental effects of human activities. For activities to be considered cumulative, their effects need to overlap in both time and space with those of the proposed actions. For the soil resource, the area for consideration is the whole planning area.

### *Vegetation Management*

Several past, current, and future vegetation management activities are occurring on the Lassen National Forest over approximately 722,391 acres. These ground-disturbing activities could have cumulative effects on the soil resource if the soil disturbance occurs in the same location as potential soil disturbance from OSV use. This is very unlikely, as effects of OSV use will be minimal throughout the forest. Potential road-building activities associated with vegetation management activities could increase soil disturbance and decrease soil productivity and stability where the roads are located. These vegetation management activities are regulated by Forest Plan standards and guidelines, Regional Standards and best management practices to ensure soil productivity is maintained.

In general, snowmobiling is the primary winter recreational use in the action area. Snowmobiling primarily occurs on existing trails, naturally un-forested areas, or in areas with limited forest cover or associated structural complexity at the ground level. Because snowmobiles operate over snow that protects the ground, it is unlikely that OSV use has a significant direct impact upon soils.

### *Grazing*

Almost the entire Lassen National Forest is located within grazing allotments. There are 60 grazing allotments present. Impacts of grazing are generally limited to areas where the animals bed, lounge, trail or access water, and this generally only occurs during the spring, summer, and fall seasons when there no snow covers on the ground. Cumulative impacts from grazing are unlikely as OSV use would not likely occur at the same time as grazing, and impacts from OSV use are minimal.

### *Other Recreation Activities*

Disturbance from general motorized use and recreational access occurs and will continue to occur throughout the forest indefinitely. We anticipate no changes in the existing recreation profile. Other recreational activities that take place off the developed roads, such as the gathering of miscellaneous forest products and hunting, occur within the project area, but because OSV use would generally occur on minimum snowpack, we anticipate no cumulative effects from other ongoing recreational activities.

### *Climate Change*

Climate change affects and will continue to affect California and the Lassen National Forest in the future. Precipitation events would likely become more unpredictable and warmer temperatures would decrease the amount of precipitation that falls as snow, likely decreasing the total snowpack and the amount of time that snow would be on the ground (State of California 2007). This could potentially increase the amount

of time the soil would be exposed to OSV impacts if seasons of OSV use are not shortened. Potentially, this could increase the impacts on sensitive soil sites including wet meadows and erosive sites because of increased soil exposure.

## Summary of Environmental Effects

Table 59 summarizes the soil issue indicators and the potential effects to those indicators by alternative.

**Table 59. Summary comparison of environmental effects to the soil resource**

Resource Element	Indicator/ Measure	Alternative 1 (no-action alternative)	Alternative 2 (proposed action)	Alternative 3	Alternative 4	Alternative 5
Soil Productivity and Soil Stability	OSV acres open to cross-country travel on sensitive soils (including wet meadows, areas with potential low stability, and areas with potential erosion hazards).	There would be no change in acreage of area currently open to cross-country OSV travel on sensitive soils. Approximately 53,902 acres with mapped sensitive soil types are open to cross-country travel. The no action alternative has the most acres of sensitive soils open to OSV use.	Approximately 52,964 acres of sensitive soils would be open to cross-country OSV travel within the forest. This is slightly less acres than the no-action alternative and alternative 4, but more acres than alternative 3 and alternative 5.	Approximately 40,590 acres of sensitive soils will be open to cross-country OSV travel. This is less acres open to OSV use than any other alternative other than alternative 5.	Approximately 53,507 acres of sensitive soils will be open to cross-country OSV travel. Under this alternative, there would be more acres of sensitive soils open to cross-country OSV travel than any other action alternative, but there would less acres of sensitive soils open to OSV use than under the no-action alternative.	Approximately 33,221 acres of sensitive soils will be open to cross-country OSV travel. Under this alternative, the least amount of sensitive soils will be open to OSV cross-country travel.

Resource Element	Indicator/ Measure	Alternative 1 (no-action alternative)	Alternative 2 (proposed action)	Alternative 3	Alternative 4	Alternative 5
Soil Stability	Minimum snow depths on trails (inches)	No enforced minimum snow depth prior to any OSV travel over existing roads and trails. Without a minimum snow depth, soil resource damage is more likely to occur as OSV use could occur when bare soil is exposed on trails, leading to potential erosion.	Minimum snow depth is 6 inches of snow prior to any OSV travel over existing roads and trails. This minimum snow depth may potentially create conditions in which the road surface is exposed to OSVs and there is potential for some soil erosion or rutting of the road surface. Monitoring of this snow depth is will occur to further evaluate the potential effects to soils.	Minimum snow depth is 6 inches of snow prior to any OSV travel over existing roads and trails. This minimum snow depth may potentially create conditions in which the road surface is exposed to OSVs and there is potential for some soil erosion or rutting of the road surface. Monitoring of this snow depth is will occur to further evaluate the potential effects to soils.	No defined snow depth for OSV use on trails. No minimum snow depth may potentially create conditions in which the road surface is exposed to OSVs and there is potential for some soil erosion or rutting of the road surface. Monitoring will occur to further evaluate the potential effects to soils.	Minimum snow depth is 12 inches of unpacked snow prior to any OSV travel over existing roads and trails. This minimum snow depth has been observed to be sufficient to prevent contact of OSVs with the bare soil surface.
Soil Productivity	Minimum snow depths for cross-country travel (inches)	No minimum snow depth for cross-country OSV travel could lead to greater soil resource damage. If bare soil or forest floor is exposed, soil erosion, soil loss, compaction, rutting and displacement could occur. With no minimum snow depth, the no-action alternative could potentially have the greatest impacts to soil productivity.	Minimum snow depth of 12 inches of unpacked snow for cross-country OSV travel would not change. Potential effects to the soil are unlikely to occur with at least 12 inches of snow covering the soil surface.	Minimum snow depth of 12 inches of unpacked snow for cross-country OSV travel would not change. Potential effects to the soil are unlikely to occur with at least 12 inches of snow covering the soil surface.	No minimum snow depth exists under this alternative. The potential for reduced soil productivity could occur, but Forest staff will monitor use and recommend usage seasons based on monitoring to prevent soil resource damage.	Minimum snow depth of 12 inches of unpacked snow for cross-country OSV travel would not change. Potential effects to the soil are unlikely to occur with at least 12 inches of snow covering the soil surface.

Resource Element	Indicator/ Measure	Alternative 1 (no-action alternative)	Alternative 2 (proposed action)	Alternative 3	Alternative 4	Alternative 5
Soil Productivity	Total acres open to OSV use	Approximately 964,030 acres of the forest are open to OSV use. Under the no-action alternative, the most acreage is open to OSV use; therefore, the most potential for soil damage exists under this alternative.	Approximately 921,180 acres of the forest would be open to OSV use. This is less area open to OSV use compared to the no-action alternative and alternative 4, but it is greater than alternative 3 and alternative 5. The proposed action has the potential for more impacts than alternatives 3 and 5, but less than the proposed action and alternative 4.	Approximately 833,990 acres of the forest would be open to OSV use, which is less than all the alternatives except alternative 5.	Approximately 954,450 acres of the forest would be open to OSV use, which is a greater area than under the proposed action, alternative 3 and alternative 5, but less area than the no-action action alternative. Alternative 4 has the potential to have the greatest soil impacts out of the 3 action alternatives.	Approximately 633,360 acres of the forest would be open to OSV use, which is the least amount of land open to OSV use out of all the five alternatives.

## **Compliance with LRMP and Other Relevant Laws, Regulations, Policies and Plans**

This project complies with the Lassen National Forest Land and Resource Management Plan, which provides standards and guidelines to protect the soil resource and the Southwest Regional Soils Quality Standards by maintaining soil productivity.

## **Short-term Uses and Long-term Productivity**

There would be no impacts from short-term uses and long-term productivity on the soil resource.

## **Unavoidable Adverse Effects**

There would be no unavoidable adverse effects of any of the alternatives to the soil resource.

## **Irreversible and Irretrievable Commitments of Resources**

There would be no irreversible and irretrievable commitments of resources for any alternatives.

## **Air Quality**

Air quality is a key resource and a valued element of forest visitors' experience. Air quality is protected under several provisions of the Clean Air Act (CAA), including the Prevention of Significant Deterioration program, the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS). Potential impacts to air quality from winter use on the Lassen National Forest relate to OSV<sup>12</sup> emissions. This analysis describes the existing condition of air quality on the Lassen National Forest and evaluates the potential changes and effects of the alternatives on air quality.

## **Relevant Laws, Regulations, and Policy**

### **Regulatory Framework**

#### *Land and Resource Management Plan*

The Lassen National Forest Land and Resource Management Plan (LRMP) (USDA Forest Service 1992) provides standards and guidelines for Air Quality. The LRMP's Standards and Guidelines call for compliance with State and local air quality requirements, and minimizing of smoke encroachment from prescribed burning (pg. 2-1).

The Forest Standards and Guidelines, with regard to OSV use, apply to the entire Forest.

- a. Maintain air quality to meet or exceed legal requirements of appropriate levels of Government.

- (1) Comply with the Federal Clean Air Act, as amended, and State and local air quality regulations.

#### *Federal Clean Air Act*

In 1963, Congress passed the Federal Clean Air Act and amended the act in 1970, 1977, and 1990. The purpose of the act is to protect and enhance air quality while ensuring the protection of public health and

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<sup>12</sup> An OSV is defined in the Forest Service's Travel Management Rule as "a motor vehicle that is designed for use over snow and that runs on a track or tracks and/or a ski or skis, while in use over snow" (36 CFR 212.1) (DEIS 2015).

welfare. The 1970 amendments established National Ambient Air Quality Standards, which must be met by most state and Federal agencies, including the Forest Service.

States are given the primary responsibility for air quality management. Section 110 of the Clean Air Act requires states to develop state implementation plans that identify how the State will attain and maintain National Ambient Air Quality Standards (NAAQS). The Clean Air Act also allows states, and some counties, to adopt unique permitting procedures and to apply more stringent standards. California has set standards for certain pollutants, such as particulate matter and ozone, which are more protective of public health than respective Federal standards. California has also set standards for some pollutants that are not addressed by Federal standards including sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles.

The Clean Air Act requires that Forest Service actions have “no adverse effect” on air resources by meeting the National Ambient Air Quality Standards and non-degradation standards for Class 1 areas. Managers are further directed to improve existing substandard conditions and reverse negative trends where practicable. The NAAQS and California Ambient Air Quality Standards (CAAQS) for particle pollution as set by the Clean Air Act and California Air Resources Board can be viewed online at the California Air Resources Board webpage.<sup>13</sup>

#### *National Ambient Air Quality Standards (NAAQS)*

NAAQS requirements were established to protect human health and the environment and acceptable maximum air quality concentrations. The NAAQS consist of numerical standards for air pollution, which are broken into “primary” and “secondary” standards for six major air pollutants described below. Primary standards protect public health (including sensitive populations such as asthmatics, children, and the elderly) and represent levels at which there are no known major effects on human health. Secondary standards are intended to protect the nation’s welfare, and account for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the environment. These standards are detailed in table 60 and accompanying footnotes.

#### *California Air Resources Board*

California law authorizes the California Air Resources Board to set ambient (outdoor) air pollution standards (California Health & Safety Code section 39606) in consideration of public health, safety, and welfare. The Air Resources Board has established State Ambient Air Quality Standards (CAAQS) to identify outdoor pollutant levels considered safe for the public. After State standards are established, State law requires the Air Resources Board to designate each area as attainment, nonattainment, or unclassified for each State standard. The area designations, which are based on the most recent available data, indicate the healthfulness of air quality throughout the State (ARB 2015). The State and National Ambient Air Quality Standards are displayed in table 60 and accompanying footnotes. (Further information can be found at: <http://www.arb.ca.gov/desig/statedesig.htm>.)

The California Air Resources Board (ARB) is responsible for meeting the Clean Air Act requirements. The Air Resources Board has further delegated the authority to local Air Pollution Control Districts (APCDs) or Air Quality Management Districts (AQMDs) for stationary sources, while retaining the authority for mobile sources. Air quality rules and regulations for California can be found at <http://www.arb.ca.gov/homepage.htm>. The APCD/AQMD has the primary responsibility for meeting the requirements of the Clean Air Act. This responsibility is carried out through the development and

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<sup>13</sup> <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>

execution of State Implementation Plans (SIPs), which must provide for the attainment and maintenance of air quality standards.

State Implementation Plans are comprehensive plans that describe how an area will attain national ambient air quality standards (NAAQS). The 1990 amendments to the Federal Clean Air Act set deadlines for attainment based on the severity of an area's air pollution problem.

State Implementation Plans are a compilation of new and previously submitted plans, programs, district rules, state regulations and Federal controls. State law makes the Air Resources Board the lead agency for all purposes related to the State Implementation Plan. Local air districts and other agencies prepare state implementation plan elements and submit them to the Air Resources Board for review and approval. The Air Resources Board forwards state implementation plan revisions to the U.S. Environmental Protection Agency (U.S. EPA) for approval and publication in the Federal Register. The Code of Federal Regulations Title 40, Chapter I, Part 52, Subpart F, Section 52.220 lists all of the items which are included in the California SIP (<http://www.arb.ca.gov/planning/sip/background.htm>). The Forest Service is required to comply with all requirements of the California State Implementation Plan.

*Regional Haze Rule (1990 Clean Air Act Amendments, 40 CFR Part 5)*

The Federal Clean Air Act of 1977 declared a national goal to remedy existing visibility impairment and prevent future haze caused by man-made air pollution at selected national parks and wilderness areas of the United States, known as Class 1 Areas. California has 29 mandatory Class 1 Areas managed by either the National Parks Service or the U.S. Forest Service (more than any other state). In 1999, the U.S. Environmental Protection Agency (U.S. EPA) promulgated a regional haze regulation (40 CFR 51.308-309) that calls for states to establish goals and emission reduction strategies to make initial improvements in visibility at their respective Class 1 Areas. Visibility variation occurs as a result of the scattering and absorption of light by particles and gases in the atmosphere. It also mandates each state to develop a Regional Haze State Implementation Plan to incorporate measures necessary to make reasonable progress towards national visibility goals. In 2009, the Air Resources Board (ARB) prepared a Regional Haze Plan for California demonstrating reasonable progress in reducing haze by 2018, the first benchmark year on the path to improved visibility. U.S. EPA funded five Regional Planning Organizations throughout the country to coordinate regional haze rule-related activities between states in each region. California belongs to the Western Regional Air Partnership, the consensus organization of western states, Tribes, and Federal agencies, which oversees analyses of monitoring data and preparation of technical reports regarding regional haze in the western United States.

**Table 60. State and National Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards <sup>1</sup>		National Standards <sup>2</sup>		
		Concentration <sup>3</sup>	Method <sup>4</sup>	Primary <sup>3,5</sup>	Secondary <sup>3,6</sup>	Method <sup>7</sup>
Ozone (O <sub>3</sub> ) <sup>8</sup>	1 hour	0.09 ppm (180 µg/m <sup>3</sup> )	Ultraviolet Photometry	---	Same as Primary Standard	Ultraviolet Photometry
	8 hour	0.070 ppm (137 µg/m <sup>3</sup> )		0.070 ppm (137 µg/m <sup>3</sup> )		
Respirable Particulate Matter (PM <sub>10</sub> ) <sup>9</sup>	24 hour	50 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	150 µg/m <sup>3</sup>	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m <sup>3</sup>		---		
Fine Particulate Matter (PM <sub>2.5</sub> ) <sup>9</sup>	24 hour	---	---	35 µg/m <sup>3</sup>	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	12.0 µg/m <sup>3</sup>		
Carbon Monoxide (CO)	1 hour	20 ppm (23 mg/m <sup>3</sup> )	Non-dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m <sup>3</sup> )	---	Non-dispersive Infrared Photometry (NDIR)
	8 hour	9.0 ppm (10 mg/m <sup>3</sup> )		9 ppm (10 mg/m <sup>3</sup> )	---	
	8 hour (Lake Tahoe)	6 ppm (7 mg/m <sup>3</sup> )		---	---	
Nitrogen Dioxide (NO <sub>2</sub> ) <sup>10</sup>	1 hour	0.18 ppm (339 µg/m <sup>3</sup> )	Gas Phase	100 ppb (188 µg/m <sup>3</sup> )	---	Gas Phase
	Annual Arithmetic Mean	0.030 ppm (57 µg/m <sup>3</sup> )	Chemiluminescence	0.053 ppm (100 µg/m <sup>3</sup> )	Same as Primary Standard	Chemiluminescence
Sulfur Dioxide (SO <sub>2</sub> ) <sup>11</sup>	1 hour	0.25 ppm (655 µg/m <sup>3</sup> )	Ultraviolet Fluorescence	75 ppb (196 µg/m <sup>3</sup> )	---	Ultraviolet Fluorescence Spectrophotometry (Pararosaniline Method)
	3 hour	---		---	0.5 ppm (1300 µg/m <sup>3</sup> )	
	24 hour	0.04 ppm (105 µg/m <sup>3</sup> )		0.14 ppm (for certain areas) <sup>10</sup>	---	
	Annual Arithmetic Mean	---		0.030 ppm (for certain areas) <sup>10</sup>	---	
Lead <sup>12,13</sup>	30 Day Average	1.5 µg/m <sup>3</sup>	---	---	---	---
	Calendar Quarter	---	Atomic Absorption	1.5 µg/m <sup>3</sup>	Same as Primary Standard	High Volume Sampler and Atomic Absorption
Rolling 3-Month Average	---	---	0.15 µg/m <sup>3</sup>			
Visibility Reducing Particles <sup>14</sup>	8 hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 hour	25 µg/m <sup>3</sup>	Ion Chromatography			
Hydrogen Sulfide	1 hour	0.03 ppm (42 µg/m <sup>3</sup> )	Ultraviolet Fluorescence			
Vinyl Chloride <sup>12</sup>	24 hour	0.01 ppm (26 µg/m <sup>3</sup> )	Gas Chromatography			

Source: California Air Resources Board (5/4/16) (See footnotes on next page.)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above  $150 \mu\text{g}/\text{m}^3$  is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from  $15 \mu\text{g}/\text{m}^3$  to  $12.0 \mu\text{g}/\text{m}^3$ . The existing national 24-hour PM2.5 standards (primary and secondary) were retained at  $35 \mu\text{g}/\text{m}^3$ , as was the annual secondary standard of  $15 \mu\text{g}/\text{m}^3$ . The existing 24-hour PM10 standards (primary and secondary) of  $150 \mu\text{g}/\text{m}^3$  also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
11. On June 2, 2010, a new 1-hour SO<sub>2</sub> standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO<sub>2</sub> national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
12. Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
13. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
14. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard ( $1.5 \mu\text{g}/\text{m}^3$  as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
15. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

### *Criteria Pollutants Regulated by EPA*

**Ozone (O<sub>3</sub>)** is the most widespread air quality problem in the state. It is a colorless gas with a pungent, irritating odor. Ozone, an important ingredient of smog, is a highly reactive and unstable gas capable of damaging the linings of the respiratory tract. This pollutant forms in the atmosphere through complex reactions between chemicals directly emitted from vehicles, industrial plants, and many other sources. Exposure to levels of ozone above the current ambient air quality standard can lead to human health effects such as lung inflammation and tissue damage and impaired lung functioning. The ozone that ARB regulates as an air pollutant is produced close to the ground level, where people live, exercise and breathe.

The California Air Resources Board (ARB) is concerned about ozone pollution because of its effects on the health of Californians and the environment (ARB 2015).

In April 2005, the Air Resources Board approved a new 9-hour standard of 0.070 ppm and retained the one-hour ozone standard of 0.09 after an extensive review of the scientific literature. (ARB 2015)

**Particulate Matter 2.5 (PM 2.5)** is the term for particles found in the air, including dust, dirt, soot, smoke and liquid droplets. Many manmade and natural sources emit PM directly or emit other pollutants that react in the atmosphere to form PM. Particles less than 10 micrometers pose a health concern because they can be inhaled into and accumulate in the respiratory system. PM 2.5 are referred to as “fine” particles and believed to pose the greatest health risks. Sources include motor vehicles, power plants, and wood burning (source: EPA.gov).

**Particulate Matter 10 (PM 10)** are the larger particles between 2.5 and 10 micrometers found in the air including smoke and dust from factories, farming, roads, mold, spores and pollen. Major concerns for human health from exposure to PM-10 include: effects on breathing and respiratory systems, damage to lung tissue, cancer, and premature death. Acidic PM-10 can also damage human-made materials and is a major cause of reduced visibility in many parts of the U.S. (source: EPA.gov)

**Lead (Pb)** is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been from fuels in on-road motor vehicles (such as cars and trucks) and industrial sources. As a result of EPA's regulatory efforts to remove lead from on-road motor vehicle gasoline, emissions of lead from the transportation sector dramatically declined by 95 percent between 1980 and 1999, and levels of lead in the air decreased by 94 percent between 1980 and 1999. Today, the highest levels of lead in air are usually found near lead smelters. The major sources of lead emissions to the air today are ore and metals processing and piston-engine aircraft operating on leaded aviation gasoline. (source: EPA.gov)

**Nitrogen Dioxide (NO<sub>2</sub>)** is a reddish-brown gas with an irritating odor. It is emitted from motor vehicles, industrial facilities, and power plants. Indoors, home heaters and gas stoves also produce substantial amounts of NO<sub>2</sub>. Nitrogen dioxide and nitric oxide are products of all types of combustion. Nitric oxide reacts with hydrocarbons in the presence of sunlight to form nitrogen dioxide. In the summer months NO<sub>2</sub> is a major component of photochemical smog and an essential ingredient in the formation of ground-level ozone pollution. Exposure to NO<sub>2</sub> along with other traffic-related pollutants, is associated with respiratory symptoms, episodes of respiratory illness and impaired lung functioning. In February 2007, the Air Resources Board established a new annual average NO<sub>2</sub> standard of 0.030 ppm and lowered the one-hour NO<sub>2</sub> standard to 0.18 ppm, after an extensive review of the scientific literature (source: ARB 2015).

**Carbon Monoxide (CO)** A colorless, odorless gas, carbon monoxide is a byproduct of incomplete combustion and is emitted directly into the atmosphere, primarily from motor vehicle exhaust. Carbon monoxide concentrations typically peak nearest a source, such as roadways, and decrease rapidly as distance from the source increases. Carbon monoxide is readily absorbed into the body from the lungs. It decreases the capacity of the blood to transport oxygen, leading to health risks for unborn children and people suffering from heart and lung disease. The symptoms of excessive exposure—headaches, fatigue, slow reflexes, and dizziness—also occur in healthy people (source: ARB 2015)

**Sulfur Dioxide (SO<sub>2</sub>)** A colorless gas with a strong, suffocating odor, sulfur dioxide is primarily a combustion product of coal, fuel oil, and diesel fuel. Only small quantities of SO<sub>2</sub> come from gasoline-fueled motor vehicle exhaust. Sulfur Dioxide is emitted directly into the atmosphere and can remain suspended for days allowing for wide distribution of the pollutant. Sulfur dioxide can trigger constriction

of the airways, causing particular difficulties for asthmatics. Children can experience increased respiratory tract infections and healthy people may experience sore throats, coughing, and breathing difficulties. Long-term exposure has been associated with increased risk of mortality from respiratory or cardiovascular disease (source: ARB 2015).

The California Air Resources Board has monitored the gaseous criteria pollutants carbon monoxide, nitrogen dioxide, ozone, and sulfur dioxide since its inception in 1968. Monitoring is performed to demonstrate attainment or non-attainment of national and state ambient air quality standards.

### Desired Condition

The Lassen LRMP states for the desired future condition that present air quality is maintained. Baseline conditions for all air quality-related values are defined and limits of acceptable change are established for Class 1 wilderness areas. (LRMP pg 4-2)

### Topics and Issues Addressed in This Analysis

#### Issues

Designating roads, trails, and areas for OSV use and grooming trails for OSV use have the potential to generate exhaust and emit pollutants into the air. This has the potential to degrade air quality, which can impact recreational users and sensitive areas.

#### Resource Indicators and Measures

The air quality analysis is a qualitative discussion comparing miles of trails open to OSV use and acres open to OSV use. The resource indicators are shown in table 61 and will be used throughout the analysis to compare the alternatives and their potential effects to air quality.

**Table 61. Air quality resource indicators and measures for assessing effects**

Resource Element	Resource Indicator	Measure	Used to address: P/N, or key issue?	Source (LRMP S/G; law or policy, BMPs, etc.)?
Air Quality	Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality.	Miles of snow trail open to OSV visitor use.	No	Forest Standards and Guidelines (pg 4-15) Air Quality a. Maintain air quality to meet or exceed legal requirements of appropriate levels of government. 1. Comply with the Federal Clean Air Act, as amended, and state and local air quality regulations.

Resource Element	Resource Indicator	Measure	Used to address: P/N, or key issue?	Source (LRMP S/G; law or policy, BMPs, etc.)?
	Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality.	Acres open to OSV visitor use.	No	Forest Standards and Guidelines (pg 4-15) Air Quality a. Maintain air quality to meet or exceed legal requirements of appropriate levels of government. 1. Comply with the Federal Clean Air Act, as amended, and state and local air quality regulations.
	Potential effects of OSV emissions to create adverse impacts to air quality.	Shifts in OSV use in relation to sensitive areas (Class 1 and II areas).	No	Forest Standards and Guidelines (pg 4-15) Air Quality a. Maintain air quality to meet or exceed legal requirements of appropriate levels of government. 1. Comply with the Federal Clean Air Act, as amended, and state and local air quality regulations.  LRMP (pg. 3-3) Caribou, Thousand Lakes and Lassen Volcanic Wilderness Areas are designated as Class I areas, allowing no degradation in air quality.

## Methodology

### Information Sources

Information sources used for this analysis are listed below and represent the best available information that was available at the time of report writing.

- ArcMap and relevant Geographic Information System (GIS) data layers from the Lassen National Forest, Environmental Protection Agency (EPA), and the California Air Resources Board (CARB) including county boundaries, air basin boundaries, air district boundaries and class 1 and 2 areas.
- GIS layer of proposed OSV designations and groomed trails
- Lassen National Forest Plan (USDA Forest Service 1992).
- Scientific literature cited in the “References” section.

- The National Visitor Use Monitoring (NVUM) information from the years 2001, 2006, and 2010.
- OSV use from the 2009 OSV Winter Trailhead Survey conducted in support of the 2010 State OSV Program Environmental Impact Report (EIR) for Program Years 2010-2020.
- Information and correspondence obtained from the Air Resource Specialist at the California Air Resources Board (CARB).

### **Incomplete and Unavailable Information**

No information was found on past monitoring of air quality or OSV emissions in the Lassen National Forest.

### **Assumptions used in the Analysis**

For analysis purposes, snowmobile emission data used was obtained from the Environmental Protection Agency (EPA 2010). Analysis was based on emission estimates for a 2-stroke snowmobile (worst-case scenario). Snowmobile miles traveled per day was estimated at 50 miles per day and was averaged based on the responses received through a survey forum (snowest.com).

Approximate annual use was an estimated 10,000 OSV visitors forest-wide for the winter season based on previous use records.

### **Spatial and Temporal Context for Effects Analysis**

The spatial context for effects analysis will be the forest boundary. The temporal context for effects analysis will be one year.

## **Affected Environment**

### **Existing Condition**

#### *Air Quality Management*

California is divided geographically into air basins for the purpose of managing the air resources of the State on a regional basis. An air basin generally has similar meteorological and geographic conditions throughout. The State is currently divided into 15 air basins, the Lassen National Forest lies mostly within the Sacramento Valley and Northwest Plateau with a small portion in the Mountain Counties Air Basin (figure 15).



Figure 15. Designated air basins in California

### Air Pollution Control District

Air quality for the forest is managed and regulated by seven air management districts. Air management districts typically follow county boundaries. Most of the forest lies within the Shasta and Lassen air districts with the southern third of the forest in the Tehama, Northern Sierra (Nevada, Plumas and Sierra counties), and Butte Districts and the northern portion within the Siskiyou and Modoc Air Districts. See figure 16 for a map of air districts in relation to the Lassen National Forest. Air quality rules and regulations for each air pollution control district can be found at their website.

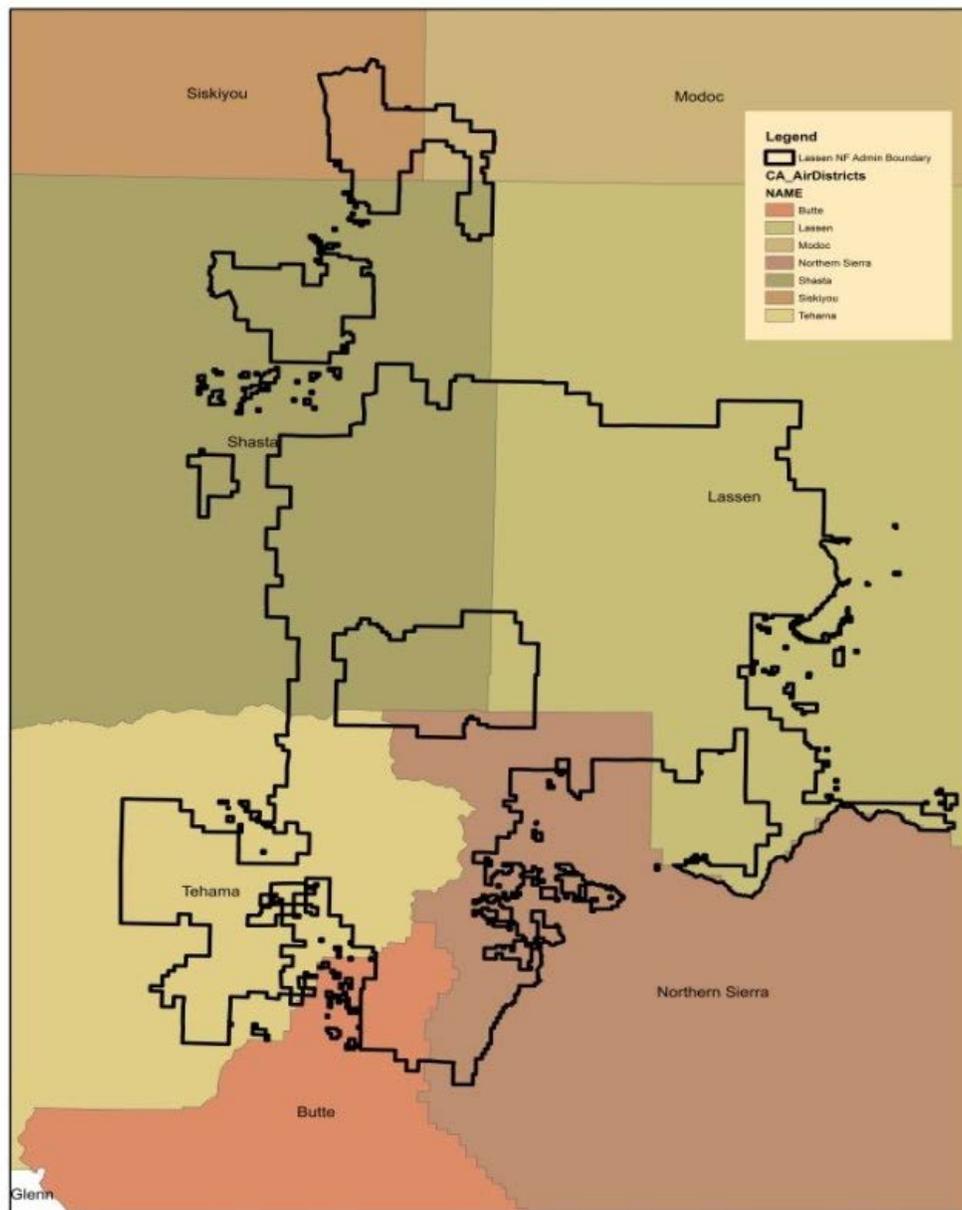


Figure 16. Air pollution control districts within the Lassen National Forest

### Class 1 and II Areas

The Thousand Lakes and Caribou Wilderness are designated as Federal Class 1 Areas on the Lassen National Forest (figure 17). The Lassen Volcanic National Park, managed by the National Park Service, is also a designated Class 1 area that is surrounded by the Lassen National Forest. The Caribou Wilderness lies along the eastern boundary of Lassen Volcanic National Park and the Thousand Lakes Wilderness is located North West of Lassen National Park. The Ishi Wilderness lies in the southwest portion of the forest and is classified as a Class II area by EPA, which allows some reduction in air quality.

Visibility impairment is defined as any humanly perceptible change in visual air quality from that which would have existed under natural conditions (in other words, absent anthropogenic influence). This change

is caused by air pollutants: particles and gases in the atmosphere which either scatter or absorb light. The net effect is the creation of a hazy condition. Sources for visibility impairment in these Class 1 areas include, but are not limited to, industrial sources, on-road and off-road vehicle emissions, road dust, windblown dust, and smoke. Sources can be local or very distant. Progress toward better visibility is calculated from data collected at the Interagency Monitoring of Protected Visual Environments (IMPROVE) network. The IMPROVE monitors measure the concentration of each haze-causing pollutant every three days. There are 17 IMPROVE monitors representing one or more of the Class 1 Areas in California. The LAV01 IMPROVE Monitoring site is located at Lassen Volcanic National Park. Smoke directly impacted the Class 1 Areas and had an overwhelming impact on visibility progress at many monitoring sites throughout California and the west (ARB 2014).

However the Air Resources Board also noted, as evidenced by reductions in anthropogenic source emissions in California and the concurrent improvement in visibility at all of California’s Class 1 Area IMPROVE monitors, California determines the current Regional Haze plan strategies are sufficient for California and its neighboring states to meet their 2018 Reasonable Progress Goals (ARB 2014).



Figure 17. Class 1 Areas in California

### **Air Quality Standards**

The Lassen National Forest must comply with Federal and State ambient air quality standards as mandated by the Clean Air Act of 1963. These standards have been established for seven criteria air pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO<sub>2</sub>), PM10, PM2.5, ozone (O<sub>3</sub>), and sulfur dioxide (SO<sub>2</sub>). California also has standards in place for sulfates, hydrogen sulfide, visibility reducing particles, and vinyl chloride (ARB 2015).

These pollutants can affect human health, reduce visibility, and lead to acidic deposition in sensitive, high-elevation lakes. Air quality within the Lassen National Forest is potentially affected by land management and development activities both on and off the forest. Sources of air pollutants include forest management activities such as wildland fires (both natural and management ignited), road dust, and vehicle emissions. These sources, as well as industrial sources and emissions from urban developments (gas stations, restaurants, railroads, and wood burning stoves) are also found outside Forest Service administered lands.

Currently, the Lassen National Forest complies with Federal and State standards and there are no known violations of the Clean Air Act. According to the Environmental Protection Agency, Butte County is in non-attainment for three criteria pollutants, 8-hour ozone, carbon monoxide and PM 2.5. The non-attainment boundary for 8-hour ozone crosses the Lassen National Forest at the south central section on the Almanor Ranger District. The concern for ozone is in the summer only according to the Air Pollution Specialist at the Air Resources Board (Lopina 2015). The city of Chico, California, within the Butte Air Pollution Control District is in non-attainment for carbon monoxide and PM 2.5. A portion of Tehama County is also in non-attainment for 8-hour ozone and Plumas County is classified as moderate non-attainment for PM 2.5 (table 62).

**Table 62. Federal non-attainment areas for criteria pollutants**

County and/or Air District	8 hour Ozone	Carbon Monoxide (CO)	Lead (Pb)	Particulate Matter 2.5 (PM <sub>2.5</sub> )	Particulate Matter 10 (PM <sub>10</sub> )	Nitrogen Dioxide (NO <sub>2</sub> )	Sulfur Dioxide (SO <sub>2</sub> )
<b>Butte</b>	<i>Marginal</i>	<i>Moderate (Chico, CA)</i>	Unclassified /Attainment	(Chico, CA)	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment
<b>Lassen</b>	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment
<b>Modoc</b>	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment
<b>Plumas (Within Northern Sierra Air District)</b>	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	<i>Moderate</i>	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment
<b>Nevada (Within Northern Sierra Air District)</b>	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment
<b>Sierra (Within Northern Sierra Air District)</b>	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment
<b>Shasta</b>	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment
<b>Siskiyou</b>	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment	Unclassified /Attainment
<b>Tehama</b>	Tuscan Buttes. Marginal non-attainment (partial County)	Unclassified /Attainment N/A	Unclassified /Attainment N/A	Unclassified /Attainment N/A	Unclassified /Attainment N/A	Unclassified /Attainment N/A	Unclassified /Attainment N/A

Source: <http://www3.epa.gov/airquality/greenbook/>. Accessed: 10/01/2015:

The table below shows the California Ambient Air Quality Standards (CAAQS) state designations for all criteria pollutants in California. The Air Resources Board makes State area designations for 10 criteria pollutants: ozone, suspended particulate matter (PM<sub>10</sub>), fine suspended particulate matter (PM<sub>2.5</sub>), carbon monoxide, nitrogen dioxide, sulfur dioxide, sulfates, lead, hydrogen sulfide, and visibility reducing particles (ARB 2015). The Air Resources Board lists eight counties in non-attainment for PM<sub>10</sub>, four in non-attainment for Ozone and Butte County also in non-attainment for PM<sub>2.5</sub>.

**Table 63. State designated non-attainment areas for criteria pollutants**

County and/ or Air District	Ozone	Carbon Monoxide (CO)	Lead (Pb)	PM <sub>2.5</sub>	PM <sub>10</sub>	Nitrogen Dioxide (NO <sub>2</sub> )	Sulfur Dioxide (SO <sub>2</sub> )	Sulfates	Hydrogen Sulfide	Visibility Reducing Particles
<b>Butte</b>	<i>Non-Attainment</i>	Attainment	Attainment	<i>Non-Attainment</i>	<i>Non-Attainment</i>	Attainment	Attainment	Attainment	Unclassified	Unclassified
<b>Lassen</b>	Attainment	Unclassified	Attainment	Attainment	<i>Non-Attainment</i>	Attainment	Attainment	Attainment	Unclassified	Unclassified
<b>Modoc</b>	Attainment	Unclassified	Attainment	Attainment	<i>Non-Attainment</i>	Attainment	Attainment	Attainment	Unclassified	Unclassified
<b>Nevada (within No Sierra Air Dist)</b>	<i>Non-attainment</i>	Unclassified	Attainment	Unclassified	<i>Non-Attainment</i>	Attainment	Attainment	Attainment	Unclassified	Unclassified
<b>Plumas</b>	Unclassified	Attainment	Attainment	Unclassified *(Portola Valley in non-attainment)	<i>Non-Attainment</i>	Attainment	Attainment	Attainment	Unclassified	Unclassified
<b>Sierra</b>	Unclassified	Unclassified	Attainment	Unclassified	<i>Non-Attainment</i>	Attainment	Attainment	Attainment	Unclassified	Unclassified
<b>Shasta</b>	<i>Non-Attainment</i>	Unclassified	Attainment	Attainment	<i>Non-Attainment</i>	Attainment	Attainment	Attainment	Unclassified	Unclassified
<b>Siskiyou</b>	Attainment	Unclassified	Attainment	Attainment	Attainment	Attainment	Attainment	Attainment	Unclassified	Unclassified
<b>Tehama</b>	<i>Non-Attainment</i>	Unclassified	Attainment	Unclassified	<i>Non-Attainment</i>	Attainment	Attainment	Attainment	Unclassified	Unclassified

Source: [www.arb.ca.gov/deg/adm/adm.htm](http://www.arb.ca.gov/deg/adm/adm.htm) (ARB last review, August 22, 2014)

For ozone, PM<sub>2.5</sub>, and PM<sub>10</sub>, the required minimum number of monitors is based on the population of the Core-Based Statistical Area (CBSA) and the severity of the pollutant concentrations each CBSA. The table below includes the CBSAs, population of the CBSAs, the site in each CBSA that is currently measuring the highest concentration, and monitor information used to evaluate whether the minimum monitoring requirement is satisfied. In all cases, sufficient monitoring exists and no additional monitoring is required (ARB 2015).

**Table 64. Minimum monitoring requirements for ozone**

CBSA	County/ Counties	Population (2010 Census)	3-Year Average the 4th Highest Concentration (ppm)	Site with the Highest 3-Year Average of the 4th Highest Concentration	Number of Monitors Required	Number of Active Monitors	Number of Additional Monitors Needed
Bakersfield*	Kern	839,361	0.091	Bakersfield- Municipal Airport	2	8	0
Chico	Butte	220,000	0.075	Paradise-Airport Road	1	2	0
El Centro	Imperial	174,528	0.080	El Centro	1	3	0
Los Angeles- Long Beach- Anaheim*	Los Angeles and Orange	12,828,837	0.098	Santa Clarita	4	16	0
Oxnard- Thousand Oaks-Ventura	Ventura	823,318	0.079	Simi Valley	2	5	0
Redding	Shasta	177,223	0.068	Anderson & Lassen Volcanic	1	4	0
Riverside- San Bernardino- Ontario*	Riverside and San Bernardino	4,224,851	0.103	Redlands- Dearborn	3	21	0
Sacramento- Arden Arcade- Roseville*	El Dorado, Placer, Sacramento, Nevada and Yolo	2,149,127	0.085	Folsom-Natoma Street	2	17	0
Santa Rosa*^	Sonoma	483,878	0.057	Healdsburg	1	2	0
Vallejo- Fairfield*	Solano	413,344	0.066	Vacaville-Ulatis Drive	2	3	0
Yuba City	Sutter and Yuba	166,892	0.074	Sutter Buttes^^	1	2	0

Source: ARB 2015

The table below displays the annual average emissions (tons per year) generated for the air districts within the Lassen National Forest (EPA 2013).

**Table 65. Annual average emissions (tons/year) by air district**

Air District	Emissions Estimates (Tons/Year)							PM <sub>10</sub>	PM <sub>2.5</sub>
	TOG	ROG	CO	NO <sub>x</sub>	SO <sub>x</sub>	PM			
Butte	9,380.5	6,212.3	30,389.9	6,643	109.5	10,793.05	6,270.7	2,171.75	
Lassen	6,288.95	2,197.3	12,884.5	1,766.6	94.9	5,880.15	3,777.75	1,153.4	
Modoc	5715.9	1,135.15	3,157.25	1,003.75	14.6	6,303.55	3,606.2	543.85	
Northern Sierra	10,577.7	5,131.9	33,572.7	4,796.1	270.1	12,380.8	7,577.4	1,941.8	
Shasta	10,829.55	5,650.2	34,525.35	8,570.2	175.2	7,548.2	4,847.2	2,014.8	
Siskiyou	9,084.85	3,854.4	15,173.05	3,467.5	58.4	9,698.05	6,015.2	1,573.15	
Tehama	7,971.6	2,449.15	8,913.3	4,117.2	36.5	5,208.55	3,014.9	810.3	
<b>TOTAL Emissions for Air Districts (tons/year)</b>	<b>59,849.05</b>	<b>26,630.4</b>	<b>138,616.1</b>	<b>30,364.35</b>	<b>759.2</b>	<b>57,812.35</b>	<b>35,109.35</b>	<b>10,209.05</b>	

### *Snowmobile Emission Standards*

The effect of emissions from snowmobile activity on air quality and deposition in high elevation ecosystems has been studied primarily at Yellowstone National Park (YNP) in Northwest Wyoming. They emit hydrocarbons (HC), nitrogen oxides (NO<sub>x</sub>), particulate matter (PM), carbon monoxide (CO), and non-combusted fuel vapors (USDI 2000). Combustion engine emissions contain carcinogens, including benzene, butadiene, and polycyclic aromatic hydrocarbons (USDI 2000). Combustion engines also emit large amounts of carbon dioxide.

In 2002, the EPA issued a regulation that imposed stringent pollution regulations on snowmobiles, requiring that snowmobiles fall under regulations of the Clean Air Act (Jehl 2002). In 2012, snowmobile manufacturers were required to meet one of two alternatives. One would require reductions in emissions of both hydrocarbons and carbon monoxide by 50 percent from current levels. The other is intended to encourage further reductions in hydrocarbons and would require a 70 percent reduction in hydrocarbons, the source of the more urgent health concerns, in return for a 30 percent reduction in carbon monoxide (Jehl 2002)

EPA also requires that manufacturers ensure each new engine, vehicle, or equipment meets the latest emission standards. Once manufacturers sell a certified product, no further effort is required to complete certification. If products were built before EPA emission standards started to apply, they are generally not affected by the standards or other regulatory requirements (EPA 2015(3)).

**Table 66. Exhaust emission standards for snowmobiles**

Phase	Model year	Phase-in (percent)	Emission standards		Maximum allowable family emission limits	
			HC	CO	HC	CO
Phase 1	2006	50	100	275		
Phase 1	2007-2009	100	100	275		
Phase 2	2010 and 2011	100	75	275		
Phase 3	2012 and later	100	( <sup>1</sup> )	( <sup>1</sup> )	150	400

Source: Code of Federal Regulations, Accessed November 2015

<sup>1</sup> See § 1051.103(a)(2):

(a) \*\*\*

(1) Follow Table 1 of this section for exhaust emission standards. You may generate or use emission credits under the averaging, banking, and trading (ABT) program for HC and CO emissions, as described in subpart H of this part. This requires that you specify a family emission limit for each pollutant you include in the ABT program for each engine family. These family emission limits serve as the emission standards for the engine family with respect to all required testing instead of the standards specified in this section. An engine family meets emission standards even if its family emission limit is higher than the standard, as long as you show that the whole averaging set of applicable engine families meets the applicable emission standards using emission credits, and the vehicles within the family meet the family emission limit. The phase-in values specify the percentage of your U.S.-directed production that must comply with the emission standards for those model years. Calculate this compliance percentage based on a simple count of your U.S.-directed production units within each certified engine family compared with a simple count of your total U.S.-directed production units. Table 1 also shows the maximum value you may specify for a family emission limit, as follows:

(2) For Phase 3, the HC and CO standards are defined by a functional relationship. Choose your corporate average HC and CO standards for each year according to the following criteria: <https://www.federalregister.gov/articles/2008/06/25/E8-14411/exhaust-emission-standards-for-2012-and-later-model-year-snowmobiles>

### Best Available Technology (BAT)

Snowmobiles must be certified by the National Park Service to enter some national parks (Yellowstone, Grand Teton). BAT certification is one of the most stringent standards for air and noise emissions in the world, requiring hydrocarbon emissions of less than 15 g/kW-hr, carbon monoxide emissions of less than 120 g/kW-hr, and sound level limited to 73 decibels (BRP 2011). The use of BAT snowmobiles, which result in lower CO and hydrocarbon emissions (USDI 2013), is not currently required on the Lassen National Forest.

### Motorized Winter Recreation

The Lassen National Forest has a well-developed winter recreation program, which emphasizes snowmobile use and includes 2,950 miles of snowmobile trails that connect to six well-placed developed staging areas. Details on the groomed OSV trail system on the Hat Creek, Eagle Lake, and Almanor Ranger Districts of the Lassen National Forest can be found in the R5 OSV Lassen Recreation Report (Valentine 2017).

Table 67 is derived from the OSV trailhead survey conducted for the State EIR, and based on data summarized in the State EIR (California Department of Park and Recreation 2010). The table shows the average number of vehicles at trailheads, and the average number of OSVs that would be expected on weekends and holidays versus weekdays. Based on this information, estimated use for the 2015/2016 winter season is 10,000 OSV users forest-wide (Valentine 2017).

**Table 67. Lassen National Forest OSV visitor use**

Location	Day Description	Number of Vehicles	Number of OSVs
Forest-wide	Weekend/Holiday (approx. 33 per season)	106	212
Forest-wide	Weekday (approx. 65 per season)	21	42
Individual Trailheads	Weekend/Holiday	15 (average)	30
Individual Trailheads	Weekday	3.5	7

Based on 2009 Data from CA State DEIR

\*assumes an average of 2 OSV's per vehicle parked at a trailhead (Valentine 2017)

### Grooming Activities

Currently there are 350 miles of NFS trails that are groomed for OSV use on the Lassen National Forest. Snow trail grooming for OSV use typically occurs mid-December and continues through March (December 26 through March 31). Grooming historically occurred several times per week with a maximum of 12 hours per day and a total of 1,743 hours for the season (USDA Forest Service 2015).

The California OHMVR Division's snowcat fleet is subject to emission regulation by the California Air Resources Board (CARB) as off-road equipment. The CARB sets an emission limit for the vehicle fleet as a whole rather than for individual pieces of equipment. Based on the total horsepower of the vehicle fleet, and the model and year of the individual equipment within the fleet, CARB determines how much horsepower per year must be repowered, retrofitted, or retired. The California OHMVR Division then determines what modifications to make to its fleet in order to satisfy CARB requirements (USDA Forest Service 2015). Due to the CARB requirement, grooming activities on the Lassen were not discussed in detail.

**Table 68. Air quality resource indicators and measures for the existing condition and alternative 1**

Resource Indicator	Measure	Alternative 1 Existing Condition
Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality.	Approximate miles of ungroomed, marked, and unmarked snow trail that would be open to public OSV use	2,950
Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality.	Acres open to OSV visitor use	964,030 acres
Potential effects of OSV emissions to create adverse impacts to air quality.	Shifts in OSV use in relation to sensitive areas (Class 1 and II areas).	No known impacts to air quality or NAAQS/CAAQS violations exist.

## Environmental Consequences

### Alternative 1 – No Action

This alternative represents the existing, baseline condition or trends by which the action alternatives are compared. Under alternative 1, there would be no changes to the existing system of OSV use on roads, snow trails, and areas within the Lassen National Forest except as prohibited by Forest Order.

Approximately 964,030 acres are open to public OSV use. This land area represents approximately 84 percent of the NFS land within the Lassen National Forest. There are 2,950 miles of currently groomed,

ungroomed, marked, and unmarked snow trail that would be open to public OSV use. The Forest Service grooms approximately 350 miles of snow trail.

Air quality on the Lassen National Forest is potentially affected by land management and development activities on and off the forest. Air pollution sources include emissions from mobile and stationary sources including industrial activity, highway vehicles, off-road vehicles (all-terrain vehicles, aircraft, locomotives, construction machinery). Dust and burning can also have significant impacts to air quality as they are occurring on and off the forest. These sources can emit a host of regulated pollutants in and around the forest. Currently, good dispersion and topographic influences on the forest have resulted in no violations of Federal and State Ambient Air Quality Standards, and have not attained concentrations high enough to warrant measurement or to result in degradation of air quality in the Class 1 areas.

There are three factors, largely beyond State control, that can interfere with air quality in Class 1 Areas: wildfire smoke, offshore shipping emissions, and Asian dust. These factors are either from natural sources (wildfire smoke), uncontrollable sources (shipping emissions beyond California’s jurisdiction), or both (Asian dust, a combination of anthropogenic and natural sources beyond California’s control) (ARB 2014).

The table below displays the potential contribution of snowmobile emissions from the estimated 10,020 OSV visitors that recreate on the Lassen National Forest each year. All calculations were done using emission estimates from a 2-stroke snow mobile (EPA 2010). As shown in table 69, it is estimated that emissions from OSV use on the Lassen contributes approximately 0.12 percent of carbon monoxide (CO) to the air districts under the no-action alternative and less than 0.01 percent of nitrogen oxide (NOx) and particulate matter (PM).

**Table 69. Emission estimate (tons/year) for OSV use on the Lassen National Forest**

Source	Number of OSVs	Miles*	CO	NOx	PM
Snowmobile (2-stroke)	10,000	50	163.47	0.47	1.49
% Pollutant Contribution to Air Districts	-----	----	0.12%	Less than 0.01	Less than 0.01

\*Assumes 10,000 OSVs recreate on the Lassen per year and travel an average of 50 miles.

## Alternative 2 – Proposed Action

The actions proposed relevant to the air analysis are as follows: (For a detailed discussion of all actions proposed under alternative 2, please refer to chapter 2 of this RDEIS.)

- Designate 334 miles of snow trails for public OSV use.
- Mechanically groom 350 miles of snow trails for public OSV use.
- Designate approximately 921,180 acres for OSV use. This land area would represent approximately 80 percent of the NFS land within the Lassen National Forest.

### *Direct and Indirect Effects - Alternative 2*

Under alternative 2 there would be a 4 percent reduction in acres open to OSV use. The proposed areas where use would be prohibited would be located in the southwestern corner of the Lassen National Forest (at elevations of 3,500 feet or less) and in the Black Mountain Research Natural Area. Proposed closures would minimize local impacts to air quality in these areas. The reduction of acres open to OSV use may cause a shift in OSV use to other areas. However, it is not likely this shift will result in increased accumulation or significant effects to air quality in other areas of the Lassen National Forest. With a proposed 4 percent reduction in acres open to OSV use, it is likely emissions generated as a result of

OSVs would be similar to or less than what is currently estimated and displayed in table 69 under the no-action alternative section of this report. Current emissions are estimated to contribute less than 1 percent (0.12 percent of carbon monoxide (CO), less than 0.01 percent of nitrogen oxide (NO<sub>x</sub>) and less than 0.01 percent of particulate matter (PM)) of pollutants to the seven air districts within the Lassen National Forest. These emissions are minor compared to other off-forest sources of air pollution that can impact the forest. Impacts to air quality include vehicle emissions such as nitrogen oxides, particulate matter and carbon monoxide from all motorized vehicles including snowmobiles and snowcats. Diesel engines also emit sulfur oxides and particulates. Air quality impacts from vehicle emissions are influenced by the effectiveness of the smog control devices on cars, amount of traffic, and the duration of engine idling. As people recreate in the forest during the winter months the effects of vehicle exhaust on air quality may become a localized temporary issue where concentrated motorized use conflicts with non-motorized uses and nuisance smell occurs.

Although there can be localized air quality impacts where there are a large number of snowmobiles occupying a parking lot as studied at Yellowstone National Park, those conditions do not apply in this case. The number of anticipated users for this assessment would be considered low as compared to Yellowstone National Park, which records 75,000 snowmobile visitors each winter (Millner 2015). The estimated 10,000 OSV visitors forest-wide for the winter season on 334 miles of trail would equate to approximately one user per mile of trail each weekend day (assuming 13 to 15 weekends and two days per weekend). It is expected OSV emissions would dissipate and the possibility of accumulation would be eliminated based on topographic influences and wind dispersion. Non-motorized users' air quality concerns in parking lots, at trailheads and on trails would continue since non-motorized and motorized users would still share the same parking areas, trailheads and many of the same trails. The odor generated by emissions from combustion engines, particularly two-cycle engines, can diminish a non-motorized user's experience. However, this is likely a recreation (user satisfaction) issue rather than a general air quality issue (see Recreation report for more discussion on the topic of visitor experience). Bishop et al. (2006) found emissions were greatest during initial startup and idling, especially when the engine is cold. They also observed reducing wait times at entrance stations would further lower emissions and exposure. Implementing similar measures or idling limits at parking lots and trailheads, may address public concerns regarding nuisance smell and potential impacts to air quality in those areas. It is anticipated any impacts to air quality from winter motorized recreation under alternative 2 will not result in any violations to National and State Ambient Air Quality Standards.

A study by Musselman et al. (2007) was conducted in Wyoming to evaluate the effects of winter recreation snowmobile activity on air quality at a high elevation site. They measured levels of nitrogen oxides (NO<sub>x</sub>, NO), carbon monoxide (CO), ozone (O<sub>3</sub>) and particulate matter (PM<sub>10</sub> mass). They found nitrogen oxides and carbon monoxide were significantly higher weekends than weekdays due to higher snowmobile use on weekends. Ozone and particulate matter were not significantly different during the weekend compared to weekdays. Air quality data during the summer was also compared to the winter data and they found carbon monoxide levels at the site were significantly higher during the winter than during the summer. Nitrogen oxides and particulates were significantly higher during the summer compared to winter. Nevertheless, air pollutants were well dispersed and diluted by strong winds common at the site, and that snowmobile emissions did not have a significant impact on air quality at the site (Musselman and Korfmacher 2007).

### **Class I Areas**

In Yellowstone National Park, the implementation of BAT requirements and the reduction in the number of OSVs entering the park during the managed use era dramatically reduced CO, PM, and hydrocarbon emissions. The substantial CO and PM emissions reductions from implementing BAT requirements have come with one important tradeoff—an increase in NO<sub>x</sub> emissions. Snowmobiles that meet BAT

requirements have higher NO<sub>x</sub> emissions than snowmobiles that do not meet BAT requirements. They found overall, from 2003 to 2011, air quality stabilized at the monitoring stations in the park, with the exception of 2010. These positive trends in air quality are primarily the result of BAT requirements for snowmobiles, fewer snowmobiles entering the park in recent years, and carbureted snow coaches being replaced with modern fuel injected engines. Requiring the use of only BAT snowmobiles has improved emissions despite the increasing number of snow coaches now entering the park. Although these changes present an overall positive trend toward lower emissions by OSVs, other local sources, such as uncontrolled wood stoves in warming huts and some facilities in the park, still contribute to winter CO and PM<sub>2.5</sub> concentrations (USDI 2013).

Implementation of this action alternative is expected to maintain the same air quality conditions as compared to the existing condition due to good dispersion characteristics across the forest, low inversion potential, low emissions generated from OSVs as compared to other potential sources, and the equivalent number of OSV route miles open. In addition, it is expected the proposed reduction in acres and areas open to OSV use may reduce air quality impacts in those areas and nearby Class 1 areas. Compliance with State and Federal air quality standards is expected to occur under alternative 2. Motorized recreation emission sources on the forest are localized, transient and not expected to result in any significant air quality impacts under alternative 2. No violations of the Clean Air Act are expected to occur under alternative 2.

**Table 70. Air quality resource indicators and measures for alternative 2**

Resource Element	Resource Indicator	Measure	Alternative 2
Air Quality	Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality.	Miles of trail open to OSV visitor use.	334 miles
	Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality.	Acres open to OSV visitor use.	921,180 acres (4 percent decrease from existing condition)
	Potential effects of OSV emissions to create adverse impacts to air quality.	Shifts in OSV use in relation to sensitive areas (Class 1 and II areas)	OSV trails within ¼ mile of sensitive areas (Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries, and to the boundary of Lassen Volcanic National Park). No known impacts to air quality or NAAQS/CAAQS violations exist.

*Cumulative Effects – Alternative 2*

**Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis**

Past, present, and reasonably foreseeable future actions have the potential to impact air quality and are summarized below. Air quality on the forest is potentially affected by land management and development activities on and off the forest. Air pollution sources include emissions from industrial activity, highway vehicles, off-road vehicles (all-terrain vehicles, aircraft, locomotives, construction machinery). Dust and burning can also have significant impacts to air quality as they are occurring on and off the forest. None of the on forest sources discussed in the existing condition are expected to increase or impact air quality when combined with alternative 2. In addition, emissions generated as a result of snowcats utilized for plowing and grooming of parking lots and trailheads could also contribute to

localized air pollution on forest. However, it is estimated the contribution of administrative snowcats use, to the overall cumulative impacts on air quality would be minimal.

Air quality impacts are expected to grow with continued growth of population around the Lassen National Forest. Substantial impacts to air quality are not expected to occur during winter months on the Lassen National Forest due to regulations already in place by the EPA and the Clean Air Act. The past, present, and reasonably foreseeable future actions would be the primary contributors to air quality impacts on the forest. Due to the short term and localized impact of OSV use, the action alternative is not expected to result in a significant contribution to the cumulative impacts of other local and regional air pollution sources. However, it is impossible to predict future pollutant discharge from off-forest mobile and stationary sources and how those sources may contribute or impact air quality on forest. There are no known unavoidable adverse, irreversible or irretrievable effects to air quality as a result of implementing alternative 2.

### Alternative 3

This alternative addresses the non-motorized recreational experience significant issue. The actions proposed relevant to the air analysis are as follows: (For a detailed discussion of all actions proposed under alternative 3, please refer to chapter 2 in this RDEIS.)

- To designate 383 miles of NFS snow trails on NFS lands within the Lassen National Forest as trails where public OSV use would be allowed when snow depth is adequate for that use to occur.
- To designate 833,990 acres of NFS lands within the Lassen National Forest as areas where public, cross-country OSV use would be allowed when snow depth is adequate for that use to occur. This land area would represent approximately 73 percent of the NFS land within the Lassen National Forest. All existing OSV prohibitions applying to areas of the forest where public motorized use is not allowed would continue.
- To identify approximately 349 miles of snow trails that would be groomed for public OSV use by the Forest Service's Lassen National Forest Grooming Program.

#### *Direct and Indirect Effects - Alternative 3*

Alternative 3 would prohibit OSV use on more acres than alternative 2, and would designate areas where motorized OSVs are restricted to designated trails. With additional areas closed or restricted to OSVs, the potential effects to air quality in sensitive areas would be less under alternative 3 and with a proposed 13 percent reduction in acres open to OSV use forest-wide, it is likely emissions generated as a result of OSVs would be similar or less than what is currently estimated and displayed in table 69 under the no-action alternative section of this report. Current emissions generated as a result of OSV use on the Lassen are estimated to contribute less than 1 percent (0.12 percent of carbon dioxide (CO), less than 0.01 percent of nitrogen oxide (NO<sub>x</sub>) and less than 0.01 percent of particulate matter (PM)) of pollutants to the seven air districts within the Lassen National Forest. These emissions are minor compared to other sources of air pollution impacting the forest.

#### *Cumulative Effects- Alternative 3*

The cumulative effects listed for alternative 2 would also apply for alternative 3.

**Table 71. Air quality resource indicators and measures for alternative 3**

Resource Element	Resource Indicator	Measure	Alternative 3
Air Quality	Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality.	Miles of trail open to OSV visitor use.	383 miles of designated OSV trails.
	Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality.	Acres open to OSV visitor use.	833,990 acres open to OSV use (a 13 percent decrease from the existing conditions)
	Potential effects of OSV emissions to create adverse impacts to air quality.	Shifts in OSV use in relation to sensitive areas (Class 1 and II areas).	OSV trails in close proximity of sensitive areas (Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries, and to the boundary of Lassen Volcanic National Park.) No known impacts to air quality or NAAQS/CAAQS violations exist.

#### Alternative 4

This alternative addresses the motorized recreational experience significant issue. The actions proposed relevant to the air analysis are as follows: (For a detailed discussion of all actions proposed under alternative 4, please refer to chapter 2 in this RDEIS.)

- To designate 380 miles of NFS snow trails on NFS lands within the Lassen National Forest as trails where public OSV use would be allowed when snow depth is adequate for that use to occur.
- To designate 954,450 acres of NFS lands within the Lassen National Forest as areas where public, cross-country OSV use would be allowed. This land area would represent approximately 83 percent of the NFS land within the Lassen National Forest.
- Mechanically groom 349 miles of snow trails for public OSV use by the Forest Service’s Lassen National Forest Grooming Program.

#### *Direct and Indirect Effects - Alternative 4*

Alternative 4 would allow OSV use on more acres than alternative 3, and slightly fewer acres than alternative 2.

The McGowen area would be closed to OSV use like alternative 3. However, one designated OSV trail would remain open and OSVs would be restricted to the trail only. This would potentially minimize impacts from OSV encroachment into Lassen Volcanic National Park and subsequent effects to air quality in the park. Otherwise, alternative 4 effects would be similar as described for alternative 2. and with a proposed less 1 percent reduction in acres open to OSV use forest-wide as compared to the existing condition, it is likely emissions generated as a result of OSVs would be similar or less than what is currently estimated and displayed in table 69 under the no-action alternative section of this report. Current emissions generated as a result of OSV use on the Lassen are estimated to contribute less than 1 percent (0.12 percent of carbon dioxide (CO), less than 0.01 percent of nitrogen oxide (NOx) and less than 0.01 percent of particulate matter (PM)) of pollutants to the seven air districts within the Lassen National Forest. These emissions are minor compared to other sources of air pollution impacting the forest.

*Cumulative Effects for Alternative 4*

The cumulative effects listed for alternative 2 would also apply for alternative 4.

**Table 72. Air quality resource indicators and measures for alternative 4**

Resource Element	Resource Indicator	Measure	Alternative 4
Air Quality	Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality.	Miles of trail open to OSV visitor use.	380
	Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality.	Acres open to OSV visitor use.	954,450 acres open to OSV use (a less than 1 percent decrease from the existing conditions)
	Potential effects of OSV emissions to create adverse impacts to air quality.	Shifts in OSV use in relation to sensitive areas (Class 1 and II areas).	OSV trails in close proximity (approx. ¼ mile) of sensitive areas (Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries, and to the boundary of Lassen Volcanic National Park.) No known impacts to air quality or NAAQS/CAAQS violations exist.

**Alternative 5**

This alternative addresses the non-motorized recreational experience significant issue. The actions proposed relevant to the air analysis are as follows: (For a detailed discussion of all actions proposed under alternative 5, please refer to chapter 2 of this RDEIS.)

- To designate 393 miles of NFS snow trails on NFS lands within the Lassen National Forest as trails where public OSV use would be allowed when snow depth is adequate for that use to occur.
- To designate 633,360 acres of NFS lands within the Lassen National Forest as areas where public, cross-country OSV use would be allowed. This land area would represent approximately 55 percent of the NFS land within the Lassen National Forest.
- Mechanically groom 350 miles of snow trails for public OSV use by the Forest Service's Lassen National Forest Grooming Program.

*Direct and Indirect Effects - Alternative 5*

Alternative 5 would allow OSV use on the least amount of acres as compared to alternatives 2, 3 and 4.

Alternative 5 effects would be similar as described for alternative 2. With a proposed 34 percent reduction in acres open to OSV use and 85 percent reduction in miles of trail open for OSV use forest-wide, as compared to the existing condition, it is likely emissions generated as a result of OSVs would be less than what is currently estimated and displayed in table 69 under the no-action alternative section of this report. Current emissions generated as a result of OSV use on the Lassen are estimated to contribute less than 1 percent (0.12 percent of carbon dioxide (CO), less than 0.01 percent of nitrogen oxide (NO<sub>x</sub>) and less than 0.01 percent of particulate matter (PM)) of pollutants to the seven air districts within the Lassen National Forest. These emissions are minor compared to other sources of air pollution impacting the forest.

*Cumulative Effects for Alternative 5.*

The cumulative effects listed for alternative 2 would also apply for alternative 5.

**Table 73. Air quality resource indicators and measures for alternative 5**

Resource Element	Resource Indicator	Measure	Alternative 4
Air Quality	Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality.	Miles of trail open to OSV visitor use.	393
	Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality.	Acres open to OSV visitor use.	633,360 acres open to OSV use (a 34 percent decrease from the existing conditions)
	Potential effects of OSV emissions to create adverse impacts to air quality.	Shifts in OSV use in relation to sensitive areas (Class 1 and II areas).	OSV trails in close proximity (approx. ¼ mile) of sensitive areas (Caribou Wilderness, Caribou extension proposed Wilderness, Mill Creek Proposed Wilderness and Thousand Lakes Wilderness boundaries, and to the boundary of Lassen Volcanic National Park.) No known impacts to air quality or NAAQS/CAAQS violations exist.

**Summary**

It is expected the levels of pollutants for the alternatives would fall within the ranges currently experienced and no violation of state or Federal ambient air quality standards would occur on the Lassen National Forest during the OSV season.

Table 74 provides a comparison of the alternatives and the degree to which the alternatives address potential air quality issues.

**Table 74. Summary comparison of air quality resource indicators and measures**

<b>Resource Indicator/Measure</b>	<b>Alternative 1 No Action</b>	<b>Alternative 2 Modified Proposed Action</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality, miles open to OSV visitor use	2,950 miles of groomed, ungroomed, marked, and unmarked snow trails are open to public OSV use.  No known violations of the CAA as a result of OSV use under the existing condition.	334 miles designated for OSV use. An 88 percent reduction in miles as compared to the existing condition.  No violations of the CAA are anticipated.	383 miles designated for OSV use. An 86 percent reduction in miles as compared to the existing condition.  No violations of the CAA are anticipated.	380 miles designated for OSV use. An 86 percent reduction in miles as compared to the existing condition.  No violations of the CAA are anticipated.	393 miles of trails for OSV use. An 85 percent reduction in miles as compared to the existing condition.  No violations of the CAA are anticipated.
Estimate of change (increase/decrease) in emissions and the potential to create adverse impacts to air quality/ acres open to OSV visitor use	964,030 acres open to OSV use.  No known violations of the CAA as a result of OSV use under the existing condition	921,180 acres open to OSV use, a 4 percent reduction from existing conditions.  No violations of the CAA are anticipated.	833,990 acres open to OSV use, a 13 percent reduction from existing conditions.  No violations of the CAA are anticipated.	954,450 acres open to OSV use, a <1 percent reduction from existing conditions.  No violations of the CAA are anticipated.	633,360 acres open to OSV use, a 34 percent reduction from existing conditions.  No violations of the CAA are anticipated.
Potential effects of OSV emissions to create adverse impacts to air quality/ Shifts in OSV use in relation to sensitive areas (Class 1 and II areas).	Groomed OSV trails are in close proximity to the Caribou Wilderness, Thousand Lakes Wilderness, and the boundary of Lassen Volcanic National Park.  No known violations of the CAA or impacts to Class 1 areas as a result of OSV use under the existing condition.	Groomed OSV trails are in close proximity to the Caribou Wilderness, Thousand Lakes Wilderness, and the boundary of Lassen Volcanic National Park.  No violations of the CAA or impacts to Class 1 areas are anticipated under this alternative.	Groomed OSV trails are in close proximity to the Caribou Wilderness, Thousand Lakes Wilderness, and the boundary of Lassen Volcanic National Park.  Designation of Butte Lake Backcountry Solitude area minimizes OSV impacts and reduces emissions near Caribou wilderness and Lassen NP  No violations of the CAA or impact to Class 1 areas are anticipated under this alternative.	Groomed OSV trails are in close proximity to the Caribou Wilderness, Thousand Lakes Wilderness and the boundary of Lassen Volcanic National Park.  No violations of the CAA are anticipated or impacts to Class 1 areas.	Groomed OSV trails are in close proximity to the Caribou Wilderness, Thousand Lakes Wilderness and the boundary of Lassen Volcanic National Park.  No violations of the CAA are anticipated or impacts to Class 1 areas.

## Summary of Environmental Effects

Potential impacts of OSV use on Class I and II areas would be fairly similar for all action alternatives. Alternatives 3 and 5 would provide slightly more protection due to additional OSV restrictions and closures in the vicinity of sensitive areas. In all action alternatives, Class I and II areas are closed to OSV use. There are no known violations of ambient air quality standards and to the Clean Air Act under the existing condition and it is anticipated there would also be no violations with the action alternatives due to the significant reduction in miles and acres open to OSV use. Short term air quality in some areas, including trailheads and parking lots may be noticeable due to the concentration of OSVs particularly in the morning and/or at engine start up. However, this is likely a nuisance smell issue rather than an air quality issue.

## Compliance with LRMP and Other Relevant Laws, Regulations, Policies and Plans

No known violations of ambient air quality standards have occurred on the forest, nor have any activities on the forest caused violations of these standards elsewhere. The alternatives comply with the Clean Air Act, the National Ambient Air Quality Standards and California Ambient Air Quality Standards for criteria pollutants.

## Other Relevant Mandatory Disclosures

### Unavoidable Adverse Effects

Authorized OSV use on NFS lands, may unavoidably affect the short term air quality in some areas, specifically at trailheads and parking lots. However, it is likely this is a nuisance smell issue rather than an air quality issue.

## Socioeconomic Conditions

### Introduction

This analysis considers the social and economic consequences of management alternatives to designate trails and areas for public over-snow vehicle (OSV) use on the Lassen National Forest. These designations will comply with Subpart C - Use by Over-Snow Vehicles, of the Forest Service Travel Management Regulation. In addition, the Lassen National Forest will combine the analysis needed for OSV use designations with analysis to formalize the identification of National Forest System Snow Trails that will be groomed for OSV use.

The human environment is central to the purpose and need for this project. OSV use designation on the Lassen National Forest seeks to protect public values related to access, safety, recreational enjoyment, and natural and cultural resources (ecosystem services). This specialist report analyzes the social and economic dimensions of designating trails and areas for public OSV use.

## Relevant Laws, Regulations, and Policy

### Regulatory Framework

#### *Land and Resource Management Plan*

The 1992 Lassen National Forest Land and Resource Management Plan (LRMP) does not specify goals and objectives for the social and economic environment. However, the LRMP's goals and objectives for

cultural resources, facilities, and recreation are relevant to the social and economic analysis. In particular, the following goals help to frame the social and economic analysis in this report:

- ◆ Ensure that Forest actions are not detrimental to traditional Native American religious rights and practices (pg. 4-3)
- ◆ Provide stable and cost-efficient road and trail systems (pg. 4-3)
- ◆ Provide a wide range of outdoor recreation opportunities to meet public demand (pg. 4-4)
- ◆ Provide diverse opportunities for off-highway vehicle recreation (pg. 4-4)
- ◆ Provide diverse opportunities for winter sports (pg. 4-4)
- ◆ Work in partnership with local communities to expand recreational facilities, programs, and trails on both public and private land (pg. 4-5)

### *Travel Management Regulation Subpart C*

The Forest Service's 2005 Travel Management Regulation requires the designation of roads, trails, and areas on national forests and grasslands that are open to motor vehicle use. Subpart C mandates the designation of routes and areas for over-snow vehicle use.

### *Federal Law*

#### **Multiple Use and Sustained Yield Act**

The Multiple Use and Sustained Yield Act requires that economic impacts are considered when establishing management plans or decisions that may affect the management of renewable forest and rangeland resources. This analysis meets the requirements of this law by addressing the economic impacts of OSV use designation on the local economy.

#### **National Environmental Policy Act**

The National Environmental Policy Act (NEPA) requires that economic and social impacts of Federal actions be considered as part of the environmental analysis. This section includes analysis on social and economic issues identified during the scoping process to meet the terms of NEPA and regulations.

#### **National Forest Management Act**

The National Forest Management Act (NFMA) and regulations require that the economic impacts of decisions or plans affecting the management of renewable resources are analyzed and that the economic stability of communities whose economies are dependent on national forest lands is considered. This analysis meets the requirements of the NFMA by specifically considering the economic impacts of the implementation of the OSV use designation project and its impacts on local communities and minority populations.

### *Executive Orders*

#### **Environmental Justice, Executive Order 12898 of February 11, 1994**

Executive Order 12898 directs Federal agencies to identify and address any adverse human health and environmental effects of agency programs that disproportionately impact minority and low-income populations. This section identifies minority and low-income populations in the analysis area and addresses the potential for disproportionate and adverse effects to these populations.

## Topics and Issues Addressed in This Analysis

### Resource Indicators and Measures

**Table 75. Socioeconomic resource indicators and measures for assessing effects**

Resource Element	Resource Indicator	Measure (Quantify if possible)	Used to address: P/N, or key issue?	Source (LRMP S/G; law or policy, BMPs, etc.)?
Economic activity	Employment	Number of jobs and amount of labor income	No	--
Quality of life	Recreation visitation	Number of recreation visits	No	--
Quality of life	Values, beliefs, and attitudes	Qualitative evaluation of public values, beliefs, and attitudes	No	--
Environmental Justice	Effects to low-income and minority populations	Qualitative evaluation of disproportionate effects to low-income and minority populations	No	Executive Order 12898

## Methodology

### Economic Analysis

Economic impacts were modeled using IMPLAN Professional Version 3.0 with 2012 data. IMPLAN is an input-output model, which estimates the economic impacts of projects, programs, policies, and economic changes on a region. IMPLAN analyzes the direct, indirect, and induced economic impacts. Direct economic impacts are generated by the activity itself, such as visitor spending associated with recreational OSV use on the Lassen National Forest. Indirect employment and labor income contributions occur when a sector purchases supplies and services from other industries in order to produce their product. Induced contributions are the employment and labor income generated as a result of spending new household income generated by direct and indirect employment. The employment estimated is defined as any part-time, seasonal, or full-time job. In the economic impact tables, direct, indirect and induced contributions are included in the estimated impacts. The IMPLAN database describes the economy in 440 sectors using Federal data from 2012.

Data on use levels under each alternative were collected from Forest Service resource specialists. In most instances, the precise change is unknown. Therefore, the changes are based on the professional expertise of Forest Service resource specialists. Regional economic impacts are estimated based on the assumption of full implementation of each alternative. The actual changes in the economy would depend on individuals taking advantage of the resource-related opportunities that would be supported by each alternative. If market conditions or trends in resource use were not conducive to developing some opportunities, the economic impact would be different from what is estimated in this analysis.

### Social Analysis

Social effects analysis uses the baseline social conditions presented in the Affected Environment section, NVUM profiles (USFS 2015b), and public comments to discern the primary values that the Lassen National Forest provides to area residents and visitors. Social effects are based on the interaction of the

identified values with estimated changes to resource availability and uses. Key determinants of quality of life that may be affected by OSV route and area designation were identified through the scoping process.

### Information Sources

Key data sources for the social and economic analysis include:

- Economic Profile System (EPS), Headwaters Economics
- U.S. Census Bureau, American Community Survey
- U.S. Forest Service, Ecosystem Management Coordination, National Forest Recreation Economic Contributions website
- National Visitor Use Monitoring program data for the Lassen National Forest, last collected in FY2010
- Public scoping comments

### Incomplete and Unavailable Information

Due to incomplete and unavailable information, the socioeconomic analysis uses the following assumptions:

- Local economic composition (e.g., sectoral specialization, size of labor market) is constant throughout the analysis period.
- OSV trail grooming increases OSV visitor use.
- Forest visitors' recreation preferences do not change during the analysis period.
- OSV and non-motorized winter recreation visitors have similar characteristics to forest visitors overall (e.g., place of residence).

### Spatial and Temporal Context for Effects Analysis

The Lassen National Forest is located in northeastern California. Forest Service economists have defined economic analysis areas for all national forests and grasslands using a protocol that identifies interactions between Forest Service resource management and local economic activity. Based on this protocol, the Lassen National Forest's economic area of influence encompasses Butte, Lassen, Plumas, Shasta, and Tehama counties. These five counties form the social and economic analysis area for this report.

The temporal boundaries for analyzing effects to the social and economic environment extend 10 years into the future (2025). This is the period for which social and economic consequences are foreseeable. Social and economic change, including changes in recreation preferences, cannot plausibly be predicted outside this temporal frame.

## Affected Environment

### Existing Condition

**Table 76. Socioeconomic resource indicators and measures for the existing condition**

Resource Element	Resource Indicator (Quantify if possible)	Measure (Quantify if possible)
Economic activity	Employment	Number of jobs and amount of labor income
Quality of life	Recreation visitation	Number of recreation visits
Quality of life	Values, beliefs, and attitudes	Qualitative evaluation of public values, beliefs, and attitudes
Environmental Justice	Low-income and minority populations	Identification of low-income and minority populations in the analysis area

#### *Demographic and Economic Characteristics*

The Lassen National Forest is located in northeastern California in Butte, Lassen, Plumas, Shasta, and Tehama Counties. The area around the Lassen National Forest is mostly non-metropolitan; the nearest major population centers are Redding, California (in Shasta County) to the west and Chico, California (in Butte County) to the south.

The analysis area counties have higher shares of older residents than the state. Plumas County has nearly double the share of residents over the age of 65 compared to California. Older populations may have different recreational preferences. For instance, mobility limitations associated with age may increase the importance of easy access to recreational sites.

**Table 77. Demographic characteristics by county**

Location	Population (ACS 2013 5-year Estimate)	Rural-Urban Continuum Code (ERS 2013)	Share of Population Over 65 (ACS 2013 5-year Estimate)
Butte County	220,542	3 (Metro, less than 250,000)	15.8%
Lassen County	34,018	7 (Nonmetro, not adjacent to metro)	10.3%
Plumas County	19,586	7 (Nonmetro, not adjacent to metro)	22.1%
Shasta County	177,966	3 (Metro, less than 250,000)	17.6%
Tehama County	63,241	4 (Nonmetro, adjacent to metro)	16.4%
California	37,659,181	--	11.8%

Source: U.S. Census Bureau 2015a and USDA ERS 2013

The five counties in the analysis area experience a greater degree of economic insecurity than the state overall. Median household incomes are lower and unemployment rates are higher in every county compared to the state. These economic characteristics suggest that changes in local employment and income may be felt acutely. Lassen National Forest recreation visitors spend money on lodging, food, fuel, and other goods and services in the economic analysis area. The designation of OSV trails and areas may affect recreation visitation and spending. As a result, local employment and income may change. Additionally, visitor spending contributes to county and municipal revenue from lodging and sales taxes.

Tax revenues are used to fund essential public services, such as emergency management. The environmental consequences analysis addresses potential changes in employment, income, and public finances in the context of local economic characteristics.

**Table 78. Economic characteristics by county**

<b>Location</b>	<b>Median Household Income</b> (ACS 2013 5-year Estimate)	<b>Unemployment Rate</b> (ACS 2013 5-year Estimate)	<b>Share of Tourism-related Employment</b> (County Business Patterns 2013, accessed via EPS)
Butte County	\$43,752	14.1%	18.6%
Lassen County	\$53,107	13.6%	20.4%
Plumas County	\$45,794	17.2%	15.4%
Shasta County	\$44,651	13.4%	17.8%
Tehama County	\$41,924	15.8%	19.2%
California	\$61,094	11.5%	16.3%

Source: U.S. Census Bureau 2015a and U.S. Census Bureau 2015b

Much of the Lassen National Forest recreation visitor spending contributes to economic activity in travel and tourism-related sectors. These sectors include retail trade, passenger transportation, accommodation and food, and arts, entertainment, and recreation. Travel and tourism sectors account for a larger share of employment in the analysis area counties than in California overall. This suggests that the analysis area economy is reliant on tourism (including outdoor recreation).

### *Recreation Visitors*

National Visitor Use Monitoring data was last collected on the Lassen National Forest in fiscal year 2010. Approximately 300,000 visits to the Lassen National Forest occur each year (USFS 2015b). Nearly 10 percent of survey respondents indicate that they participate in snowmobiling during their trip, with 8.4 percent reporting that snowmobiling is the primary purpose of their trip (USFS 2015b). That makes snowmobile use the third most common recreation activity on the forest, behind only viewing natural features and fishing, which account for 19.4 percent and 22.0 percent of main activities, respectively (USFS 2015b). The majority of forest visitors (60.2 percent) traveled fewer than 100 miles to reach the site. Nearly one-fifth of visits originated from a single zip code (96130), which covers the city of Susanville, California (USFS 2015b). The NVUM data do not break out visitor origin by activity type. Therefore, the analysis assumes that OSV and non-motorized winter recreation visitors reside in the same areas as forest visitors overall.

### *Economic Contributions*

Visitors to national forests spend money on lodging, restaurants, gasoline, entry fees, and souvenirs. These purchases support employment and labor income in communities that surround NFS lands. Visitor spending is influenced by both the type of trip (local or non-local; day or overnight) and the type of recreation activities. Snowmobilers spend more than most other recreation visitors (White and Stynes 2010). The NVUM survey collects data on “previous and planned spending of the entire recreation party within 50 miles of the interview site during the trip to the area” (White and Stynes 2010). These data indicate that a snowmobiler spends an average of \$642 (\$2007) on a non-local overnight trip and \$74 (\$2007) on a local day trip, compared to \$366 (\$2007) and \$34 (\$2007) for the same types of trips among participants of all recreation activities (White and Stynes 2010). Therefore, snowmobilers spend nearly twice what an average recreation user spends on their trip.

Recreation visitation (all activities and trip types) on the Lassen National Forest supports approximately 79 jobs<sup>14</sup> and \$2.6 million in labor income on an average annual basis (USFS 2015a). The largest contributions are to the retail trade and accommodation and food services sectors (USFS 2015a). Due to the high spending of snowmobilers, changes to over-snow vehicle opportunities on the Lassen National Forest have the potential to measurably affect economic contributions associated with national forest recreation. The environmental consequences analysis addresses the economic impact of over-snow vehicle route and area designations.

### *Values, Beliefs, and Attitudes*

**Values** are “relatively general, yet enduring, conceptions of what is good or bad, right or wrong, desirable or undesirable.”

**Beliefs** are “judgments about what is true or false – judgments about what attributes are linked to a given object. Beliefs can also link actions to effects.”

**Attitudes** are “tendencies to react favorably or unfavorably to a situation, individual, object, or concept. They arise in part from a person’s values and beliefs regarding the attitude object” (Allen et al 2009).

OSV trail and area designation may affect nearby residents and visitors to the Lassen National Forest. Public comments received during the scoping process provide insight into the values, beliefs, and attitudes of stakeholders in the OSV designation process. These comments reflect diverse opinions on the costs and benefits of various types of winter recreation on the Lassen National Forest.

Snow depth restrictions were controversial among some commenters with one noting that “Snow depth restrictions have always been difficult for the FS to enforce, and have often resulted in Law Enforcement closing down an entire area based solely on snow depths at trailheads” (Scoping letter #2, project record). However, other snowmobile users found the snow depth restriction reasonable, stating their “support [for] the implementation of the 6-inch minimum for OSV usage on roads and trails...parking or trailhead facilities are located in areas where there may be minimal snowfall but exceptional recreational opportunities remain for the snowmobile community in areas that are higher and colder and may have numerous feet of snow” (Scoping letter #62, project record).

Some commenters believe that elevation restrictions are at best, redundant and perhaps arbitrary given the snowpack restriction (Scoping letter #62, Scoping letter #49, project record) . Furthermore, another commenter noted that “snowmobiling cross-country is self-limiting. A snowmobiler quickly pays the high price for riding his snowmobile with inadequate snow” (Scoping letter #2, project record). Public beliefs that OSV users self-regulate may contribute to negative attitudes about Forest Service restrictions on OSV access and use.

The contribution of OSV use to local economic activity, and the potential for restrictions to decrease these economic contributions, was noted by a commenter: “It is critical that an economic analysis be completed as part of the environmental analysis...If the restrictions that are currently proposed in the NOI were implemented this year, there would be a great impact to local businesses and loss of jobs” (Scoping letter #2, project record).

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<sup>14</sup> The economic modeling software (IMPLAN) reports jobs as average annual full-time and part-time jobs. No distinction is made between full-time and part-time employment, so the job calculations in this report are not full-time equivalents (FTEs). However, the duration of employment is used to calculate the number of jobs. Therefore, 1 full-time or part-time job lasting 1 year is equivalent to 2 full-time or part-time jobs lasting 6 months each. Both of these examples will be reported as 1 job in this analysis.

Some commenters noted that motorized and non-motorized recreationists face asymmetrical user conflict: “Quiet non-motorized recreationists can have the quality of their experience dramatically altered by snowmobiles, while motorized users often don’t even notice skiers using the same landscape” (Switalski 2014). In particular, some commenters identified the following effects that reduce the quality of the recreation experience for non-motorized users: “OSV impacts on other recreational users include noise, toxic exhaust, consumption of powder snow and rutting of trails and routes. Because non-motorized users wish to avoid such impacts, non-motorized use becomes concentrated at the areas where motorized use is prohibited. Where snowmobile use is heavy, non-motorized users are displaced to the extent that the area becomes effectively motorized use-only” (Scoping letter #27, project record).

A number of non-motorized winter recreationists expressed concerns that shared motorized and non-motorized spaces pose health (from snowmobile emissions) and safety (potential for collision or triggering an avalanche) risks to non-motorized users (Switalski 2014).

Additionally, some commenters believe that motorized and non-motorized winter recreation users have inequitable opportunities on the Lassen National Forest. For example, one comment argued that “the motorized community has more than enough open space to use compared to areas that are exclusive to human powered backcountry use” (Scoping letter #27, project record). Additionally, other comments expressed concern that the proposed action would leave over 82 percent of the forest open to cross-county OSV use (Scoping letter #42, Scoping letter #9, project record). As a result of asymmetrical user conflict and few restrictions on OSV use, these commenters argue that “with fewer or smaller areas available, there will be a concentration of use which may lead to increased crowding, recreational conflict and resource damage. For example, it is becoming more commonplace for snowmobilers to travel on dry roadbeds or snow-free trails to access receding snowline” (Switalski 2014).

These views led some commenters to suggest that the forest dedicate some terrain to non-motorized snow sports only, to reduce conflict: “Motorists with OSVs now travel, per visit, faster, farther, higher and longer than in the past. This turbocharged magnification of demand for terrain has increased impacts to forest resources, to air and water quality, to modest (bipedal) forest visitors, and likely to resident wildlife” (Scoping letter #40, project record). Snowlands Network identifies the following areas as particularly important for non-motorized recreational users: Eagle Lake, Butte Lake, McGowen, Colby Mountain, Lake Almanor, and Fredonyer-Goumaz (Scoping letter #27, project record).

The relationship between OSV users and Pacific Crest National Scenic Trail users was highlighted in several comments. For some, “the prohibition of snowmobiles on the PCT trail tread only is inadequate in protecting the trail and experience afforded PCT winter users” (Scoping Letter #66, project record). Other commenters, however, argued that OSVs should be allowed to cross the PCT at any location (Scoping letter #61, project record).

### *Environmental Justice*

As noted above, residents of the analysis area counties experience a higher degree of economic insecurity than California residents overall. This is borne out in the poverty data, which reveals that four of the five analysis area counties have a higher poverty rate than California. In particular, residents of Butte and Tehama counties experience particularly high rates of poverty.

However, the analysis area counties have lower shares of minority residents than the state. In California, 60 percent of the population identifies other than non-Hispanic white. In the analysis area counties, the shares of minority residents are much lower, accounting for between 15 percent and 34 percent of the population.

**Table 79. Environmental justice characteristics by county**

Location	Poverty Rate <sup>15</sup> (ACS 2013 5-year Estimate)	Share Other than White Alone, Non-Hispanic (ACS 2013 5-year Estimate)
Butte County	20.4%	25%
Lassen County	16.9%	34%
Plumas County	15.2%	15%
Shasta County	17.5%	18%
Tehama County	19.7%	29%
California	15.9%	60%

Source: U.S. Census Bureau 2015a

Given high rates of poverty in the analysis area, the environmental consequences analysis will address the potential for management actions to disproportionately and adversely affect low-income individuals. Low-income individuals may be less able to adapt to changes in employment, income, and recreation opportunities on the Lassen National Forest.

## Environmental Consequences

### Alternative 1

The no-action alternative is required by the National Environmental Policy Act and serves as a baseline to compare effects of action alternatives. This alternative would continue current management and would not affect public OSV use in the project area.

**Table 80. Socioeconomic resource indicators and measures for alternative 1**

Resource Element	Resource Indicator (Quantify if possible)	Measure (Quantify if possible)	Alternative 1
Economic activity	Employment, income, tax revenue	Number of jobs, amount of labor income, tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue
Quality of life	Recreation visitation	Number of recreation visits	No change due to management; visitor use expected to increase over time
Quality of life	Values, beliefs, and attitudes	Qualitative evaluation of public values, beliefs, and attitudes	User conflict may increase due to population growth and increased visitor use
Environmental Justice	Low-income and minority populations	Change in cost of participating in recreation activities	No change due to management; climate change may increase distances winter recreation users must travel for adequate snow depth

### *Economic Activity*

The no-action alternative would not affect forest recreation use or visitor spending. Therefore, this alternative would not affect the number of jobs, amount of labor income, or tax revenue in the local

<sup>15</sup> “Following the Office of Management and Budget’s (OMB) Statistical Policy Directive 14, the Census Bureau uses a set of money income thresholds that vary by family size and composition to determine who is in poverty. If a family’s total income is less than the family’s threshold, then that family and every individual in it is considered in poverty. The official poverty thresholds do not vary geographically, but they are updated for inflation using Consumer Price Index (CPI-U). The official poverty definition uses money income before taxes and does not include capital gains or noncash benefits (such as public housing, Medicaid, and food stamps)” (U.S. Census Bureau 2015a).

economy. Visitor use is expected to increase over time due to factors outside the control of the Forest Service (e.g., population growth), which would increase employment, labor income, and tax revenue. However, these increases in visitor use would not be affected by the selection of any of the alternatives.

### *Quality of Life*

The values, beliefs, and attitudes discussion above identified several key issues related to OSV use on the Lassen National Forest and quality of life for visitors and area residents. In particular, commenters discussed recreation opportunities and user conflict. The no-action alternative would not implement management activities that affect recreation opportunities or user conflict. As noted in the recreation report, conflicts between motorized and non-motorized winter experiences on the Lassen National Forest are currently minor and infrequent. However, conflict may increase as population and visitor use increase. As a number of commenters noted, user conflict is often asymmetrical (motorized use inhibit non-motorized use, but not the reverse). Therefore, the potential for increased user conflict may particularly affect quality of life for non-motorized winter recreation users.

### *Environmental Justice*

The no-action alternative would not affect the cost of participating in recreation activities on the forest. Therefore, this alternative would not disproportionately and adversely affect the low-income individuals and households in the analysis area. However, climate change may reduce the areas on the forest that are suitable for winter recreation due to reduced precipitation and warmer winters. This could increase the travel costs (i.e., in terms of time and fuel) for accessing winter recreation opportunities on the forest. Low-income individuals and households have fewer financial resources and, thus, may be disproportionately affected by increased recreational travel costs.

## **Alternative 2**

Alternative 2 is the modified proposed action. Alternative 2 would designate trails and areas for public OSV use on the Lassen National Forest.

### *Direct and Indirect Effects - Alternative 2*

#### **Economic Activity**

The modified proposed action would decrease the acres designated for OSV use to 921,180 acres, a 4 percent reduction from existing conditions. The modified proposed action would designate 334 miles of snow trails on NFS lands and groom 349.7 miles of snow trails on NFS lands and adjacent non-NFS lands. This represents a change in groomed trail mileage relative to current conditions by 0.2 mile. As stated in the assumptions, based on observational evidence, OSV visitor use is driven by the miles of groomed trails. Therefore, the modified proposed action is not expected to change recreational visitor use compared to the no-action alternative. As a result, recreation-related employment, labor income, and tax revenue would not change relative to the no-action alternative.

#### **Quality of Life**

The values, beliefs, and attitudes discussion above identified several key issues related to public OSV use on the Lassen National Forest and quality of life for visitors and area residents. In particular, commenters discussed recreation opportunities and user conflict. The proposed action would not designate 228,847 acres for OSV use (185,983 acres are not designated for OSV use under current management), which is a 23 percent increase in areas not designated for OSV use relative to existing conditions. Therefore, the modified proposed action would improve quality of life for non-motorized winter recreation users on the Lassen National Forest who prefer to have areas separated from OSV users. The increase in acres not designated for OSV use may alleviate some concerns expressed by non-motorized

winter recreation users related to vehicle exhaust fumes, disparities in speed, noise, and competition for fresh powder. Although the miles of groomed OSV trails would not change significantly relative to current conditions, some OSV users may feel that the reduction in acres designated for OSV use adversely affects their quality of life by reducing the acreage available for cross-county OSV travel relative to existing conditions.

The modified proposed action would groom OSV trails, designate trails, and allow cross-country OSV use in close proximity to the Wilderness boundaries, Lassen Volcanic National Park, existing recreation areas, and adjacent State and Federal lands. Additionally, non-motorized and motorized users would continue to share trailheads for access. These areas are described in detail in Chapter 2 – Areas Identified for OSV Designation in the Action Alternatives. Therefore, the potential for user conflict to adversely affect quality of life would continue under the modified proposed action.

To minimize and mitigate the conflicts between motor vehicle use and existing or proposed recreational uses on the eight discrete OSV area designations, the following measures will be taken. This list is not all encompassing, see appendices C and D for a full list of mitigations to address the minimization criteria.

1. If incursions occur, patrols, kiosk information and signage in the area will be increased.
2. Prohibit by order, OSV use in areas where conflicts are found, as described by discrete area in appendices C and D. Exceptions would include areas that are designated groomed and ungroomed trails.
3. A broad area along Almanor lakeshore and the associated non-motorized ski trails would not be designated for OSV use.
4. McGowan Lake cross-country ski trail would not be designated for OSV use, while the broader area would be designated for cross-county OSV use.
5. The majority of the area surrounding Lassen National Park would not be designated for OSV use.

Under the modified proposed action, 28 PCT crossings would be designated. This may alleviate concerns expressed by both non-motorized users who feel restricting OSV users at the trail head only is not adequate, and motorized users who desire access to recreation on both sides of the PCT. However, some OSV users feel they should be able to cross the trail at any location, and other OSV users feel that any restriction to PCT use adversely affects their quality of life. Additionally, some non-motorized users may feel any OSV use on or near the PCT adversely affects their quality of life, this concern is mitigated by not designating any areas within 500 feet of either side of the PCT for OSV use.

### **Environmental Justice**

The reduction in acres designated for OSV use may require some OSV users to travel farther to recreate on the forest. However, miles of groomed trails will not change significantly from the no-action alternative, so the effect of the closures on travel costs is expected to be minor. Additionally, minimum snow depth for OSV use on snow trails overlying roads and trails is lowered to 6 inches, relative to existing conditions. This may reduce the distance that OSV users must travel to recreate on the forest. Like the no-action alternative, climate change may affect travel costs due to reduced precipitation and warmer winters. Low-income individuals would be disproportionately affected by changes in the cost of participating in winter recreation on the forest. Overall, the modified proposed action is expected to have a minor effect on recreation travel costs.

**Table 81. Socioeconomic resource indicators and measures for alternative 2 direct and indirect effects**

Resource Element	Resource Indicator (Quantify if possible)	Measure (Quantify if possible)	Alternative 2 Direct and Indirect Effects
Economic activity	Employment, income, tax revenue	Number of jobs, amount of labor income, tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue
Quality of life	Recreation visitation	Number of recreation visits	No change due to management; visitor use expected to increase over time
Quality of life	Values, beliefs, and attitudes	Qualitative evaluation of public values, beliefs, and attitudes	23 percent increase in acres not designated for OSV use would benefit quality of life of non-motorized winter recreation users and may adversely affect quality of life for OSV users; potential for continued user conflict due to trails in proximity to wilderness, national park, and shared trailheads
Environmental Justice	Low-income and minority populations	Change in cost of participating in recreation activities	Minor change in travel costs due to fewer areas designated for OSV use and reductions in snow depth requirements; climate change may increase distances winter recreation users must travel for adequate snow depth

*Cumulative Effects – Alternative 2***Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis**

Past, present, and reasonably foreseeable projects in the planning area include vegetation management, livestock grazing, and prescribed burns. These actions have the potential to temporarily restrict or displace recreation use. However, none of the actions are expected to measurably affect annual recreation use, visitor spending, and associated employment, labor income, and tax revenue. Therefore, no cumulative effects related to economic activity are anticipated. The temporary displacement of recreation use may affect quality of life if preferred sites are temporarily unavailable. However, such effects are expected to be infrequent and minor. Temporary displacement is not expected to increase conflict between motorized and non-motorized recreation users. Finally, these past, present, and reasonably foreseeable actions may affect travel costs if visitors must travel farther because preferred recreation sites are temporarily unavailable. However, since displacement would be infrequent and minor, effects to travel costs are not expected to meaningfully add to the potential environmental justice effects described in the direct and indirect effects analysis.

**Table 82. Resource indicators and measures for alternative 2 cumulative effects**

Resource Element	Resource Indicator (Quantify if possible)	Measure (Quantify if possible)	Alternative 2 Cumulative Effects
Economic activity	Employment, income, tax revenue	Number of jobs, amount of labor income, tax revenue	No effects to employment, labor income, and tax revenue are expected
Quality of life	Recreation visitation	Number of recreation visits	Infrequent and minor displacement not expected to change number of recreation visits
Quality of life	Values, beliefs, and attitudes	Qualitative evaluation of public values, beliefs, and attitudes	Infrequent and minor displacement not expected to change user conflict or quality of life
Environmental Justice	Low-income and minority populations	Change in cost of participating in recreation activities	No measurable change in travel costs

## Alternative 3

Alternative 3 is described in detail in chapter 2 of this RDEIS. Alternative 3 was developed to address the non-motorized recreational experience significant issue.

### *Direct and Indirect Effects - Alternative 3*

#### **Economic Activity**

Alternative 3 would decrease the acres designated for OSV use to 833,990 acres, a 13 percent reduction from existing conditions. Alternative 3 would designate 383 miles of snow trails on NFS lands and groom 349.4 miles of snow trails on NFS lands and adjacent non-NFS lands. This is an increase in designated trails of 48.8 miles compared to the modified proposed action, but the miles of groomed trails are consistent with all other alternatives. As stated in the assumptions, based on observational evidence, OSV visitor use is driven by the miles of groomed trails. Therefore, alternative 3 is not expected to change recreational visitor use compared to the no-action alternative. As a result, recreation-related employment, labor income, and tax revenue would not change relative to the no-action alternative.

#### **Quality of Life**

The values, beliefs, and attitudes discussion above identified several key issues related to OSV use on the Lassen National Forest and quality of life for visitors and area residents. In particular, commenters discussed recreation opportunities and user conflict. Alternative 3 would not designate 316,048 acres for OSV use (185,983 acres are not designated for OSV use under current management), which is a 70 percent increase from existing conditions. Therefore, alternative 3 would improve quality of life for non-motorized winter recreation users relative to both the no-action alternative and the modified proposed action. The increase in acres not designated for OSV use may alleviate some concerns expressed by non-motorized winter recreation users related to vehicle exhaust fumes, disparities in speed, noise, and competition for fresh powder. Although the number of designated ungroomed trails is greater under alternative 3 relative to the modified proposed action, some OSV users may feel that the increase in acres not designated for OSV use adversely affects their quality of life by reducing the acreage available for cross-county OSV travel relative to existing conditions.

Alternative 3 would groom OSV trails, designate trails, and allow cross-country OSV use in close proximity to the wilderness boundaries, Lassen Volcanic National Park, existing recreation areas, and adjacent State and Federal lands. Additionally, non-motorized and motorized users would continue to share trailheads for access. These areas are described in detail in Chapter 2 – Areas Identified for OSV Designation in the Action Alternatives. Therefore, the potential for user conflict to adversely affect quality of life would continue under alternative 3.

To minimize and mitigate the conflicts between motor vehicle use and existing or proposed recreational uses on the eight discrete OSV area designations, the following measures will be taken. This list is not all encompassing, see appendices C and D for a full list of mitigations to address the minimization criteria.

1. If incursions occur, patrols, kiosk information and signage in the area will be increased.
2. Prohibit by order, OSV use in areas where conflicts are found, as described by discrete area in appendices C and D. Exceptions would include areas that are designated groomed and ungroomed trails.
3. A broad area along Almanor lakeshore and the associated non-motorized ski trails would not be designated for OSV use.

4. McGowan Lake: cross-country OSV use would not be designated in a broader area around ski trails but allow for through use of OSVs on designated non-groomed trails.
5. The majority of the area surrounding Lassen National Park would not be designated for OSV use.

Unlike the modified proposed action, alternative 3 would not designate specific OSV crossing points on the PCT nor would it eliminate areas within 500 feet of the PCT from designation for OSV use. This may alleviate concerns expressed by motorized users who desire access to recreation on both sides of the PCT. However, non-motorized users may feel any OSV use on or near the PCT adversely affects their quality of life. Alternative 3 would monitor for conflicts, if they are found to exist, cross-country OSV use would be prohibited, by order, in the same undesignated area as in the modified proposed action or alternative 5.

**Environmental Justice**

The reduction in acres designated for OSV use may require some OSV users to travel farther to recreate on the forest. However, miles of groomed trails are consistent with the no-action alternative, so the effect of the closures on travel costs is expected to be minor. Additionally, minimum snow depth for OSV use is lowered to 6 inches where site review determines there would be no damage to underlying resources. Like the no-action alternative, climate change may affect travel costs due to reduced precipitation and warmer winters. Low-income individuals would be disproportionately affected by changes in the cost of participating in winter recreation on the forest. Overall, alternative 3 is expected to have a minor effect on recreation travel costs.

**Table 83. Socioeconomic resource indicators and measures for alternative 3 direct and indirect effects**

Resource Element	Resource Indicator (Quantify if possible)	Measure (Quantify if possible)	Alternative 3 Direct and Indirect Effects
Economic activity	Employment, income, tax revenue	Number of jobs, amount of labor income, tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue
Quality of life	Recreation visitation	Number of recreation visits	No change due to management; visitor use expected to increase over time
Quality of life	Values, beliefs, and attitudes	Qualitative evaluation of public values, beliefs, and attitudes	70 percent increase in acres not designated for OSV use would benefit quality of life of non-motorized winter recreation users and may adversely affect quality of life for OSV users; potential for continued user conflict due to trails in proximity to wilderness, national park, and shared trailheads
Environmental Justice	Low-income and minority populations	Change in cost of participating in recreation activities	Minor change in travel costs due to fewer areas designated for OSV use and reductions in snow depth requirements; climate change may increase distances winter recreation users must travel for adequate snow depth

### *Cumulative Effects – Alternative 3*

#### **Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis**

The cumulative effects under alternative 3 would be similar to the cumulative effects described under alternative 2.

#### **Alternative 4**

Alternative 4 is described in detail in chapter 2 of this RDEIS. Alternative 4 was developed to address the motorized recreational experience issue.

#### *Direct and Indirect Effects - Alternative 4*

#### **Economic Activity**

Alternative 4 would decrease the acres designated for OSV use to 954,450 acres, a less than 1 percent reduction from existing conditions. Alternative 4 would designate 380.3 miles of snow trails on NFS lands and groom 349.4 miles of snow trails on NFS lands and adjacent non-NFS lands. This is an increase in designated trails of 46 miles compared to the modified proposed action, but the miles of groomed trails are consistent with all other alternatives. As stated in the assumptions, based on observational evidence, OSV visitor use is driven by the miles of groomed trails. Therefore, alternative 4 is not expected to change recreational visitor use compared to the other alternatives analyzed in this report. As a result, recreation-related employment, labor income, and tax revenue would not change relative to the no-action alternative.

#### **Quality of Life**

The values, beliefs, and attitudes discussion above identified several key issues related to public OSV use on the Lassen National Forest and quality of life for visitors and area residents. In particular, commenters discussed recreation opportunities and user conflict. Alternative 4 would not designate 195,580 acres for OSV use (185,983 acres are closed to OSVs under current management), which is a 5 percent increase from existing conditions. Alternative 4 would not designate for OSV use fewer acres than the other action alternatives (modified proposed action, alternative 3, and alternative 5). The net effect on motorized and non-motorized quality of life is expected to be consistent with current conditions and the no-action alternative.

Alternative 4 would groom OSV trails, designate trails, and allow cross-country OSV use in close proximity to the Wilderness boundaries, Lassen Volcanic National Park, existing recreation areas, and adjacent State and Federal lands. Additionally, non-motorized and motorized users would continue to share trailheads for access. These areas are described in detail in Chapter 2 – Areas Identified for OSV Designation in the Action Alternatives. Therefore, the potential for user conflict to adversely affect quality of life would continue under alternative 4.

To minimize and mitigate the conflicts between motor vehicle use and existing or proposed recreational uses on the eight discrete OSV area designations, the following measures will be taken. This list is not all encompassing, see appendices C and D for a full list of mitigations to address the minimization criteria.

1. If incursions occur, patrols, kiosk information and signage in the area will be increased.
2. Prohibit by order, OSV use in areas where conflicts are found, as described by discrete area in appendices C and D. Exceptions would include areas that are designated groomed and ungroomed trails.

3. A broad area along Almanor lakeshore and the associated non-motorized ski trails would not be designated for OSV use.
4. McGowan Lake: cross-country OSV use would not be designated in a broader area around ski trails, but allow for through use of OSVs on designated non-groomed trails.
5. The majority of the area surrounding Lassen National Park would not be designated for OSV use.

Alternative 4 would designate specific OSV crossing points on the PCT, but unlike the modified proposed action, it would also designate areas within 500 feet of the PCT for OSV use. This may alleviate concerns expressed by motorized users who desire access to recreation on both sides of the PCT. However, non-motorized users may feel any OSV use on or near the PCT adversely affects their quality of life.

Alternative 4 would monitor for conflicts, if they are found to exist, cross-country OSV use would be prohibited, by order, in the same undesignated area as in the modified proposed action or alternative 5.

**Environmental Justice**

Alternative 4 would decrease acres designated for OSV use by less than 1 percent. Therefore, management actions are not expected to affect the travel costs of motorized winter recreation users relative to current conditions. Additionally, snow depth requirements are lowered to, “depth necessary to avoid resource damage,” which may reduce the distances that OSV users must travel to recreate on the forest. Like the no-action alternative, climate change may affect travel costs due to reduced precipitation and warmer winters. Low-income individuals would be disproportionately affected by changes in the cost of participating in winter recreation on the forest. Overall, alternative 4 is expected to have a minor effect on recreation travel costs.

**Table 84. Socioeconomic resource indicators and measures for alternative 4 direct and indirect effects**

<b>Resource Element</b>	<b>Resource Indicator (Quantify if possible)</b>	<b>Measure (Quantify if possible)</b>	<b>Alternative 4 Direct and Indirect Effects</b>
Economic activity	Employment, income, tax revenue	Number of jobs, amount of labor income, tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue
Quality of life	Recreation visitation	Number of recreation visits	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue
Quality of life	Values, beliefs, and attitudes	Qualitative evaluation of public values, beliefs, and attitudes	No net change in quality of life relative to current conditions; user conflict may increase due to population growth and increased visitor use
Environmental Justice	Low-income and minority populations	Change in cost of participating in recreation activities	Minor change due to management, snow depth reductions may decrease the distance that OSV users must travel; climate change may increase distances winter recreation users must travel for adequate snow depth

*Cumulative Effects – Alternative 4*

**Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis**

The cumulative effects under alternative 4 would be similar to the cumulative effects described under alternative 2.

## Alternative 5

Alternative 5 is described in detail in chapter 2 of this RDEIS. Alternative 5 was developed to address the non-motorized recreational experience significant issue.

### *Direct and Indirect Effects - Alternative 5*

#### **Economic Activity**

Alternative 5 would decrease the acres designated for OSV use to 633,360 acres, a 34 percent reduction from existing conditions. Alternative 5 would designate 390.4 miles of snow trails on NFS lands and groom 349.5 miles of snow trails on NFS lands and adjacent non-NFS lands. This is a 56 mile increase in designated trails compared to the modified proposed action, but the miles of groomed trails are consistent with all other alternatives. As stated in the assumptions, based on observational evidence, OSV visitor use is driven by the miles of groomed trails. Therefore, alternative 5 is not expected to change recreational visitor use compared to the no-action alternative. As a result, recreation-related employment, labor income, and tax revenue would not change relative to the no-action alternative.

#### **Quality of Life**

The values, beliefs, and attitudes discussion above identified several key issues related to public OSV use on the Lassen National Forest and quality of life for visitors and area residents. In particular, commenters discussed recreation opportunities and user conflict. Alternative 5 would not designate 510,540 acres for OSV use (185,983 acres are not designated for OSVs use under current management), which would be a 175 percent increase from existing conditions and greater than any other alternative. Therefore, alternative 5 would improve quality of life for non-motorized winter recreation users on the Lassen National Forest who prefer to have areas separated from OSV users. The increase in acres not designated for OSV use may alleviate some concerns expressed by non-motorized winter recreation users related to vehicle exhaust fumes, disparities in speed, noise, and competition for fresh powder. Although the miles of groomed OSV trails would not change significantly relative to current conditions, some OSV users may feel that the reduction in acres designated for OSV use adversely affects their quality of life by reducing the acreage available for cross-county OSV travel relative to existing conditions.

Alternative 5 would groom OSV trails, designate trails, and allow cross-country OSV use in close proximity to the Wilderness boundaries, Lassen Volcanic National Park, existing recreation areas, and adjacent State and Federal lands. Additionally, non-motorized and motorized users would continue to share trailheads for access. These areas are described in detail in Chapter 2 – Areas Identified for OSV Designation in the Action Alternatives. Therefore, the potential for user conflict to adversely affect quality of life would continue under alternative 5.

To minimize and mitigate the conflicts between motor vehicle use and existing or proposed recreational uses on the eight discrete OSV area designations, the following measures will be taken. This list is not all encompassing, see appendices C and D for a full list of mitigations to address the minimization criteria.

1. If incursions occur, patrols, kiosk information and signage in the area will be increased.
2. Prohibit by order, OSV use in areas where conflicts are found, as described by discrete area in appendices C and D. Exceptions would include areas that are designated groomed and ungroomed trails.
3. A broad area along Almanor lakeshore and the associated non-motorized ski trails would not be designated for OSV use.

4. McGowan Lake: cross-country OSV use would not be designated in a broader area around ski trails but allow for through use of OSVs on designated non-groomed trails.
5. The majority of the area surrounding Lassen National Park would not be designated for OSV use.

Like the modified proposed action, alternative 5 would designate specific OSV crossing points on the PCT and would create an area within 500 feet of the PCT not designated for OSV use. This may alleviate concerns expressed by both non-motorized users who feel restricting OSV users at the trail head only is not adequate, and motorized users who desire access to recreation on both sides of the PCT. However, some OSV users feel they should be able to cross the trail at any location, and other OSV users feel that any restriction to PCT use adversely affects their quality of life. Additionally, some non-motorized users may feel any OSV use on or near the PCT adversely affects their quality of life, this concern is mitigated by not designating any areas within 500 feet of either side of the PCT for OSV use.

**Environmental Justice**

Alternative 5 would not designate for OSV use areas below 3,500 feet in elevation and would reduce acres designated for OSV relative to the no-action and modified proposed action alternatives. These changes may require some OSV users to travel farther to recreate on the forest. However, miles of groomed trails will not change significantly from the no-action alternative so the effect of the closures on travel costs is expected to be minor. Snow depth requirements are identical to the no-action alternative, therefore, no changes to travel costs due to snow depth requirements are anticipated relative to current conditions. Like the no-action alternative, climate change may affect travel costs due to reduced precipitation and warmer winters. Low-income individuals would be disproportionately affected by changes in the cost of participating in winter recreation on the forest. Overall, the modified proposed action is expected to have a minor effect on recreation travel costs.

**Table 85. Socioeconomic resource indicators and measures for alternative 4 direct and indirect effects**

<b>Resource Element</b>	<b>Resource Indicator (Quantify if possible)</b>	<b>Measure (Quantify if possible)</b>	<b>Alternative 5 Direct and Indirect Effects</b>
Economic activity	Employment, income, tax revenue	Number of jobs, amount of labor income, tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue
Quality of life	Recreation visitation	Number of recreation visits	No change due to management; visitor use expected to increase over time
Quality of life	Values, beliefs, and attitudes	Qualitative evaluation of public values, beliefs, and attitudes	175 percent increase in acres not designated for OSV use would benefit quality of life of non-motorized winter recreation users and may adversely affect OSV users; potential for continued user conflict due to trails in proximity to wilderness, national park, and shared trailheads
Environmental Justice	Low-income and minority populations	Change in cost of participating in recreation activities	Minor change due to prohibition on OSV use below 3,500 feet in elevation and reduced open acres; climate change may increase distances winter recreation users must travel for adequate snow depth

### *Cumulative Effects – Alternative 5*

#### **Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis**

The cumulative effects under alternative 4 would be similar to the cumulative effects described under alternative 2.

#### **Summary**

Table 86 displays a comparison of each alternative's socioeconomic consequences.

**Table 86. Summary comparison of environmental effects to socioeconomic resources**

<b>Resource Element</b>	<b>Indicator/ Measure</b>	<b>Alternative 1 (no-action)</b>	<b>Alternative 2} (proposed action)</b>	<b>Alternative 3 (non-motorized experience)</b>	<b>Alternative 4 (motorized experience)</b>	<b>Alternative 5 (non-motorized, issue)</b>
Economic activity	Employment, income, tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue	No change due to management; increased visitor use over time would increase number of jobs, labor income, and tax revenue
Quality of life	Recreation visitation	No change due to management; visitor use expected to increase over time	No change due to management; visitor use expected to increase over time	No change due to management; visitor use expected to increase over time	No change due to management; visitor use expected to increase over time	No change due to management; visitor use expected to increase over time
Quality of life	Values, beliefs, and attitudes	No net change in quality of life relative to current conditions; user conflict may increase due to population growth and increased visitor use	23 percent increase in acres not designated for OSV use would benefit quality of life of non-motorized winter recreation users and may adversely affect quality of life for OSV users; potential for continued user conflict due to trails in proximity to wilderness, national park, and shared trailheads	70 percent increase in acres not designated for OSV use would benefit quality of life of non-motorized winter recreation users and may adversely affect quality of life for OSV users; potential for continued user conflict due to trails in proximity to wilderness, national park, and shared trailheads	No net change in quality of life relative to current conditions; user conflict may increase due to population growth and increased visitor use	175 percent increase in acres not designated for OSV use would benefit quality of life of non-motorized winter recreation users and may adversely affect quality of life for OSV users; potential for continued user conflict due to trails in proximity to wilderness, national park, and shared trailheads

<b>Resource Element</b>	<b>Indicator/ Measure</b>	<b>Alternative 1 (no-action)</b>	<b>Alternative 2} (proposed action)</b>	<b>Alternative 3 (non-motorized experience)</b>	<b>Alternative 4 (motorized experience)</b>	<b>Alternative 5 (non-motorized, issue)</b>
Environmental Justice	Low-income and minority populations	No change due to management; climate change may increase distances winter recreation users must travel for adequate snow depth	Minor change in travel costs due to fewer areas designated for OSV use and reductions in snow depth requirements; climate change may increase distances winter recreation users must travel for adequate snow depth	Minor change in travel costs due to fewer areas designated for OSV use and reductions in snow depth requirements; climate change may increase distances winter recreation users must travel for adequate snow depth	Minor change due to management, snow depth reductions may decrease the distance that OSV users must travel; climate change may increase distances winter recreation users must travel for adequate snow depth	Minor change due to prohibition on OSV use below 3,500 feet in elevation and reduced open acres; climate change may increase distances winter recreation users must travel for adequate snow depth

## **Compliance with LRMP and Other Relevant Laws, Regulations, Policies and Plans**

The no-action alternative would not be in compliance with Subpart C of the Travel Management Regulation, which requires designation of roads, trails, and areas on NFS lands to provide for OSV use.

The modified proposed action, and alternatives 3, 4, and 5 would be in compliance with Subpart C of the Travel Management Regulation. These alternatives would also be in compliance with the forest plan direction to provide diverse off-highway and winter recreation opportunities.

This report satisfies requirements for socioeconomic analysis, as identified in the Relevant Laws, Regulations, and Policy section.

## **Hydrologic Resources**

This section analyzes the impacts of over-snow vehicles (OSVs) on hydrologic resources resulting from the designation of trails and areas for OSV use and the identification of snow trails to be groomed for OSV use on the Lassen National Forest. The focus is on water quality and quantity changes that may result from the use of OSVs. OSV use has the potential to impact water and watersheds in several ways including chemical contamination, ground surface disturbance, runoff timing, or altering streamside vegetation.

The Forest Service adheres to a variety of laws, regulations and policy that provide standards and guidelines for managing OSV impacts. Consistency of OSV use with water-related laws, regulations, and policy such as the Lassen National Forest Land and Resource Management Plan (LRMP) and the Federal Clean Water Act will be determined. This analysis will determine the direct, indirect, and cumulative effects of OSV use on hydrologic resources potentially resulting from implementation of this this management strategy.

Management decisions to allow cross-country OSV travel, add new routes and areas to the national forest transportation system, and make changes to the existing national forest transportation system must consider effects on watershed hydrologic function. Protection of water quantity and quality is an important part of the mission of the Forest Service (Forest Service Strategic Plan for 2007 to 2012, July 2007). Management activities on national forest lands must be planned and implemented to protect hydrologic function and water quality of forest watersheds, including the volume, timing, and quality of stream flow. The use of roads, trails, and other areas on national forests for public operation of over-snow vehicles has the potential to affect these hydrologic functions through runoff changes and changes in water quality. This analysis considers these potential effects, determines the likelihood of these actions resulting in changes, and if likely, the intensity of these changes and their consequences.

The affected environment and an analysis of management strategy alternatives will be described for water resources. This report will describe the area potentially affected by the alternatives and existing resource conditions within watersheds in the analysis area. Measurement indicators are used to describe the existing conditions for watersheds within the analysis area. The measurement indicators are also used in the analysis to compare, quantify, and describe how each alternative addresses resource concerns as they pertain to hydrologic resources. The hydrologic analysis includes all aquatic resources that could be affected by OSVs. This includes perennial and seasonal streams, lakes, ponds, meadows, and springs.

## Relevant Laws, Regulations, and Policy

### Regulatory Framework

#### *Land and Resource Management Plan*

The LRMP provides standards and guidelines for water-related concerns. The following list of standards and guidelines are a subset of all applicable LRMP direction, and this management strategy must be analyzed for consistency to all applicable LRMP standards and guidelines for hydrology (table 87).

**Table 87. Lassen National Forest LRMP (1992) guidelines relevant to watershed resources**

<b>Page</b>	<b>Forest-wide Guidelines</b>
Ch. 4, Sec. E, p. 4-31, WR a. (1-2)	<p>a. Provide water of sufficient quality and quantity to meet current needs. Meet additional future demand where compatible with other resource needs.</p> <p>(1) Implement Best Management Practices (BMP) (LRMP Appendix Q) to meet water quality objectives stated in 22.c. below, and maintain and improve the quality of surface waters on the Lassen National Forest. Identify methods for applying the BMPs during environmental analysis of proposed projects, and incorporate them into project planning documents.</p> <p>(2) Provide water for Lassen National Forest uses by filing for and maintaining all water rights needed for such uses. Deny special use permit applications and protest other parties' water rights applications that jeopardize forest uses or fish and wildlife needs.</p>
Ch. 4, Sec. E, p. 4-32, WR b. (4)	(4) Conduct formal cumulative watershed effects analysis in accordance with Pacific Southwest Region FSH2509.22, Chapter 20. Adjust project impacts and/or timing to keep disturbance below the appropriate threshold of concern (TOC) in all affected sub basins and watersheds.
Ch. 4, Sec. E, p. 4-32, WR b. (5)	(5) Where formal analysis of a project's cumulative watershed effects is not necessary or feasible, document the reasons and limit disturbance to five percent per decade in sensitive areas, per Land Management Planning Direction for the Pacific Southwest Region (4-1.H.2.b(2)). Sensitive areas are defined as watershed acres that have high erosion potential, steep slopes, or high instability. See [Forest Plan] FEIS Glossary under "sensitive watershed lands."
Ch. 4, Sec. E, p. 4-32, WR c. (1-2)	<p>c. Comply with Federal, State, regional, and local water quality regulations, requirements and standards.</p> <p>(1) Comply with discharge requirements of the Clean Water Act, state drinking water and sanitary regulations, and State and Regional Water Quality Control Board basin plans and rulings.</p> <p>(2) Take immediate remedial action if activities under Forest Service management violate water quality standards.</p>
Ch. 4, Sec. E, p. 4-33, WR d. (3)	(3) Analyze environmental effects of proposed projects within riparian areas in a NEPA document.
Ch. 4, Sec. F, p. 4-51, D, FI #3	3. Where natural conditions permit, achieve or maintain stable channel conditions over at least 80 percent of the total linear distance of stream channels.
<b>Page</b>	<b>Roads</b>
LRMP Ch. 4, Sec. F, p. 4-50, D, FC #1	1. Limit stream crossings to stable rock or gravel areas or where stream bank damage will be minimal. Where this is not feasible, develop crossings that minimize disturbance to riparian-dependent resources. Crossings will be as near right angles as possible.
LRMP Ch. 4, Sec. F, p. 4-50, D, FC #2	2. Disperse flows from ditches or culverts to keep upland area run off from reaching riparian zones.

Page	Forest-wide Guidelines
Ch. 4, Sec. F, p. 4-50, D, FC #3	3. Route roadside drainage through armored ditches or culverts across erodible areas.
Ch. 4, Sec. F, p. 4-51, D, FC #6	6. Out slope roads to minimize collection of water.
Page	Recreation
Ch. 4, Sec. F, p. 4-52, D, RC #3	3. Confine off-highway vehicles, except over-snow vehicles, to designated roads, trails, and stream crossings in riparian areas.

### *Sierra Nevada Forest Plan Amendment*

The 2004 Sierra Nevada Framework established for the first time a comprehensive aquatic and riparian conservation strategy for all of the national forest lands in the Sierra Nevada Mountains. Key components of this strategy include riparian buffer zones, critical refuges for threatened and endangered aquatic species, special management for large meadows, and a watershed analysis process.

The framework includes standards and guidelines in national forests for construction and relocation of roads and trails and for management of riparian conservation areas. These standards and guidelines require the Forest Service to avoid road construction, reconstruction, and relocation in meadows and wetlands; maintain and restore the hydrologic connectivity of streams, meadows, and wetlands by identifying roads and trails that intercept, divert, or disrupt flow paths, and implementing corrective actions; and determining if stream characteristics are within the range of natural variability prior to taking actions that could adversely affect streams.

The framework's standards and guidelines for riparian conservation areas are intended to minimize the risk of activity-related sediment entering aquatic systems. The framework established riparian conservation area widths for all national forests in the Sierra Nevada Mountains: 300 feet on each side of perennial streams; 150 feet on each side of intermittent and ephemeral streams; and 300 feet from lakes, meadows, bogs, fens, wetlands, vernal pools, and springs (table 88).

**Table 88. Riparian conservation areas adjacent to aquatic features as designated by the Sierra Nevada Forest Plan Amendment Record of Decision (SNFPROD 2004)**

Aquatic feature	Riparian Conservation Area
Perennial stream	300 feet on each side of the stream, measured from the bank full edge of the stream
Seasonally flowing streams	150 feet on each side of the stream, measured from the bank full edge of the stream
Special aquatic features (includes lakes, wet meadows, bogs, fens, wetlands, vernal pools, and springs)	300 feet from the edge of the features or riparian vegetation, whichever width is greater
Perennial streams with riparian conditions extending more than 150 feet from the edge of the stream bank or seasonally flow streams extending more than 50 feet from the edge of the stream bank	300 feet from the edge of the features or riparian vegetation, whichever width is greater
Streams in inner gorge	Top of inner gorge (the inner gorge is defined by stream adjacent slopes greater than 70 percent gradient)

### *Wheeled Vehicles or Snowmobiles*

Standard and Guideline. Minimize resource impacts from wheeled off-highway (and over-snow) vehicle use and cross-country use of OSVs. Each National Forest may designate where OHV or OSV use will occur. Unless otherwise restricted by current forest plans or other specific area standards and guidelines, cross-country travel by over-snow vehicles would continue.

### **Riparian Conservation Areas: Activity-Related Standards and Guidelines**

Where a proposed project encompasses a riparian conservation area (RCA) or a critical aquatic refuge (CAR), conduct a site-specific project area analysis to determine the appropriate level of management within the RCA (or CAR). Determine the type and level of allowable management activities by assessing how proposed activities measure against the riparian conservation objectives (RCOs) and their associated standards and guidelines. Areas included in RCAs are: 300 feet on each side of perennial streams, 150 feet on each side of intermittent and ephemeral streams, and 300 feet from lakes, meadow, bogs, fens, wetlands, vernal pools, and springs (table 88).

#### **Riparian Conservation Objective 1**

Ensure that identified beneficial uses for the water body are adequately protected. Identify the specific beneficial uses for the project area, water quality goals from the Regional Basin Plan, and the manner in which the standards and guidelines will protect the beneficial uses. Beneficial uses describe how water is used and vary by water body. Examples of beneficial uses include water for domestic water supply, fire suppression, fish and wildlife habitat, and contact recreation (swimming).

#### **Riparian Conservation Objective 2:**

Maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lakes, meadows, bogs, fens, wetlands, vernal pools, and springs; (2) streams, including in-stream flows; and (3) hydrologic connectivity both within and between watersheds to provide for the habitat needs of aquatic-dependent species.

Standard and Guideline 100: Maintain and restore hydrologic connectivity of streams, meadows, wetlands, and other special aquatic features by identifying roads and trails that intercept, divert, or disrupt natural surface and subsurface water flow paths. Implement corrective actions where necessary to restore connectivity.

Standard and Guideline 101: Ensure that culverts or other stream crossings do not create barriers to upstream or downstream passage for aquatic-dependent species. Locate water drafting sites to avoid adverse effects to stream flows and depletion of pool habitat. Where possible, maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows, wetlands, and other special aquatic features.

Standard and Guideline 102: Prior to activities that could adversely affect streams, determine if relevant stream characteristics are within the range of natural variability. If characteristics are outside of the range of natural variability, implement mitigations and short-term restoration actions needed to prevent further declines or cause an upward trend in conditions. Evaluate required long-term restoration actions and implement them according to their status among other restoration needs.

Standard and Guideline 103: Prevent disturbance to stream banks and natural lake and pond shorelines caused by resource activities (e.g., livestock, off-highway vehicles, and dispersed recreation) from exceeding 20 percent of stream reach or 20 percent of natural lake and pond shorelines. Disturbance includes bank sloughing, chiseling, trampling, and other means of exposing bare soil or cutting plant

roots. This standard does not apply to developed recreation sites, sites authorized under special use permits, or designated OHV routes.

**Riparian Conservation Objective 4:**

Ensure that management activities within RCAs and CARs enhance or maintain physical and biological characteristics associated with aquatic and riparian-dependent species.

Standard and Guideline 116: Identify roads, trails, OHV trails and staging areas, developed recreation sites, dispersed campgrounds, special use permits, grazing permits, and day-use sites during landscape analysis. Identify conditions that degrade water quality or habitat for aquatic and riparian-dependent species. At the project level, evaluate and consider actions to ensure consistency with standards and guidelines or desired conditions.

**Riparian Conservation Objective 5:**

Preserve, restore, or enhance special aquatic features, such as meadows, lakes, ponds, bogs, fens, and wetlands, to provide the ecological conditions and processes needed to recover or enhance the viability of species that rely on these areas.

Standard and Guideline 118: Prohibit or mitigate ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining bog and fen ecosystems and plant species that depend on these ecosystems. During project analysis, survey, map, and develop measures to protect bogs and fens from such activities as trampling by livestock, pack stock, humans, and wheeled vehicles. Criteria for defining bogs and fens include the presence of plants in the genus *Meesia*, and three sundew species (*Drosera* spp.). Complete initial plant inventories of bogs and fens within grazing allotments prior to re-issuing permits.

**Riparian Conservation Objective 6:**

Identify and implement restoration actions to maintain, restore, or enhance water quality and maintain, restore, or enhance habitat for riparian and aquatic species.

Standard and Guideline 122: Recommend restoration practices in: (1) areas with compaction in excess of soil quality standards, (2) areas with lowered water tables, or (3) areas that are either actively down cutting or that have historic gullies. Identify other management practices that may be contributing to the observed degradation, such as road building, recreational use, grazing, and timber harvests.

**State Laws**

The California Water Code consists of a comprehensive body of law that incorporates all state laws related to water, including water rights, water developments, and water quality. The laws related to water quality (CWC §§ 13000 to 13485) apply to waters on the national forests and are directed at protecting the beneficial uses of water. Of particular relevance to the proposed action is Section 13369, which deals with non-point-source pollution and best management practices.

**The Porter-Cologne Water Control Quality Act**, as amended in 2006, is included in the California Water Code. This act provides for the protection of water quality by the State Water Resources Control Board and the Regional Water Quality Control Boards, which are authorized by the U.S. Environmental Protection Agency to enforce the Federal Clean Water Act (CWA) in California.

Sections 208 and 319 of the Federal Clean Water Act address nonpoint source pollution and require water quality management plans for nonpoint sources of pollution. The Forest Service's Pacific Southwest Region (Region 5) has worked with the California water quality agencies to meet CWA requirements. The

greatest emphasis in this coordination has been on the management and control of nonpoint sources of water pollution, with sediment, water temperature, and nutrient levels of most concern.

The State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs) entered into agreements with the Forest Service to control nonpoint source discharges by implementing BMPs. These BMPs, which are set forth in the Forest Service Pacific Southwest Region guidance document, “Water Quality Management for National Forest System lands in California, Best Management Practices” (2000), constitute a portion of the State’s Nonpoint Source Management Plan and comply with the requirements of Sections 208 and 319 of the CWA. The agreements include BMPs related to OSV use, and to road construction and maintenance. The implementation and effectiveness of the BMPs are reviewed annually. In recent years, the Forest Service has emphasized monitoring in national forests to ensure the implemented projects follow approved control measures (USFS 2000, 2004b).

#### *Pacific Southwest Region Best Management Practices and National Core Best Management Practices*

The State and Regional Water Quality Control Boards entered into agreements with the Forest Service to control non-point-source discharges by implementing control actions certified by the State Water Quality Control Board and the Environmental Protection Agency as best management practices (USFS R5 FSH 2509.22 - soil and water conservation handbook, 2011). These are designed to protect and maintain water quality and prevent adverse effects to beneficial uses, both on-site and downstream. Further, the Forest Service has generated National Core BMPs that include the BMPs listed below for OSV use.

Through the execution of a formal Management Agency Agreement with the Forest Service in 1981, the SWRCB designated the Forest Service as the Water Quality Management Agency for National Forest System lands in California. The Forest Service best management practices are in conformance with the provisions and requirements of the Federal CWA and within the guidelines of the Basin Plans developed for the nine RWQCBs in California. The BMPs most relevant to the OSV Program pertain to snow removal and monitoring and include the following:

BMP 2-25 (USFS R5 FSH 2509.22 - soil and water conservation handbook, 2011): Snow Removal Controls to Avoid Resource Damage

- a. Objective: To minimize the impact of snowmelt runoff on road surfaces and embankments and to consequently reduce the probability of sediment production resulting from snow removal operations.
- b. Explanation: This would be a preventative measure used to protect resources and indirectly to protect water quality. Forest roads are sometimes used throughout winter for a variety of reasons. For such roads the following measures would be employed to meet the objectives of this practice.
  11. The contractor will be responsible for snow removal in a manner which will protect roads and adjacent resources.
  12. Rocking or other special surfacing and drainage measures will be necessary before the operator would be allowed to use the roads.
  13. Snow berms will be removed where they result in an accumulation or concentration of snowmelt runoff on the road and erosive fill slopes.
  14. Snow berms will be installed where such placement will preclude concentration of snowmelt runoff and serve to rapidly dissipate melt water. If the road surface is damaged during snow

removal, the purchaser or contractor will be required to replace lost surface material with similar quality of material and repair structures damaged in snow removal operations as soon as practical unless otherwise agreed to in writing.

- c. Implementation: Project location and detailed mitigation will be developed by the IDT [interdisciplinary team] during environmental analysis and incorporated into the project management strategy and/or contracts. Project crew leaders and supervisors will be responsible for implementing force account projects to construction specifications and project criteria.

**BMP 4-7 (USFS 2000): Water Quality Monitoring of off-highway vehicle (and OSV) Use According to a Developed Plan**

- d. Objective: To provide a systematic process to determine when and to what extent off-highway vehicle use will cause or is causing adverse effects on water quality.
- e. Explanation: Each Forest's off-highway vehicle plan [Travel Management Plan and LRMP] will:
  - 15. Identify areas or routes where off-highway vehicle use could cause degradation of water quality.
  - 16. Establish baseline water quality data for normal conditions as a basis from which to measure change.
  - 17. Identify water quality standards and the amount of change acceptable.
  - 18. Establish monitoring measures and frequency.
  - 19. Identify controls and mitigation appropriate in management of off-highway vehicles.
  - 20. Restrict off-highway vehicles to designated routes.
- f. Implementation: Monitoring results would be evaluated against the off-highway vehicle plan objectives for water quality and the LRMP objectives for the area. These results would be documented along with actions necessary to correct identified problems. If considerable adverse effects are occurring, or would be likely to occur, immediate corrective action would be taken. Corrective actions may include, but would not be limited to, reduction in the amount of off-highway vehicle use, signing, or barriers to redistribute use, partial closure of areas, rotation of use on areas, closure to causative vehicle type(s), total closure, and structural solutions such as culverts and bridges.

**National Core BMP Rec-7. Over-snow Vehicle Use**

Reference: FSM 7718

Objective: Avoid, minimize or mitigate adverse effects to soil, water quality and riparian resources from over-snow vehicle use.

Explanation: An over-snow vehicle is a motor vehicle that is designed for use over snow and that runs on a track or tracks and/or a ski or skis, while in use over snow. Over-snow vehicles include snowmobiles, snowcats, and snow grooming machines. Snowmobiles and snowcats are used for access and for recreational activities. Snow grooming machines are used to prepare snow on trails for downhill or cross-country skiing or snowmobile use.

An over-snow vehicle traveling over snow results in different impacts to soil and water resources than motor vehicles traveling over the ground. Unlike other motor vehicles traveling cross-country, over-snow vehicles generally do not create a permanent trail or have direct impact on soil and ground vegetation

when snow depths are sufficient to protect the ground surface. Emissions from over-snow vehicles, particularly two-stroke engines on snowmobiles, release pollutants like ammonium, sulfate, benzene, polycyclic aromatic hydrocarbons, and other toxic compounds that are stored in the snowpack.

During spring snowmelt runoff, these accumulated pollutants are released and may be delivered to surrounding water bodies. In addition, over-snow vehicles that fall through thin ice can pollute water bodies.

Use of National Forest System lands and/or trails by over-snow vehicles may be allowed, restricted or prohibited at the discretion of the local line officer.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using state BMPs, Forest Service regional guidance, Forest or Grassland Plan direction, BMP monitoring information, and professional judgment:

- Use suitable public relations and information tools, and enforcement measures to encourage the public to conduct cross-country over-snow vehicle use and on trails in a manner that will avoid, minimize or mitigate adverse effects to soil, water quality, and riparian resources.
  - ◆ Provide information on the hazards of running over-snow vehicles on thin ice.
  - ◆ Provide information on effects of over-snow vehicle emissions on air quality and water quality.
- Use applicable practices of BMP Rec-4 (Motorized and Non-motorized Trails) when locating, designing, constructing, and maintaining trails for over-snow vehicle use.
- Allow over-snow vehicle use cross-country or on trails when snow depths are sufficient to protect the underlying vegetative cover and soil or trail surface.
- Specify the minimum snow depth for each type or class of over-snow vehicle to protect underlying resources as part of any restrictions or prohibitions on over-snow use.
- Specify season-of-use to be at times when the snowpack would be expected to be of suitable depth.
- Specify over-snow vehicle class suitable for the expected snowpack and terrain or trail conditions.
- Use closure orders to mitigate effects when adverse effects to soil, water quality, or riparian resources are occurring.
- Use applicable practices of BMP Rec-2 (Developed Recreation Sites) when constructing and operating over-snow vehicle trailheads, parking, and staging areas.
  - ◆ Use suitable measures to trap and treat pollutants from over-snow vehicle emissions in snowmelt runoff or locate the staging area at a sufficient distance from nearby water bodies to provide adequate pollutant filtering.

*Federal Law*

**The Organic Administration Act of 1897** (16 U.S.C. 475) states that one of the purposes for which the national forests were established was to provide for favorable conditions of water flow.

**The Federal Water Pollution Control Act** (Clean Water Act, CWA) as amended, intends to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Required are:

(1) compliance with state and other Federal pollution control rules to the same extent as non-governmental entities, (2) in-stream water quality criteria needed to support designated uses, (3) control

of nonpoint source water pollution by using conservation or “best management practices,” (4) permits to control discharge of pollutants into waters of the United States. Compliance with the Clean Water Act by national forests in California is achieved under state law.

**The National Forest Management Act of 1976** (NFMA) prevents watershed conditions from being irreversibly damaged and protects streams and wetlands from detrimental impacts. Land productivity must be preserved. Fish habitat must support a minimum number of reproductive individuals and be well distributed to allow interaction between populations.

**The Safe Drinking Water Act** Amendment of 1996 provides the states with more resources and authority to enact the Safe Drinking Water Act of 1977. This amendment directs the states to identify source areas for public water supplies that serve at least 25 people or 15 connections at least 60 days a year.

**Executive Order 11988** directs Federal agencies to provide leadership and take action on Federal lands to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains. Agencies are required to avoid the direct or indirect support of development on floodplains whenever there are practicable alternatives and evaluate the potential effects of any proposed action on floodplains.

**Executive Order 11990**, as amended, requires Federal agencies exercising statutory authority and leadership over Federal lands to avoid to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands. Where practicable, direct or indirect support of new construction in wetlands must be avoided. Federal agencies are required to preserve and enhance the natural and beneficial values of wetlands. Other laws pertinent to watershed management on National Forest System lands can be found in Forest Service Manual 2501.1.

## Topics and Issues Addressed in This Analysis

### Scope of Analysis

The hydrologic analysis includes all water resources that could be affected by the public’s use of OSVs on trails and areas designated for OSV use and on groomed trails. This includes perennial and seasonal streams, lakes, ponds, vernal pools, meadows, wetlands, and springs.

Seasonal streams include intermittent and ephemeral streams. Ephemeral streams run for a short period of time with rainfall and snowmelt, whereas intermittent streams run for most of the year, except during times when water loss exceeds water availability in the channel. Vernal pools are seasonal ponds that usually develop during snowmelt and dissipate into the summer season.

### Data Sources

Data on OSV routes and uses were compiled from geographic information systems data obtained from the Lassen National Forest, or from communication with forest recreation personnel or other specialists on the forest. Available scientific literature combined with an assessment of local conditions was used to assess snowmobile effects on the project area.

### Purpose and Need

Part of the management strategy’s purpose and need is to provide manageable, designated OSV system of trails and areas consistent with Travel Management Rule at 36 CFR part 212. To protect hydrologic resources, it would be important to ensure OSVs would be operated on adequate snow depths, and to minimize impacts to natural and cultural resources. As an integral part of the development and analysis of the alternatives, the minimization criteria at 36 CFR §212.55(b) were used to compare and contrast

alternatives as to how they would minimize damage to soil, watershed, vegetation, and other forest resources.

## Affected Environment

### Hydrology

The OSV project area on the Lassen National Forest would be located in the southern Cascades with the majority occurring on the east side of the crest. There are many streams, lakes, and reservoirs within the project area. Many water bodies are directly accessed or crossed by the OSV trails and many more can be accessed by OSVs going cross-country in areas designated for OSV use.

Table 89 summarizes the affected environment for water resources, which includes watershed areas on National Forest System lands. The Lassen National Forest is subdivided into 124 6<sup>th</sup>-level watersheds. The watershed average size is about 35,000 acres. The existing condition of watersheds (watershed health) on the forest varies depending upon amount of disturbance found within each watershed and the degree of natural integrity of the system. Disturbance in the form of land management activities, such as timber management, road construction, livestock grazing, mining, recreation, and special-uses have the potential to adversely affect a watershed's condition. Management activity effects are influenced in part by the local terrain, the precipitation regime, and other factors.

**Table 89. Hydrologic characteristics of the OSV analysis area within the Lassen National Forest**

<b>Hydrologic Characteristics</b>	
<b>Landscape</b>	Sierra Nevada Mountains (northern end of range) and Cascade Mountains (southern end of range)  Elevation ranges between 2,000 feet (foothills near Tehama State Wildlife Refuge) and 7,800 feet (unnamed butte north of Caribou wilderness).
<b>Climate<sup>a</sup></b>	Highly variable across the Lassen NF due to elevation and rain shadow effect of Lassen Peak and Sierra Nevada Mountain Range.  Mediterranean climate, whereby most precipitation occurs between November and April.  Winter precipitation below 3,500 feet is primarily rain and above 3,500 feet is primarily snow.  Mean annual precipitation ranges between: 24–26 inches at the Sacramento Valley foothills, 80–90 inches at the crest of the Sierra Nevada and Cascade Mountains, and 16–32 inches at Eagle Lake.
<b>Aquatic features</b>	514 miles of perennial streams.  1,442 miles of intermittent streams.  1,057 lakes with total acreage of 6,207 acres, ranging between <0.01 acres to 1,407 acres (McCoy Flat Reservoir).  1,086 meadows with total acreage of 321,752 acres, ranging between <0.01 acres to 1380 acres.
<b>Beneficial Uses<sup>b</sup></b>	Varies by watershed: municipal water supplies for domestic use, fire protection, hydropower generation, irrigation, contact and non-contact recreation, cold freshwater habitat, spawning habitat, stock watering, and wildlife habitat.
<b>Domestic use</b>	Marten Creek, which supplies water to the community of Mineral.
<b>Clean Water Act 303(d) Water Bodies<sup>c</sup></b>	Eagle Lake for nitrogen and phosphorous from multiple sources, Susan River for mercury and unknown toxicity (source unknown), NF Feather River below Lake Almanor for mercury (unknown source) and temperature (flow regulation and hydromodification), and Pit River for nutrients (agriculture and agriculture grazing).

<b>Hydrologic Characteristics</b>	
<b>Watersheds<sup>d</sup></b>	124 sixth-field watersheds on the Lassen National Forest within the affected environment. Average size of entire watersheds (includes all ownerships): 34,526 acres Average watershed acreage within affected environment: 8,649 acres

<sup>a</sup>Source: Young 1998.; <sup>b</sup>Source: Cal EPA LRWQCB 2005, Cal EPA CVWQCB 2007; <sup>c</sup>Source: Cal EPA SWRCB 2006; <sup>d</sup>Does not include Butte, Sacramento River/Antelope Creek, Sacramento River/Thomes Creek, or Sacramento-Deer Creek Watersheds. Watershed size of these watersheds ranges between 153,000 and 519,000 acres and meaningful comparisons could not be made.

**Table 90. Compliance with beneficial uses of water on the Lassen National Forest**

Hydrologic Unit/Watershed	State HUC no.	Municipal and Domestic Supply	Agricultural Supply	Industrial Process Supply	Industrial Service Supply	Ground Water Recharge	Freshwater Replenishment	Navigation	Hydropower Generation	Water Contact Recreation	Non-contact Water Recreation	Commercial and Sport Fishing	Aquaculture	Warm Freshwater Habitat	Cold Freshwater Habitat	Inland Saline Water Habitat	Wildlife Habitat	Spawning, Reproduction and Development	Water Quality Enhancement	Flood Peak Attenuation/Flood Water Storage	Preservation of Biological Habitats of Special Significance	Migration of Aquatic Organisms	Rare, threatened and Endangered Species
<sup>1</sup> Susan River	637.20	x	x			x	x	x		x	x	x		x	x		x	x	x	x		x	
<sup>1</sup> Eagle Drainage	637.20	x	x			x	x	x		x	x	x		x	x		x	x	x	x	x	x	x
<sup>2</sup> Pit River	526.00	x	x						x	x	x			x	x		x	x				x	
<sup>2</sup> Hat Creek	526.30	x	x						x	x	x				x		x	x			x	x	x
<sup>2</sup> Cow Creek	507.3	x	x						x	x	x				x		x	x				x	
<sup>2</sup> Battle Creek	507.12		x						x	x	x				x		x	x			x	x	x
<sup>2</sup> Antelope Creek	509.63	x	x							x	x				x		x	x			x	x	x
<sup>2</sup> Mill Creek	509.42	x	x							x	x				x		x	x			x	x	x
<sup>2</sup> Deer Creek	509.20	x	x							x	x				x		x	x			x	x	x
<sup>2</sup> Butte Creek	521.30	x	x							x	x				x								
Feather River	520.3		x								x				x							x	

1, 2 Cal LRWQCB EPA 1995,

### Surface Water

Approximately 514 miles of perennial stream channels and 1,442 miles of intermittent streams flow through the Lassen National Forest. The forest also has 1,057 lakes totaling over 6,207 acres, and 321,752 meadow acres, ranging in size from less than an acre to over 1,000 acres. The hydrology of the project area is dynamic and evolving. There can be large annual variations in water availability and quality, seasonal flow rates, and water temperatures (table 89).

**Table 91. Major water bodies accessible by OSVs in the project area**

National Forest OSV Trail System	Major Water body
<b>Cascade Mountain Range – East Side</b>	
Lassen/Ashpan	North Battle Creek Reservoir
Lassen/Bogard	Crater Lake
Lassen/Fredonyer	McCoy Flat Reservoir and Hog Flat Reservoir. Both devoid of water in 2007, 2008, and 2009
Lassen/Swain Mountain	Silver Lake, Caribou Lake, Echo Lake, Lake Almanor
<b>Cascade Mountain Range – West Side</b>	
Lassen/Morgan Summit	No lakes occur near trail system
Lassen/Jonesville	Lake Almanor

Precipitation and snow accumulation also can change over time as a result of climate change. Modern human activities have altered the natural dynamics of water through the construction of dams and diversions, watershed practices that alter water yields, temperature, sedimentation, and the introduction of pollutants and exotic biota. Surface waters on the forest originate as runoff from snowmelt and rainfall. Snowfall is generally the greatest contributor to total runoff, while intense rainfall events can cause the largest floods. The major runoff season on the forest is from April through June. Snowmelt runoff peaks usually occur from late May into June.

Major water bodies within the Lassen National Forest include Eagle Lake, Susan River, Hat Creek, Lake Almanor (reservoir), and headwaters of the North Fork of the Feather River. Water flowing from the forest in creeks and streams is vital for its fisheries and downstream uses. Other notable streams include Battle Creek, Antelope Creek, Deer Creek, Mill Creek, and Butte Creek. These streams support anadromous fish and flow unimpaired all the way to the Sacramento River downstream of Shasta reservoir.

### Surface water quality

Located in high elevations of the Cascades, the project activities occur on snowpack forming the headwaters of many watersheds. These elevations generally produce surface water of excellent quality. Contaminant levels in most waters meet State standards and the fishable and swimmable objectives of the Federal CWA. Most pollutants come from nonpoint sources, such as erosion from roads and parking areas. Sediment at levels above natural rates of erosion is the most common nonpoint source pollutant in forested ecosystems (USFS 2001).

Quality of surface water is affected by the integrity of the fluvial system. Some concerns exist for watersheds where watershed impacts have affected water quality and stream channel potential, including riparian conditions and streambank stability. These effects would be in limited locations, and changes in management could improve existing conditions.

Section 305(b) of the CWA requires states to prepare and submit every two years a water quality summary report to the U.S. Environmental Protection Agency (EPA). In addition, CWA Section 303(d) requires states to submit to the EPA lists of water bodies that meet 303(d) listing criteria. This list identifies water quality-limited water bodies. Water quality impacts can be from point and/or nonpoint sources of pollution, and may require additional controls to meet state water quality standards. These water quality-limited water bodies are prioritized based on the severity of the pollution and other factors. Currently impaired waters include Eagle Lake for nitrogen and phosphorous, Susan River for mercury and other toxics, North Fork Feather River downstream of Lake Almanor for mercury and temperature, and Pit River for nutrients (table 89).

**Surface water uses**

Surface water from the forest is used both consumptively and non-consumptively. Uses in both categories depend on high quality water. Non-consumptive water uses include recreation, wildlife, fisheries, and the aesthetic quality of this resource. Value on the forest is high for these uses. Much of the recreation use on the forest revolves around water bodies, including sightseeing, camping, fishing, and boating. Most campgrounds on the forest are located near lakes and streams.

Consumptive water uses include hydropower generation, fish hatcheries, downstream agriculture, road construction, fire protection, dust abatement, and special use permits. The Lassen National Forest contains no municipal watersheds that are managed under any type of agreement.

**Table 92. Impaired water bodies on or adjacent to the Lassen National Forest<sup>1</sup>**

<p><b><u>Eagle Lake</u></b>  <i>Phosphorous and Nitrogen Sources:</i> Agriculture (N only), Grazing-Related Sources, Silviculture, Other Urban Runoff, Highway/Road/Bridge Runoff, Wastewater, Onsite Wastewater Systems (Septic Tanks), Marinas and Recreational Boating, Atmospheric Deposition, Internal Nutrient Cycling (primarily lakes), Sediment Resuspension, Natural Sources, Recreational and Tourism Activities (non-boating), and Nonpoint Source.                  Eagle Lake lies within the analysis area and nitrogen and phosphorous, which bind to sediment, can reach Eagle Lake at hydrologically connected road segments.</p>
<p><b><u>Susan River</u></b>                  Mercury from unknown source.                  Unknown toxicity from unknown source.                  Headwaters are located within analysis area.</p>
<p><b><u>NF Feather River below Lake Almanor</u></b>                  Mercury from unknown source.                  Water Temperature from flow regulation/Modification and Hydromodification.                  Water temperature in the NF Feather Rivers results from water released from the dam on Lake Almanor.</p>
<p><b><u>Pit River</u></b>                  Nutrients from agriculture and agriculture-grazing.                  Organic Enrichment/Low Dissolved Oxygen from agriculture and agriculture grazing.                  Temperature, water due agriculture and agriculture grazing.                  Within analysis area, but constituents of concern are not related to roads.</p>

<sup>1</sup>State of California, Water Quality Control Board 2006

**Table 93. State water quality standards that are relevant to motorized routes**

Category	Standard	Beneficial Uses Potentially Affected										
Bacteria	Fecal coliform concentration shall not exceed a geometric mean of 200/100 ml (min. of 5 samples / 30-day period), nor more than 10 percent of samples (30-day period) exceed 400/100 ml.	Contact Recreation (REC-1)										
Color	Water shall be free of discoloration that causes nuisance or adversely affects beneficial uses.	Domestic or municipal Contact Recreation Non-contact Recreation										
Floating Material	Water shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses.	Domestic or municipal Contact Recreation Non-contact Recreation Power										
Oil and Grease	Waters shall not contain oils, greases, waxes, or other materials that causes nuisance, a visible film or coating on the surface or on objects in water, or otherwise adversely affect beneficial uses.	All										
Total Dissolved Solids	Shall not exceed 125 mg/l (90 percentile).	Domestic or municipal Contact Recreation Aquatic organisms										
Sediment	The suspended sediment load and discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.	All										
Settleable Materials	Waters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.	Domestic or municipal Power Aquatic organisms										
Suspended Material	Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.	All										
Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity shall not exceed the following Nephelometric Turbidity Units (NTU)s:  <table style="margin-left: 40px; border: none;"> <tr> <td style="padding-right: 20px;"><b>For natural turbidity between:</b></td> <td><b>Increases shall not exceed</b></td> </tr> <tr> <td>0 and 5 NTUs</td> <td>1 NTU</td> </tr> <tr> <td>5 and 50 NTUs</td> <td>20 percent</td> </tr> <tr> <td>50 and 100 NTUs</td> <td>10 NTUs</td> </tr> <tr> <td>Greater than 100 NTUs</td> <td>10 percent.</td> </tr> </table>	<b>For natural turbidity between:</b>	<b>Increases shall not exceed</b>	0 and 5 NTUs	1 NTU	5 and 50 NTUs	20 percent	50 and 100 NTUs	10 NTUs	Greater than 100 NTUs	10 percent.	All
<b>For natural turbidity between:</b>	<b>Increases shall not exceed</b>											
0 and 5 NTUs	1 NTU											
5 and 50 NTUs	20 percent											
50 and 100 NTUs	10 NTUs											
Greater than 100 NTUs	10 percent.											

### *Surface Water Protection Measures*

Public water supplies are protected by the Safe Drinking Water Act, which was amended in 1996. The Safe Drinking Water Act does not require source areas to deliver water of potable quality with no need for treatment. In fact, waters in pristine areas usually need treatment due to natural waterborne parasites, such as giardia.

BMPs have been adopted to protect water quality in compliance with the CWA. BMPs cover a wide variety of land management actions on NFS lands, including watershed management, timber, transportation and facilities, pesticide-use, recreation, minerals, fish and wildlife habitat, fire suppression, and fuels management. When BMPs are properly applied, pollutant delivery to streams and lakes is minimal and recovery of waters and aquatic sites should be rapid. The physical, chemical, and biological integrity of waters in all watersheds should be as good as in watersheds that are managed exclusively for domestic and municipal supplies.

### *Groundwater*

Rainfall and snowmelt, as well as producing surface runoff, also recharge groundwater sources on the forest. Groundwater aquifers release water during periods of low precipitation to maintain base flows of streams. Groundwater seeps and springs are in some cases vitally important in providing habitat for over-wintering salmon eggs and fry.

Groundwater is of beneficial use both on and off-forest, in the form of water supply wells. Communities use groundwater for part or all of their municipal water supply, while other residents use individual domestic wells. Consumptive use of groundwater on the forest is low. Such use is limited to special-use permittees and Forest Service campgrounds and administrative sites with domestic wells.

The existing condition of groundwater on the forest is good, although not all wells provide high quality drinking water. Past management activities on the forest do not appear to have adversely affected groundwater quality. No groundwater contamination from recreation uses (toilets) has been recorded, with all road-accessible toilets being of the pump-vault type. Some potential for such ground water contamination exists at heavily used recreation sites with limited facilities.

### *Riparian Areas and Wetlands*

In this analysis, riparian ecosystems, aquatic ecosystems, wetlands, lakeside zones, and floodplains will be jointly referred to as riparian areas. The terms riparian zones and riparian areas are used interchangeably, but by strict ecological definition, may not be the same in all instances.

Riparian areas are the transition zone between uplands and water in lakes and rivers. Riparian ecosystems are characterized by the presence of trees, shrubs, or herbaceous vegetation that require free or unbound water, or conditions that are wetter than those of surrounding areas. Riparian areas occur in stream corridors, along lakeshores, and around springs, wetlands, and wet meadows. Vegetation in riparian areas can include characteristic woody riparian hardwood types such as aspen, alder, or willow, or it can include larger and more vigorous trees of the same species as found on adjacent uplands.

The forest contains a variety of wetlands. Wetlands are defined in the 1987 Corps of Engineers Wetlands Delineation Manual (USDD Army Corps of Engineers 1989) as: “Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, fens, bogs, and similar areas.”

Riparian ecosystems are generally inclusive of wetlands. Healthy riparian areas, with an abundance of trees and other vegetation, slow flood waters and reduce the likelihood of downstream flooding. Riparian areas improve water quality by filtering runoff and sediment from flood flows and adjacent upland slopes. Healthy riparian areas act like a sponge, absorbing water readily during periods of excess. Water slowed by riparian areas enters the groundwater. Some of it is released later, increasing late summer and fall stream flow.

Fish depend upon healthy riparian areas to provide stable channels, sustained water supply, clean and cool water, food, and streambank cover. Riparian areas produce an abundance of stream cover and shade, which in turn limit the amount of water temperature fluctuation in the stream. This limiting in water temperature is generally advantageous to cold-water fish species.

Many animals visit and live in riparian areas. Benefits provided by riparian areas include food, cover, and nesting habitat for birds. They come for water, food, cover, and temperature moderation. Riparian areas often provide sheltered upstream and downstream transportation corridors for wildlife to other habitats.

Riparian areas are attractive and inviting to forest visitors. People often seek water and riparian environments for recreation activities. Management of riparian areas is considered in the context of the environment in which they are located, while recognizing their special values. Riparian-dependent resources include fisheries, stream channel stability, water quality, and wildlife.

## **Environmental Consequences**

The NFMA and the CWA provide direction for evaluating the direct, indirect and cumulative effects of proposed alternatives. NFMA requires that “soil, slope, or other watershed conditions would not be irreversibly damaged;” and that protection is provided for streams, stream banks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperature or chemical composition, blockages of water courses, or deposits of sediment likely to seriously and adversely affect water conditions or fish habitat.

The CWA declares a policy to “restore and maintain” clean water and directs each state to adopt anti-degradation policies. The State’s anti-degradation policy (as described in the RWQCB’s basin plans and in waste discharge requirements) and implementation of BMPs would safeguard existing water uses.

### **Analysis Assumptions**

Assumptions used for the analysis are based on published literature and the hydrologist’s professional judgement based on experience with the USDA Forest Service. These sources of information framed the key indicators (table 94, page 279) used for analyzing the environmental consequences of each alternative on watershed resources. They provide background information and conclusions regarding the effects of OSVs and other factors considered in this analysis, and apply to the analysis of all alternatives.

#### *Assumption 1: Snow Plowing and Removal*

Snow removal at trailhead parking areas has been occurring for decades. Snow plowing and removal occurs on paved surfaces in snow parks and does not cause soil disturbance, alter existing drainage patterns, or affect soil permeability. This is because BMPs would be applied that ensure that snowmelt from snow storage areas does not result in erosion or impair quality of surface waters.

With implementation of BMPs, snow removal would not cause noticeable or measureable impacts from erosion. High runoff rates are uncommon from snow storage areas. The thaw rate in snow storage areas is typically slow, and snow is placed where the runoff percolates into the soil. As a result erosion or siltation from snow storage runoff is minimal.

The snow removal operations at trailhead parking areas would not result in direct impacts on water quality. Snowmelt from snow storage areas could contain a more concentrated level of fuel deposits, oils, sand, and particulates. This is mitigated because snow is removed to designated storage areas where the snow melt can percolate into the soil and sheet flow across parking areas is avoided. This snow disposal and storage method also allows avoidance of direct discharge into surface water. As a result, the potential for water quality impacts associated with contaminants in the snow from plow equipment use is considered minimal.

Snow removal operations are subject to BMPs, which ensure compliance with Federal CWA requirements. Consequently, project activities including snow removal are consistent with Lassen National Forest LRMP watershed management standards and guidelines and management prescriptions.

This activity is not included in the proposed action, but is an on-going and reasonably foreseeable future action that would be considered for cumulative effects.

#### *Assumption 2: Trail Grooming*

Trail grooming does not cause substantial impacts to water quality, perennial, intermittent or ephemeral streams, wetlands, or in other bodies of water. This is because the direct project activities of trail grooming occur over an existing road and trail network and do not alter landforms or result in significant soil disturbance that would change water flow patterns or quantities of surface water runoff.

Consequently, project activities including snow removal, trail grooming, and OSV travel on groomed trails are consistent with Lassen National Forest LRMP watershed management standards and guidelines and management prescriptions.

#### *Assumption 3: OSV Use on Trails*

For this analysis, OSVs include snowmobiles, snowcats, and other tracked vehicles designed for use over snow. Most OSV trails are snow-covered un-paved roads and trails. The primary pollutant of concern in forested environments is eroded sediment from unpaved roads, fill slopes, and cut slopes. According to West (2002), roads in forested lands are the largest source of potential non-point source pollution. Fine-grained sediment from roads and trails that reaches water bodies can potentially impair water quality.

However, this use would not impair water quality because much of the OSV use under this management strategy would occur on groomed trails where design features call for adequate snow cover, negligible potential for contact with bare soil, and practically no disturbance of underlying trail and road surfaces. OSV use on the groomed trail system given adequate snow coverage would not cause substantial impacts to water quality in perennial, intermittent, or ephemeral streams, in wetlands, or in other bodies of water.

#### *Assumption 4: Cross-country Off-trail Riding by OSVs.*

Some researchers have found that snowmobiles can contribute to erosion of trails and steep slopes. The degree of potential erosion is dependent on site-specific factors such as slope, aspect, elevation, adjacent vegetation, level of use, and weather conditions. Olliff et al. (1999) found that if steep slopes are intensively used, snow may be removed and the ground surface exposed to extreme weather conditions and increased erosion by continued snowmobile traffic. Similar results could occur when snowmobiles use exposed southern exposures. OSV use in off-trail open riding areas where there is minimal snow cover or bare patches of ground could potentially result in destruction of vegetation, soil compaction, and erosion in areas of repeated and concentrated use.

However, with adequate snow depths, cross-country use of OSVs would have a negligible effect on ground disturbance that could lead to erosion and sedimentation in streams or other water bodies, and a negligible effect on vegetation, especially along streams and other water bodies.

This is because off-trail OSV use would be generally dispersed and would not result in high concentration of OSV use on bare soil. Also, travel over bare soil can damage machines, so is generally avoided by operators. With adequate minimum snow levels, this management strategy would result in no more than incidental and localized soil erosion, and therefore, would not create water quality impacts to streams or water bodies by introducing sediment in water runoff.

Cross-country OSV use has the potential to affect woody riparian species by bending and breaking of branches by recreationists running over the branches (Neumann and Merriam, 1972). This is most likely to occur with lower snow depths such as the beginning of the winter season and before sufficient snow has accumulated to protect vegetation, and during spring snowmelt. Regenerating timber could also be affected by bending and breaking of leaders with inadequate snow depth. However, vegetation trampling from snowmobiles and potential impacts to riparian resources from OSV use would be considered negligible with adequate snowpack coverage.

Widespread snow compaction from cross-country OSV use can affect melt patterns, and in turn, the hydrologic regime. Studies have found delayed snowmelt in areas compacted by snowmobiles versus areas of un-compacted snow (Keddy et al. 1979, Neumann and Merriam 1972). During spring snowmelt, these effects can reduce the ability of the snow to slow runoff. It is unknown how much OSV-related snow compaction would affect runoff rate and timing, but some studies suggest up to a 2-week delay. However, because snow compaction from off-trail cross-country use is currently not extensive on a watershed scale, measureable changes in hydrology are not expected.

When OSVs are operated on adequate snow depths, the effects of cross-country OSV use are consistent with the Lassen National Forest LRMP, including RCOs, watershed management standards and guidelines, and management prescriptions.

#### *Assumption 5: Exhaust Emissions*

Exhaust emissions deposited in the snowpack in the amounts anticipated on the Lassen National Forest from grooming equipment or OSVs on trails or OSVs traveling cross-country would be considered minor and currently do not functionally impair water quality of adjacent water bodies. In addition to exhaust emissions, grooming equipment and OSVs could potentially leave behind unburned fuel, lubrication oil, and other compounds on the top layers of snow. Some of the unburned hydrocarbons could accumulate on the snow surface and could eventually wash into streams and lakes. This could cause localized degradation of water quality.

Concentrations of pollutants from OSVs have been observed in snowmelt runoff (Arnold and Koel 2006, McDaniel and Zielinska 2014). Discharge from two-stroke snowmobile engines can lead to indirect pollutant deposition into the top layer of snow and subsequently into the associated surface and ground water (Adams 1975). Hagemann and Van Mouweik (1999) found that there is a potential risk to aquatic life from snowmobile emissions, but that the risk could not be quantified because of a current lack of water quality data. Adams (1975) showed that high concentrations of lead and hydrocarbons were found in pond water adjacent to snowmobile trails during the weeks following ice melt. The study also found that juvenile brook trout had increased hydrocarbon intake and reduced stamina, from surface water and food chain feeding.

Studies conducted in the Rocky Mountain region provide some indication of the potential effects of pollution deposition from OSV use. The U.S. Geological Survey monitored the snowpack throughout the northern Rocky Mountains over a period of several years to measure regional water quality trends as well as the effect of OSV use. The monitoring showed a relationship between OSV use and pollutant deposition in the snowpack, but not more than negligible to minor quantities of OSV-related pollution in snowmelt. Detectable vehicle-related pollution in snowmelt was found to be in the range of background or near-background levels (Ingersoll 1999).

A study in Yellowstone National Park analyzed snowmelt from four test locations adjacent to roadways and parking lots heavily used by OSVs between Yellowstone's West Entrance at West Yellowstone, Montana, and the Old Faithful visitor area. No cross-country OSV use was allowed, and OSVs were concentrated on one main trail in to the park. The purpose of the study was to evaluate whether increased snowmobile use within the Park was creating increased potential for emissions to enter pristine surface waters. Specific objectives were to (1) examine snowmelt runoff for the presence of specific volatile organic compounds (VOCs), (2) determine if concentrations of any VOCs exceed safe drinking water criteria, and (3) predict the potential for impacts by VOCs on the fauna of streams near roads heavily used by snowmobiles in the park. In spring 2003 and 2004, water samples were collected and tested. In situ water quality measurements (temperature, dissolved oxygen, pH, specific conductance, and turbidity) were collected; all were found within acceptable limits. Five VOCs were detected (benzene,

ethylbenzene, m- and p-xylene, o-xylene, and toluene). The very low concentrations were found to be below EPA criteria and guidelines for the VOCs analyzed and were below levels that would adversely impact aquatic ecosystems (Arnold and Koel 2006).

The number of snowmobiles entering Yellowstone in 2003 and 2004 was 47,799 and 22,423, respectively (Arnold and Koel 2006). The estimated seasonal day use of OSV Program trails across the Lassen National Forest is around 10,000 OSVs. These visitations are spread across multiple trailheads and trail systems and do not all occur in the same location. As a result, OSV seasonal use levels at any Lassen National Forest trailhead or trail system are considerably less than OSV use that occurred at Yellowstone National Park, and are considered very low.

Since Yellowstone OSV use levels studied had not resulted in impaired water quality, due to much lower use numbers it follows that the OSV use in the project area from this management strategy would not adversely affect water quality of snowmelt. Therefore, due to very low concentrations of pollutants from OSV use, operation of OSVs on system trails and cross-country would be consistent with water quality objectives in the Lassen National Forest LRMP, including RCOs, watershed management standards and guidelines, and management prescriptions.

*Assumption 6: Monitoring would occur as Prescribed*

Although there would be no indicated adverse damage caused by OSV use to water resources, further monitoring and, if needed, implementing other protective measures would further ensure that aquatic resources are adequately protected. Possible protective measures include restricting access to aquatic communities where substantial impacts are observed through educational materials and signage, or if necessary, through the use of barriers or trail re-routes.

The annual OSV monitoring would include monitoring of streams and riparian systems, wetland, and other sensitive aquatic habitats occurring near the groomed trail system. The Forest Service water quality BMP 4-7 (USFS 2000) would be followed for monitoring guidelines.

*Assumption 7: Other Hydrologic Impacts*

The management strategy would not involve the construction of any structures which could impede or redirect flood flows, nor any ground surface modifications which could change drainage patterns, impervious surfaces, soil permeability, or other hydrological characteristics such as surface water volumes. The management strategy would not expose people or property to a risk of flooding nor increase the risk of flooding for existing development in floodplains in the project area. The management strategy would not place housing or other structures within a flood hazard area. The management strategy would not involve a change in water use, affect a private or public water supply, or affect the quantity or quality of groundwater recharge, aquifer volume or cause a lowering of the local groundwater table level. The management strategy would not involve an increase in impervious surfaces. The management strategy would not involve discharges of storm water or wastewater.

*Assumption 8: Equivalent Roded Area Model not Appropriate*

The equivalent roded acre (ERA) model (FSH 1990a: chapter 20) was not used for this analysis to show cumulative watershed effects. As long as adequate snow depths are maintained, because there are virtually no direct or indirect effects, using the ERA model would not show any detectable differences between alternatives for this management strategy and is not appropriate for this scale of analysis, which covers nearly a million acres.

The ERA model is beneficial at demonstrating changes in ERA for management strategies that intend to disturb hundreds to thousands of acres for fuels reduction, travel management, or timber harvest plans; or

to show cumulative effects of wildfires. This management strategy would not create a new disturbance on the landscape for any alternative. Changing the overall acreage of areas open for OSVs would not lead to increases or decreases in ground disturbance as long as OSVs are managed appropriately. Finally, the ERA method would not show any detectable differences within the sixth field watersheds in this analysis.

#### *Assumption 9: Global Climate Change*

Global climate change is expected to substantially affect California over the next 50 years (<http://www.water.ca.gov/climatechange/docs/062807factsheet.pdf>). Precipitation is likely to become more variable from year to year. Warmer temperatures would reduce the proportion of precipitation that falls as snow and increase the proportion that falls as rain. This shift would result in higher peak flows, more frequent flooding, increased erosion, reduced summer base flows, more frequent droughts, and increased summertime stream temperatures.

These expected changes have several implications for OHV use effects on water resources on national forests:

- As floods become more frequent and of greater magnitude, roads and trails would likely be subjected to greater stresses from higher runoff. Erosion of route surfaces and route/stream crossings would become more common. Ephemeral channels would carry water more frequently than in the past.
- The role of roads and trails in increasing runoff and peak flows (Ziemer 1981, Jones and Grant 1996) would likely increase. Cumulative watershed effects in watersheds near their thresholds of concern may become more common.
- Protection and restoration of meadows and other riparian areas that extend the duration of base flows would be increasingly important as snowpack diminishes. Routes through riparian areas that are currently not causing resource damage could cause damage in the future as runoff becomes more extreme.
- Seasons of use for OSV routes may need to be modified as precipitation and temperature patterns change.

#### *Assumption 10: Non-motorized Uses*

For the purposes of this analysis, non-motorized uses have very little to no effect on hydrology and will not be considered further in this analysis.

### Effects Analysis Methodology

This section describes the methodology used for the effects analysis for water resources. This section establishes indicators (table 94) chosen to measure potential effects, the analysis area, timeframe, methods used, and assumptions made for the effects analysis of all action alternatives on water resources.

As defined in the regulations for implementing NEPA, Code of Federal Regulations, Chapter 40, Sections 1500-1508, direct effects would be those effects caused by the proposed action (or action alternative) and which occur at the same time and place as the action. Indirect effects would be those caused by the action that are later in time or farther removed in distance from the location of the action.

We will analyze the direct and indirect effects and cumulative watershed effects for each of the action alternatives. Direct and indirect effects of each project alternative will be analyzed together. At the end of these analyses there is a summarized comparison of alternatives.

We used key indicators (table 94) to summarize the direct and indirect effects of alternatives and compare them to the no-action alternative. A summary compares each alternative by the indicators, LRMP

consistency, and consistency with the Federal Clean Water Act and the Porter-Cologne Water Quality Control Act.

### *Methodology and Information Sources*

We used GIS data, a variety of reports and assessments of OSV impacts, and professional experience and judgement using scientific literature on OSV impacts for this analysis.

### *Incomplete and Unavailable Information*

We performed no field observations or site-specific water quality or ground-disturbance monitoring for this analysis. And, we conducted very little monitoring of snowmobile impacts on hydrology at specific sites. Lassen National Forest recreation staff monitor snowmobile and other winter recreation use on the forest, but no water quality sampling or hydrology assessments were made supporting this assessment of snowmobile impacts. We based assessments of OSV water quality impacts primarily on scientific literature.

**Table 94 Indicators used for the hydrologic analyses**

<b>Resource Indicator</b>	<b>Usefulness of Indicator Measure</b>	<b>Geographic Scales for Each Indicator Measure</b>
Designated use area for OSV use	Impacts are widely dispersed and differences in alternatives are minor	Lassen National Forest
Minimum Snow Depth for OSV Use on Designated Trails (Inches)	Minimum snow depths on trails can be evaluated for effectiveness for protecting the trail surface	Lassen National Forest
Minimum Snow Depth for Cross-country OSV Use (Inches)	Minimum snow depths for cross-country travel can be evaluated for effectiveness for protecting the ground surface and vegetation	Lassen National Forest
Number of snowmobiles per year using trails across forest	Total amount of use can be compared to use amounts in Yellowstone and other studies to gauge potential water quality effects	Lassen National Forest
Consistency with Riparian Conservation Objectives (RCOs) 1, 2, 4, 5, and 6	Evaluation of the effects to RCAs, water quality and beneficial uses of water	Lassen National Forest

Note: The Sierra Nevada Forest Plan Amendment requires that RCO analyses be conducted during environmental analyses for new proposed management activities within CARs and RCAs (Standard and Guideline 92). There would be no additional routes proposed for addition to the national forest transportation system within CARs in the analysis area. Consequently, consistency with the RCOs is an indicator to ensure that goals of Aquatic Management Strategy would be met (USDA FS PSW Region 2004: 32). [The RCO Analysis is in appendix F.](#)

### *Spatial and Temporal Context for Effects Analysis*

The spatial and temporal bounds for discussing and analyzing direct, indirect, and cumulative effects on water resources and associated riparian areas and wetlands would be the watersheds within the Lassen National Forest.

Short-term effects would be generally up to 1 year in duration, and long-term effects would be more than 1 year in duration.

### **Effects Common to all Alternatives**

Current and proposed winter recreation activities include non-motorized activities such as backcountry skiing and snow-shoeing, and motorized activities such as private snowcats and snowmobiling. Non-

motorized effects would not have a measurable impact on hydrology. Only the effects of motorized OSV activities are considered in the Environmental Consequences section of this report.

For all alternatives including the no-action alternative, OSV use would be allowed in the project area. A comparison of alternatives based on trails and areas open to OSV use, and minimum snow depth for OSV use on trails and cross-country is shown in table 95. Effects common to all alternatives from OSV use are outlined in the assumptions in the previous section and include effects to water quality from OSV exhaust and lubricants, and snow compaction, and trampling of vegetation from OSV tracks.

**Table 95 Alternative comparisons**

<b>OSV Management</b>	<b>Alternative 1 Current Management</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
Minimum Snow Depth for Public OSV Use on Snow Trails (Inches)	12	6 inches on snow trails overlying roads and trails 12 inches on trail not overlying roads or trails	6 inches where site review determines there would be no damage to underlying resources	Depth necessary to avoid resource damage	12
Minimum Snow Depth for Public, Cross-country OSV Use (Inches)	12	12	12	Depth necessary to avoid resource damage	12
Minimum Snow Depth for Snow Trail Grooming to Occur (Inches)	12	12*	18	12	12
OSV Trail Grooming Season	12/26 – 3/31	12/26 – 3/31	12/26 – 3/31	12/26 – 3/31	12/26 – 3/31

\*The originally scoped proposed action has been modified to be consistent with the state grooming standard which states, “Begin grooming when the snow depth is at least 12 to 18 inches” (OSV Program Draft EIR, Program Years 2010-2020 – October 2010, California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division, page 2-12).

### Alternative 1 – No Action

Measurements of indicators for the range of alternatives for the no-action alternative are shown in table 96. Indicators focus on use levels and required snow depths needed for OSV use under the alternatives. Effects of the alternatives depend in part on the amount of use by OSVs, and also on the effectiveness of required snow depths as a mitigation for anticipated effects of OSV use.

**Table 96. Hydrology resource indicators and measures for alternative 1, no action**

<b>Resource Indicator</b>	<b>Usefulness of Indicator</b>	<b>Alternative 1 Measure</b>
Land area open for OSV use	Impacts are widely dispersed and differences in alternatives are minor	964,030 acres
Minimum Snow Depth for Public OSV Use on Snow Trails (Inches)	Minimum snow depths on trails can be evaluated for effectiveness in protecting the trail surface	No Minimum

Resource Indicator	Usefulness of Indicator	Alternative 1 Measure
Minimum Snow Depth for Public, Cross-country OSV Use (Inches)	Minimum snow depths for cross-country travel can be evaluated for effectiveness in protecting the ground surface and vegetation	No Minimum
Number of snowmobiles per year using trails across forest	Total amount of use can be compared to use amounts in Yellowstone and other studies to gauge potential water quality effects	10,000
Consistency with Riparian Conservation Objectives 1, 2, 4, 5, and 6	Evaluation of the effects to RCAs, water quality and beneficial uses of water	Complies with RCOs 1,2,4,5,6

*Direct and Indirect Effects*

Current OSV use would continue on 964,030 acres under the no-action alternative. Minimum snow depths would be enough snow to protect from resource damage for both groomed trails and for cross-country OSV use.

Incidental direct effects including ground disturbance in low-snow areas could potentially occur under current use. Snowmobiles and other OSVs have low ground pressure. However, in some instances snowmobile tracks have the capacity to break through thinner snowpack and churn soil, litter or trail surfaces into the snow, and create isolated ruts in the soil or trail surface. Churned soil may get incorporated in runoff when snow melts.

However, much of the OSV use under this alternative currently occurs on groomed trails where the management strategy calls for 12 inches of snow cover before grooming can occur and low potential for contact with bare soil and practically no disturbance of trail and road surfaces.

For OSV use on the OSV trail system, the minimum snow depth to protect from resource damage standard snow coverage is likely to be adequate to mitigate and eliminate substantial water quality impacts such as stream sedimentation in perennial, intermittent, or ephemeral streams, in wetlands, or in other bodies of water. For proposed minimum snow levels, current uses have not resulted in more than incidental and isolated direct effects such as soil erosion of groomed trail surfaces, and therefore, have not created indirect water quality impacts to streams or water bodies by increasing sediment in water runoff.

Cross-country OSV use in open riding areas where there would be minimal snow cover or bare patches of ground could potentially result in direct effects including destruction of vegetation, soil compaction, and erosion in areas of repeated and concentrated use. However, with adequate snow depths, cross-country use of OSVs would have a negligible effect on ground disturbance leading to erosion and sedimentation in streams or other water bodies, and a negligible effect on vegetation, especially along streams and other water bodies.

There has been and would continue to be incidental and isolated ground contact in areas where OSVs operating cross-country would contact the ground surface due to variations in snow depths such as on high wind-exposed ridges, and southern-facing slopes. Off-trail OSV use currently is generally dispersed and does not result in high concentration of ground disturbance from OSV use on bare soil. With adequate minimum snow levels, current conditions would result in no more than incidental surface disturbance and soil erosion and therefore would not create water quality impacts to streams or water bodies by introducing sediment in water runoff.

Cross-country OSV use has the potential to directly affect woody riparian species by trampling, including bending and breaking of branches by OSVs running over the branches. This has the potential to directly affect shade along streams by reducing vegetation cover. However, direct effects to vegetation probably do occur under current conditions, but at this time the effects are limited by requiring adequate snow cover before allowing OSV use.

As a result, vegetation trampling from snowmobiles and potential impacts to riparian resources from OSV use would be considered negligible with adequate snowpack coverage, and no direct or indirect changes to vegetation would be expected from the no-action alternative. Riparian woody shrub species along stream courses would continue to be protected by the 12-inch snow cover requirement by limiting the direct physical trampling effect from snowmobiles on vegetation.

The direct effect of widespread snow compaction from cross-country OSV use can create more dense snow that leads to an indirect effect of slower melt rate, and could in turn indirectly affect the hydrologic regime by delaying snowmelt rates. It is unknown how much OSV-related snow compaction would affect runoff rate and timing, but some studies suggest up to a 2-week delay. However, because snow compaction from off-trail cross-country use is currently not extensive, measureable changes in hydrology on a watershed scale are not expected.

Direct and indirect effects from overall numbers of OSVs can be used to gauge water quality effects. About 10,000 OSVs per year are currently using forest trails and would have access to cross-country use areas. OSV users would be spread over several trailheads, so actual user numbers would be lower for a particular area. Studies on OSV impacts on water quality indicate that even at much higher use levels, there would be no adverse effects on water quality from OSV emissions. The number of snowmobiles that entered Yellowstone in 2003 and 2004 was 47,799 and 22,423, respectively. At Yellowstone, OSVs were confined to a few trails. Since the much higher Yellowstone OSV use levels studied have not resulted in impaired water quality, it follows that the OSV use in the project area for this alternative would not adversely affect water quality of snowmelt.

Unauthorized activities such as “water skipping” or trying to snowmobile across open water have been observed in some areas. These efforts are not always successful, resulting in snowmobiles abandoned in lakes or other open water. This has the potential to increase effects to water quality from lubricants leaking into surface water, which can also affect aquatic biota. Similarly, during spring break-up, snowmobiles could cross open streams and other water bodies where snow cover is not present, which could result in the deposition of pollutants directly in stream courses and water bodies.

However, the authorized operation of OSVs occurs over a protective layer of snow, and direct and indirect effects to hydrology are isolated and incidental. Furthermore, for existing minimum operating snow depths, this alternative would not result in more than incidental soil erosion and therefore would not create water quality impacts to streams or water bodies by introducing sediment in to water runoff. Therefore, with adequate snow depths, OSV use on trails would be consistent with the Lassen National Forest LRMP, including RCOs, watershed management standards and guidelines, and management prescriptions.

Water quality effects from OSV exhaust stored in snowpack would be negligible and not exceed water quality standards. As a result, current operation of OSVs on system trails and cross-country would be consistent with water quality objectives in the Lassen National Forest LRMP, including RCOs 1, 2, 4, 5, and 6, watershed management standards and guidelines, and management prescriptions.

The RCOs apply to all routes that pass through RCAs and meadows. Under alternative 1, groomed and ungroomed OSV trails and cross-country travel would be allowed within RCAs, but because of the layer

of snowpack protecting the ground surface, there is currently a very low resource damage potential. Although no restrictions on OSVs in riparian areas, frozen lakes, or meadows are currently in place, no adverse impacts to these areas have been observed or monitored.

### Consistency with Riparian Conservation Objectives

**RCO 1 and 6:** Under alternative 1, beneficial uses of water bodies would be protected and enhanced. There would be no changes in water storage, seasonal availability, or quality.

**RCO 2, 4 and 5:** Under alternative 1, the geomorphic and biological characteristics of meadows, streams and RCAs would be protected. Because there would be no sedimentation, there would likely be no changes to aquatic primary productivity. Growing season water availability would remain unchanged and would not affect ecosystem integrity.

### Cumulative Effects- Alternative 1

Past, present, and reasonably foreseeable future projects in the project area include vegetation management, livestock grazing, prescribed burns, and recreation. There are many past, on-going, and reasonably foreseeable future projects identified in the Lassen National Forest that may be ground-disturbing and could potentially add sediment or other pollutants to surface waters within the forest. The Forest Service utilizes BMPs in compliance with the CWA to minimize water quality impacts. The Forest Service monitors roads and trails used by OSVs and implements BMPs to control erosion and other effects.

The risks of cumulative effects from this alternative are very low, because, as a result of the 12-inch minimum snow depth, there would continue to be only incidental ground disturbance, low risk of damage to vegetation or other direct and indirect effects. **As a result, there would be no change to cumulative watershed effects or equivalent roaded acres (ERA) calculations for any watersheds under this alternative.**

There would be negligible effects from exhaust emissions stored in snowpack. This alternative would not implement the recommended project design criteria and mitigations, and would open the highest amount of land area to OSVs. However, this alternative would provide adequate snow cover to protect soils and water resources, and to protect vegetation in riparian areas. This alternative would be consistent with Lassen National Forest LRMP standards and guidelines, and would not result in irreversible or irretrievable effects to soil, water, or riparian resources.

### Alternative 2 – Proposed Action

The proposed action would be similar to the current use in terms of effects to hydrology. It would restrict OSV use to 921,180 acres of Lassen National Forest, and would require at least 6 inches of snow on OSV trails that overlay existing roads and trails. It would require a minimum of 12 inches of snow cover for cross-country OSV use and on designated trails not underlain by existing roads and trails. The minimum snow depth before snow trail grooming for OSV use could occur would be 12 inches (table 97).

**Table 97. Hydrology resource indicators, alternative 2**

Resource Indicator	Usefulness of Indicator	Alternative 2 Measure
Designated use area for OSV use	Impacts are widely dispersed and differences in alternatives are minor	921,180 acres
Minimum Snow Depth for OSV Use on Designated Trails underlain by roads or trails	Minimum snow depths on trails can be evaluated for effectiveness in protecting the trail surface	6 inches

Resource Indicator	Usefulness of Indicator	Alternative 2 Measure
Minimum Snow Depth for Cross-country OSV Use	Minimum snow depths for cross-country travel can be evaluated for effectiveness in protecting the ground surface and vegetation	12 inches
Number of snowmobiles per year using trails across forest	Total amount of use can be compared to use amounts in Yellowstone and other studies to gauge potential water quality effects	10,000
Consistency with Riparian Conservation Objectives 1, 2, 4, 5, and 6	Evaluation of the effects to RCAs, water quality and beneficial uses of water	Complies with RCOs 1,2,4,5,6

### *Direct and Indirect Effects*

The effects of alternative 2 would be similar to alternative 1, except for slightly lower number of acres open to OSVs, and the snow depth requirement for use of OSV trails underlain by roads or trails. Under this alternative, about 40,000 acres less NFS land (table 96) would be open to OSV use. Because direct and indirect effects of this alternative would be negligible, having less acreage open to OSVs would lead to no increase in direct or indirect effects on hydrology.

As in alternative 1, incidental direct effects including ground disturbance in low-snow areas may occur under this alternative. One substantial difference in this alternative would be the minimum 6 inches of snow depth required for the use of designated trails (table 97) underlain by roads and trails. Because minimum snow levels under alternative 2 would be lower than the current conditions on designated trails, there would be a slightly higher risk of ground disturbance and subsequent water quality impacts.

On designated trails with only 6 inches of snow cover, snowmobile tracks have a higher capacity to break through a thinner snowpack and churn soil, litter, or trail surfaces into the snow, and create isolated ruts in the trail surface. Modern OSVs with deep lugs on their treads can easily displace 4 inches of snow each pass, depending on snow moisture amounts. Ruts could channel runoff from road or trail surfaces, potentially leading to stream sedimentation. Churned soil may get incorporated in runoff when snow melts.

Currently, there are no studies or monitoring information that can provide information on direct or indirect effects of the 6-inch snow depth on trails proposed for this alternative. However, snowmobile user web forums usually suggest about 6 inches as a minimum snow amount needed before snowmobile use (Snowmobile Forum 2008). Snowmobilers hesitate to operate machines on soil because it would damage their machines.

The 6-inch depth may or may not be an adequate depth for hydrology resource protection because direct effects of operation of OSVs on 6 inches of snow on trails may lead to possible trail surface displacement and rutting, leading to a slight chance of sediment erosion from the trail surface. Further, this 6-inch depth may be sufficient for operation of a snowmobile, but other OSVs may need more depth to avoid ground disturbance.

For this alternative, as a result of a minimum 6-inch snow depth on trails there likely would be a much higher risk of causing direct trail impacts such as displacement of the trail surface compared to having a 12-inch minimum snow depth for trail uses. A 6-inch snow depth can become much thinner and may not offer effective protection for the ground surface after several passes by OSVs.

Overall, however, OSV use in alternative 2 would occur over a protective layer of snow, and direct and indirect effects to hydrology would likely be isolated and incidental. As a result, for proposed minimum

snow levels, this alternative would not result in more than incidental soil erosion, and therefore, would not create water quality impacts to streams or water bodies by introducing sediment in to water runoff.

With adequate snow depths, OSV use on trails would be consistent with the Lassen National Forest LRMP, including RCOs, watershed management standards and guidelines, and management prescriptions. Although adverse effects would not be expected, **periodic monitoring would be required consistent with BMP 4-7** as a mitigation in areas with a 6-inch minimum snow depth to ensure there would not be impacts to the trail surface that could lead to stream sedimentation. Further, **it is recommended that the 6-inch OSV use depth only be applied to well-surfaced trails** such as graveled or paved roads.

As in alternative 1, much of the OSV use under this alternative would occur on groomed trails where the management strategy calls for 12 inches of snow cover before grooming can occur. This would result in negligible potential for contact with bare soil and practically no disturbance of trail and road surfaces. For OSV use on the groomed OSV trail system the 12 inch requirement would be adequate to protect trail surfaces. The 6-inch minimum snow depth standard snow coverage for OSV trails overlaying established roads and trails would likely be adequate to mitigate and eliminate substantial indirect water quality impacts such as stream sedimentation in perennial, intermittent, or ephemeral streams, in wetlands, or in other bodies of water.

As in alternative 1, for the proposed 12-inch minimum snow levels for cross-country use, OSVs used for cross-country travel would not result in more than incidental and isolated direct effects such as soil erosion of groomed trail surfaces, and therefore would not create indirect water quality impacts to streams or water bodies by increasing sediment in water runoff. There would continue to be incidental and isolated ground contact in areas where OSVs operating cross-country could potentially contact the ground surface due to variations in snow depths, such as on high wind-exposed ridges and southern-facing slopes. However, off-trail OSV use would be generally dispersed and would not result in a high concentration of ground disturbance from OSV use on bare soil. With adequate minimum snow levels, current conditions would result in no more than incidental surface disturbance and soil erosion and therefore would not create water quality impacts to streams or water bodies by introducing sediment in water runoff.

Similar to alternative 1, cross-country OSV use would have the potential to directly affect woody riparian species by trampling, including bending and breaking of branches by OSVs running over vegetation. This would have the potential to directly affect shade along streams by reducing vegetation cover. Direct effects to vegetation probably would occur under alternative 2, but the effects would be limited by requiring adequate snow cover before allowing OSV use.

As a result, vegetation trampling from snowmobiles and potential impacts to riparian resources from OSV use would be considered negligible with adequate snowpack coverage, and no direct or indirect changes to vegetation would be expected from the no-action alternative. Riparian woody shrub species along stream courses would continue to be protected by the 12 inch snow cover requirement by limiting the direct physical trampling effect from snowmobiles on vegetation.

The direct effect of widespread snow compaction from cross-country OSV use under alternative 2 would create denser snow that could lead to an indirect effect of slower snow melt rates, and could, in turn, indirectly affect the hydrologic regime by delaying snowmelt rates in localized areas. It is unknown how much OSV-related snow compaction would affect runoff rates and timing, and some studies suggest up to a two week delay in melting for heavily compacted snow such as on groomed OSV trails.

It is not expected that cross-country snowmobile use would heavily compact snow over large areas. Because the areal extent of snow compaction from cross-country OSV use combined with compacted

snow on groomed trails would not be extensive on a watershed scale, measureable changes in hydrologic relationships would not be expected.

As described in the assumptions for this alternative, water quality effects from OSV exhaust hydrocarbon emissions stored in snowpack under alternative 2 would be negligible and not exceed water quality standards.

Under alternative 2, operation of OSVs on system trails and cross-country would be consistent with water quality objectives in the Lassen National Forest LRMP, including RCOs 1, 2, 4, 5, and 6, watershed management standards and guidelines, and management prescriptions.

The RCOs apply to all routes that pass through RCAs and meadows. Under alternative 2, groomed and ungroomed OSV trails and cross-country travel would be allowed within RCAs, but because of the layer of snowpack protecting the ground surface, there is currently a negligible resource damage potential. Although no restrictions on OSVs in riparian areas, lakes, or meadows are currently in place, no adverse impacts to these areas have been observed or monitored.

### **Consistency with Riparian Conservation Objectives**

**RCO 1 and 6:** Under alternative 2, beneficial uses of water bodies would be protected and enhanced. There would be no changes in water storage, seasonal availability, or quality.

**RCO 2, 4 and 5:** Under alternative 2, the geomorphic and biological characteristics of meadows, streams, and RCAs would be protected. Because there would be no sedimentation, there would likely be no changes to aquatic primary productivity. Growing season water availability would remain unchanged and would not affect ecosystem integrity.

### **Required Monitoring**

For the 6-inch minimum snow depths allowed on trails, operation of OSVs should be monitored periodically when use would be allowed at every site where the 6-inch standard would be applied when snow would be less than 12 inches deep. Monitoring would focus on whether OSVs are impacting trail surfaces, and be reported to the forest or district hydrologist and soil scientist. If adverse effects are observed to occur on trail surfaces, OSV use should be discontinued. Monitoring would help ensure adverse effects are not occurring, and would reduce the risks of adverse effects by providing information on effects of snowmobile use.

### ***Cumulative Effects – Alternative 2***

Past, present, and reasonably foreseeable future projects in the project area include vegetation management, livestock grazing, prescribed burns, and recreation. There are many past, on-going, and reasonably foreseeable future projects identified in the Lassen National Forest that may be ground-disturbing and could potentially add sediment or other pollutants to surface waters within the forest. Wildfires are unforeseeable events that could directly impair water quality until vegetation recovers.

The Forest Service utilizes BMPs in compliance with the CWA to minimize water quality impacts. In 2008, the Lassen National Forest BMPs were rated and implemented 92 percent of the time and effective 90 percent of the time for 77 site evaluations. Projects whose BMP results were not effective were related to roads, developed and dispersed recreation, and in one case, water source development.

The risks of cumulative effects from this alternative would be negligible. As a result of the 12-inch minimum snow depth for cross-country use, there would continue to be only incidental ground disturbance. **As a result, there would be no change to equivalent roaded acres (ERA) calculations for**

**any watersheds under this alternative, and no change in detrimental cumulative watershed effects.** There would be negligible effects from exhaust emissions stored in snowpack, and low risk of damage to vegetation or other direct and indirect effects. This alternative would implement the recommended project design criteria and mitigations, and would open the second highest amount of land area to OSVs. This alternative would provide adequate snow cover to protect soils and water resources, and to protect vegetation in riparian areas. This alternative would be consistent with Lassen National Forest LRMP standards and guidelines. This alternative would not result in irreversible or irretrievable effects to soil, water, or riparian resources.

### Alternative 3

Alternative 3 would be similar to alternative 2 in terms of effects to hydrology. It would restrict OSV use to 833,990 acres of NFS land, and would recommend 12 inches of snow cover over trails before OSV use, or at least 6 inches of snow on OSV trails as long as site review determines there is no damage to underlying surface resources. It would require a 12-inch minimum snow cover for cross-country OSV use, and a minimum of 18 inches of snow cover before grooming of trails could occur (table 98).

**Table 98. Hydrology resource indicators, alternative 3**

Resource Indicator	Usefulness of Indicator	Alternative 3 Measure
Designated use area for OSV use	Impacts are widely dispersed and differences in alternatives are minor	833,990 acres
Minimum Snow Depth for OSV Use on Designated Trails	Minimum snow depths on trails can be evaluated for effectiveness for protecting the trail surface	6 inches where site review determines there would be no damage to underlying resources
Minimum Snow Depth for Cross-country OSV Use	Minimum snow depths for cross-country travel can be evaluated for effectiveness for protecting the ground surface and vegetation	12 inches
Number of snowmobiles per year using trails across forest	Total amount of use can be compared to use amounts in Yellowstone and other studies to gauge potential water quality effects	10,000
Consistency with Riparian Conservation Objectives 1, 2, 4, 5, and 6	Evaluation of the effects to RCAs, water quality and beneficial uses of water	Complies with RCOs 1,2,4,5,6

#### *Direct and Indirect Effects*

The direct and indirect effects of alternative 3 would be the same alternative 2. There would be fewer acres open to OSVs, however. Under this alternative, about 90,000 acres less NFS land would be open to OSV use.

Because direct and indirect effects of this alternative would be negligible, this would result in minimal direct or indirect effects on hydrology. As in alternative 2, incidental direct effects including ground disturbance in low snow areas could potentially occur under this alternative. As in alternative 2, this alternative requires a minimum 12 inches of snow depth for cross-country OSV use and for grooming of OSV trails, and a recommended 12 inches of snow depth for trails, with a 6-inch snow depth for the use of designated trails as long as site reviews indicate protection of the trail surface (table 97).

As in alternative 2, although adverse effects would not be expected, **periodic monitoring would be required consistent with BMP 4-7** as a mitigation in areas with a 6-inch minimum snow depth to ensure

there would not be impacts to the trail surface that could lead to stream sedimentation. Further, **it would be recommended that the 6-inch OSV use minimum depth only be applied to well-surfaced trails** such as graveled or paved roads.

The RCOs apply to all routes that pass through RCAs and meadows. Under alternative 3, groomed and ungroomed OSV trails and cross-country travel would be allowed within RCAs, but because of the layer of snowpack protecting the ground surface, there is negligible resource damage potential. Although no restrictions on OSVs in riparian areas, lakes, or meadows are currently in place, no adverse impacts to these areas have been observed or monitored.

### **Consistency with Riparian Conservation Objectives**

**RCO 1 and 6:** Under alternative 3, beneficial uses of water bodies would be protected and enhanced. There would be no changes in water storage, seasonal availability, or quality.

**RCO 2, 4 and 5:** Under alternative 3, the geomorphic and biological characteristics of meadows, streams, and RCAs would be protected. Because there would be no sedimentation, there would likely be no changes to aquatic primary productivity. Growing season water availability would remain unchanged and would not affect ecosystem integrity.

### **Required Monitoring**

For the 6-inch minimum snow depths allowed on trails, operation of OSVs would be monitored periodically when use would be allowed at every site where the 6-inch standard would be applied when snow would be less than 12 inches deep. Monitoring would be consistent with BMP 4-7, focus on whether OSVs are impacting trail surfaces, and be reported to the forest or district hydrologist and soil scientist. If adverse effects are observed to occur on trail surfaces, OSV use would be discontinued. Monitoring would help ensure adverse effects are not occurring, and would reduce the risks of adverse effects by providing information on effects of snowmobile use.

### *Cumulative Effects – Alternative 3*

Past, present, and reasonably foreseeable future projects in the project area include vegetation management, livestock grazing, prescribed burns, and recreation. There are many past, on-going, and reasonably foreseeable future projects identified in the Lassen National Forest that may be ground-disturbing and could potentially add sediment or other pollutants to surface waters within the forest. Wildfires are unforeseeable events that could directly impair water quality until vegetation recovers.

The risks of cumulative effects from this alternative would be negligible. As a result of the 12-inch minimum snow depth for cross-country use, there would continue to be only incidental ground disturbance. **As a result, there would be no change to equivalent roaded acres (ERA) calculations for any watersheds under this alternative, and no change in detrimental cumulative watershed effects.**

There would be negligible effects from exhaust emissions stored in snowpack, and low risk of damage to vegetation or other direct and indirect effects. This alternative would implement the recommended project design criteria and mitigations, and would open the lowest amount of land area to OSVs. This alternative would provide adequate snow cover to protect soils and water resources, and to protect vegetation in riparian areas. This alternative would be consistent with Lassen National Forest LRMP standards and guidelines. This alternative would not result in irreversible or irretrievable effects to soil, water, or riparian resources.

## Alternative 4

Alternative 4 would be similar to alternative 2 in terms of effects to hydrology. It would differ slightly in that it would increase areas designated for OSV use to 954,450 acres of NFS land, and would require the minimum amount of snow depth necessary to avoid resource damage on designated OSV trails. It would require the minimum amount of snow depth to avoid resource damage snow cover minimum for cross-country OSV use, and 12 inches of snow cover before grooming of trails could occur (table 99).

**Table 99. Hydrology resource indicators, alternative 4**

Resource Indicator	Usefulness of Indicator	Alternative 4 Measure
Designated use area for OSV use	Impacts are widely dispersed and differences in alternatives are minor	954,450 acres
Minimum Snow Depth for OSV Use on Designated Trails	Minimum snow depths on trails can be evaluated for effectiveness for protecting the trail surface	Depth necessary to avoid resource damage
Minimum Snow Depth for Cross-country OSV Use	Minimum snow depths for cross-country travel can be evaluated for effectiveness for protecting the ground surface and vegetation	Depth necessary to avoid resource damage
Number of snowmobiles per year using trails across forest	Total amount of use can be compared to use amounts in Yellowstone and other studies to gauge potential water quality effects	10,000
Consistency with Riparian Conservation Objectives 1, 2, 4, 5, and 6	Evaluation of the effects to RCAs, water quality and beneficial uses of water	Complies with RCOs 1,2,4,5,6

### *Direct and Indirect Effects*

The direct and indirect effects of alternative 4 would be similar as alternative 2. A higher number of acres would be open to OSVs. Under this alternative, about 30,000 acres more NFS land would be open to OSV use. Because direct and indirect effects of this alternative would be negligible, having slightly more acreage open to OSVs would not lead to more direct or indirect effects on hydrology. As in alternative 2, incidental direct effects including isolated and incidental ground disturbance in low snow areas could potentially occur under this alternative. As in alternative 2, this alternative would require a minimum 12 inches of snow depth for grooming of OSV trails. Unlike alternative 2, it would require a “no resource damage” minimum snow depth for the use of designated OSV trails and for cross-country use. As in alternative 2, implementation of this alternative would have a risk for causing minor ground disturbance.

Although adverse direct, indirect, or cumulative effects would be not expected, **periodic monitoring would be required consistent with BMP 4-7** as a mitigation in areas with a depth necessary to avoid resource damage minimum snow depth to ensure there would not be impacts to the trail surface that could lead to stream sedimentation. Further, **it would be recommended that the depth necessary to avoid resource damage minimum snow depth when applied on trails be applied on well-surfaced trails** such as graveled or paved roads. Further, as a result, during low-snow conditions, monitoring would be required of trail conditions before OSV use would be allowed. Monitoring should include assessment of snow conditions at every OSV entry point onto the forest to assure adequate snow depth, especially in “shoulder” seasons during lower snowpack conditions.

The RCOs apply to all routes that pass through RCAs and meadows. Under alternative 4, groomed and ungroomed OSV trails and cross-country travel would be allowed within RCAs, but because of the required layer of snowpack protecting the ground surface, there is a very low resource damage potential.

Although no restrictions on OSVs in riparian areas, lakes, or meadows are currently in place, no adverse impacts to these areas have been observed or monitored.

### Consistency with Riparian Conservation Objectives

**RCO 1 and 6:** Under alternative 4, beneficial uses of water bodies would be protected and enhanced. There would be no changes in water storage, seasonal availability, or quality.

**RCO 2, 4 and 5:** Under alternative 4, the geomorphic and biological characteristics of meadows, streams and RCAs would be protected. Because there would be no sedimentation, there would likely be no changes to aquatic primary productivity. Growing season water availability would remain unchanged and would not affect ecosystem integrity.

### Alternative 5

Alternative 5 would be similar to alternative 2 in terms of overall effects to hydrology. It would differ in that it would decrease areas designated for OSV use to 633,360 acres of NFS land, and would require at least 12 inches of snow on designated OSV trails. It would require a 12-inch snow cover minimum for cross-country OSV use, and 12 inches of snow cover before grooming of trails could occur (table 99).

**Table 100. Hydrology resource indicators, alternative 5**

Resource Indicator	Usefulness of Indicator	Alternative 5 Measure
Designated use area for OSV use	Impacts are widely dispersed and differences in alternatives are minor	633,360 acres
Minimum Snow Depth for OSV Use on Designated Trails	Minimum snow depths on trails can be evaluated for effectiveness for protecting the trail surface	12 inches
Minimum Snow Depth for Cross-country OSV Use	Minimum snow depths for cross-country travel can be evaluated for effectiveness for protecting the ground surface and vegetation	12 inches
Number of snowmobiles per year using trails across forest	Total amount of use can be compared to use amounts in Yellowstone and other studies to gauge potential water quality effects	10,000
Consistency with Riparian Conservation Objectives 1, 2, 4, 5, and 6	Evaluation of the effects to RCAs, water quality and beneficial uses of water	Complies with RCOs 1,2,4,5,6

### Direct and Indirect Effects

The direct and indirect effects of alternative 5 would be similar as for alternative 2, however, the approach for alternative 5 is more conservative in that less acres are open, and deeper snow cover is required before OSV trail use. Under this alternative, about 331,000 acres less NFS land would be open to OSV use. Because direct and indirect effects of this alternative would be negligible, having less acreage open to OSVs under this alternative would decrease further any risk of direct or indirect effects on hydrology. As in alternative 2, incidental direct effects may occur such as isolated ground disturbance in low snow areas under alternative 5. Also, as in alternative 2, this alternative would require a minimum 12 inches of snow depth for cross-country OSV use and for grooming of OSV trails. However, unlike alternative 2, it would require a 12-inch minimum snowpack for OSV use on all trails.

As in alternative 2, although adverse direct, indirect, or cumulative effects would be not expected, **periodic monitoring would be required consistent with BMP 4-7** as a mitigation in areas with a depth necessary to avoid resource damage minimum snow depth to ensure there would not be impacts to the

trail surface that could lead to stream sedimentation. Further, **it would be recommended that the depth necessary to avoid resource damage minimum snow depth OSV use minimum depth when applied on trails be applied on well-surfaced trails** such as graveled or paved roads.

The RCOs apply to all routes that pass through RCAs and meadows. Under alternative 4, groomed and ungroomed OSV trails and cross-country travel would be allowed within RCAs, but because of the layer of snowpack protecting the ground surface, there is a very low resource damage potential. Although no restrictions on OSVs in riparian areas, lakes, or meadows are currently in place, no adverse impacts to these areas have been observed or monitored.

### **Consistency with Riparian Conservation Objectives**

**RCO 1 and 6:** Under alternative 4, beneficial uses of water bodies would be protected and enhanced. There would be no changes in water storage, seasonal availability, or quality.

**RCO 2, 4 and 5:** Under alternative 4, the geomorphic and biological characteristics of meadows, streams and RCAs would be protected. Because there would be no sedimentation, there would likely be no changes to aquatic primary productivity. Growing season water availability would remain unchanged and would not affect ecosystem integrity.

### **Required Monitoring**

For the 12-inch minimum snow depths allowed on trails, operation of OSVs would be monitored periodically when use would be allowed at every site where the 12-inch standard would be applied. Monitoring would be consistent with BMP 4-7, focus on whether OSVs are impacting trail surfaces, and be reported to the forest or district hydrologist and soil scientist. If adverse effects are observed to occur on trail surfaces, OSV use would be discontinued. Monitoring would help ensure adverse effects are not occurring, and would reduce the risks of adverse effects by providing information on effects of snowmobile use.

### *Cumulative Effects – Alternative 5*

Past, present, and reasonably foreseeable future projects in the project area include vegetation management, livestock grazing, prescribed burns, and recreation. There are many past, on-going, and reasonably foreseeable future projects identified on the Lassen National Forest that could be ground-disturbing and could potentially add sediment or other pollutants to surface waters within the forest. Wildfires are unforeseeable events that could directly impair water quality until vegetation recovers.

The risks of cumulative effects from this alternative would be negligible. As a result of the 12-inch minimum snow depth for cross-country use, there would continue to be only incidental ground disturbance. **As a result, there would be no change to equivalent roaded acres (ERA) calculations for watersheds under this alternative, and no change in detrimental cumulative watershed effects.**

There would be negligible effects from exhaust emissions stored in snowpack, and low risk of damage to vegetation or other direct and indirect effects. This alternative would implement the recommended project design criteria and mitigations, and would open the highest amount of land area to OSVs. This alternative would provide adequate snow cover to protect soils and water resources, and to protect vegetation in riparian areas. This alternative would be consistent with Lassen National Forest LRMP standards and guidelines. This alternative would not result in irreversible or irretrievable effects to soil, water, or riparian resources.

## Conclusions

All alternatives would protect water resources, including the no-action alternative.

### Alternative 5 would best protect water resources:

For OSV use on the OSV trail system and cross-country uses, the ungroomed 12-inch minimum snow depth standard snow coverage has been observed to be adequate to mitigate and eliminate substantial water quality impacts such as stream sedimentation in perennial, intermittent, or ephemeral streams, in wetlands, or in other bodies of water. Alternative 5 has fewer acres open to OSV use than the other alternatives. The primary emphasis is that this alternative calls for a consistent 12-inch minimum snow depth for trails and cross-country uses, which would help ensure adequate snow cover for OSV use.

These alternatives would have a negligible impact on water quality as a result of hydrocarbon emissions from OSVs. Alternatives 1 and 5 would be consistent with the Clean Water Act and Porter-Cologne Water Quality Control Act, as water quality would not be impaired and beneficial uses would be protected.

There would be no watersheds with an increased risk of cumulative watershed effects as result of this alternative, and it would be consistent with all of the applicable RCOs in the 2004 Sierra Nevada Forest Plan Amendment.

Beneficial uses would be protected because 12-inch snow depths would be maintained on trails, reducing the risks of trail disturbance.

### Alternatives 1, 2, 3, and 4 would do the second best job at protecting water resources:

For OSV use on the OSV trail system, the ungroomed 6-inch minimum snow depth standard and 12-inch minimum cross-country snow coverage in alternatives 2 and 3 if carefully enforced would be adequate to mitigate and eliminate substantial water quality impacts such as stream sedimentation in perennial, intermittent, or ephemeral streams, in wetlands, or in other bodies of water. Alternative 4 requires snowpack adequate to avoid resource damage. Alternatives 1 and 4 would require additional monitoring to determine suitable snow depths to avoid resource damage. Snow cover assessments would be particularly more important to do early and late in the OSV season. Consistent and timely monitoring would be needed for all alternatives as a mitigation to ensure that damage to trails or cross-country areas would not occur.

These alternatives would have a negligible impact on water quality as a result of hydrocarbon emissions from OSVs. Beneficial uses of water bodies would be protected under these alternatives. As a result, alternatives 1, 2, 3, and 4 would be consistent with the Clean Water Act and Porter-Cologne Water Quality Control Act as water quality and beneficial uses would be protected. There would be no watersheds with a risk of cumulative watershed effects as result of these alternatives, and these alternatives would be consistent with applicable RCOs in the 2004 Sierra Nevada Forest Plan Amendment.

## Riparian Conservation Objectives Analysis

The Sierra Nevada Forest Plan Amendment (SNFPA FSEIS ROD) requires that RCO analysis be conducted during environmental analysis for new proposed management activities within CARs and RCAs (Standard and Guideline #92). Consistency with the RCOs is an indicator to ensure that goals of the Aquatic Management Strategy (AMS) would be met (USDA FS PSW Region 2004: 32).

For this management strategy, allowing use of over-snow vehicles when the ground would be covered with a protective layer of snow would have a negligible effect on RCAs because direct and indirect effects would be negligible, and OSV use would result in negligible effects to RCAs. Hydrocarbon pollution derived from OSVs and grooming equipment would have a negligible effect on water quality under this management strategy.

The above determinations are based on Standard and Guideline #92, which states “Evaluate new proposed management activities within CARs and RCAs during environmental analysis to determine consistency with the RCOs at the project level and the AMS goals for the landscape.” Consequently, consistency with the RCOs is an indicator to ensure that goals of the AMS would be met (USDA FS PSW Regulation 2004: 32).

*Indicator: Consistency with Riparian Conservation Objectives 1, 2, 4 and 5 (Alternative 1)*

The RCOs apply to all routes that pass through RCAs and meadows. Over-snow vehicles would traverse meadows and streams in areas designated for cross-country OSV use with no restriction, and OSV trails in some areas would be located in RCAs.

**RCO 1:** Under alternative 1, beneficial uses of water bodies would be protected. OSV use would not impact beneficial uses of water bodies, especially municipal watersheds. Beneficial uses within the major hydrologic areas, units, or creeks on the Lassen National Forest, designated by the State Lahontan Regional Water Quality Control Board, have been identified in table 90. OSV use would not impact CWA 303(d) water bodies.

**RCO 2:** Under the no-action alternative, the geomorphic and biological characteristics of meadows, perennial streams and RCAs would be protected under this management strategy. Under this RCO, the goal is to maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lakes, meadows, bogs, fens, wetlands, vernal pools, springs; (2) streams, including in-stream flows; and (3) hydrologic connectivity both within and between watersheds to provide for the habitat needs of aquatic-dependent species. For this management strategy, criteria for establishing consistency are that OSV use would not cause accelerated erosion, such as head-cutting or the formation of gullies in meadows or spring ecosystems. Current OSV use does not lower water tables of meadows, and does not alter the movement of surface water in meadows. OSV use does not de-water spring ecosystems, does not capture streams and divert them down roads, and does not disturb shorelines of natural and man-made lakes and ponds.

**RCO 4:** Under the no-action alternative, management activities within RCAs would enhance or maintain physical and biological characteristics associated with aquatic and riparian-dependent species. For this management strategy, criteria for establishing consistency are that OSV use does not degrade the water quality of hydrologically connected systems, and that OSV use does not modify channel morphology of streams.

**RCO 5:** Under the no-action alternative, efforts would be made to preserve, restore, or enhance special aquatic features, such as meadows, lakes, ponds, bogs, fens, and wetlands, to provide the ecological conditions and processes needed to recover or enhance the viability of species that rely on these areas.

*Indicator: consistency with Riparian Conservation Objectives 1, 2, 4 and 5 (Alternatives 2, 3, 4, and 5)*

The RCOs apply to all routes that pass through RCAs and meadows. Over-snow vehicles would traverse meadows and streams in areas designated for cross-country OSV use with no restriction. Snow cover would protect these resources, and OSV trails in some areas would be located in RCAs.

**RCO 1:** Under alternatives 2, 3, 4, and 5 beneficial uses of water bodies would be protected. OSV use would not impact beneficial uses of water bodies, especially municipal watersheds. Beneficial uses within the major hydrologic areas, units, or creeks on the Lassen National Forest, designated by the State Lahontan Regional Water Quality Control Board, have been identified in table 90. OSV use would not impact CWA 303(d) water bodies.

**RCO 2:** Under alternatives 2, 3, 4, and 5 the geomorphic and biological characteristics of meadows, perennial streams and RCAs would be protected. Under this RCO, the goal is to maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lakes, meadows, bogs, fens, wetlands, vernal pools, springs; (2) streams, including in-stream flows; and (3) hydrologic connectivity both within and between watersheds to provide for the habitat needs of aquatic-dependent species. For these alternatives, criteria for establishing consistency are that OSV use would not cause accelerated erosion, such as head-cutting or the formation of gullies in meadows or spring ecosystems. Current OSV use does not lower water tables of meadows, and does not alter the movement of surface water in meadows. OSV use does not de-water spring ecosystems, does not capture streams and divert them down roads, and does not disturb shorelines of natural and man-made lakes and ponds.

**RCO 4:** Under alternatives 2, 3, 4, and 5, management activities within RCAs would enhance or maintain physical and biological characteristics associated with aquatic and riparian-dependent species. For these alternatives, criteria for establishing consistency are that OSV use does not degrade the water quality of hydrologically connected systems, and that OSV use does not modify channel morphology of streams.

**RCO 5:** Under alternatives 2, 3, 4, and 5, efforts would be made to preserve, restore, or enhance special aquatic features, such as meadows, lakes, ponds, bogs, fens, and wetlands, to provide the ecological conditions and processes needed to recover or enhance the viability of species that rely on these areas.

## **Consistency with Lassen National Forest LRMP and Other Relevant Laws, Regulations, Policies and Plans**

All alternatives would comply with the Lassen National Forest Land and Resource Management Plan (LRMP), which provides standards and guidelines for water-related concerns. The 2004 Sierra Nevada Forest Plan Amendment modified the LRMP guidance.

All alternatives would be consistent with the Clean Water Act and Porter-Cologne Water Quality Control Act as water quality and beneficial uses would be protected. The alternatives would be consistent with all applicable RCOs in the Sierra Nevada Forest Plan Amendment once mitigations have been implemented. Beneficial uses of water bodies and water quality would be protected for all alternatives. Physical and biological properties of RCAs would be protected for all alternatives.

All alternatives would comply with the 2004 Sierra Nevada Forest Plan Amendment. The RCOs apply to all routes that pass through RCAs and meadows. Under all alternatives, groomed and ungroomed OSV trails and cross-country travel would be allowed within RCAs, but because of the layer of snowpack protecting the ground surface, there would be very low resource damage potential. Although no restrictions on OSVs in riparian areas, lakes, or meadows are currently in place, no adverse impacts to these areas have been observed or monitored.

### **Consistency with Riparian Conservation Objectives**

**RCO 1 and 6:** Under all alternatives, beneficial uses of water bodies would be protected and enhanced. There would be no changes in water storage, seasonal availability, or quality.

**RCO 2, 4 and 5:** Under all alternatives, the geomorphic and biological characteristics of meadows, streams and RCAs would be protected. Because there would be no sedimentation, there would likely be no changes to aquatic primary productivity. Growing season water availability would remain unchanged and would not affect ecosystem integrity.

This project would comply with the Clean Water Act as enforced through the Porter-Cologne Water-Quality Act for the State of California.

### **Short-term Uses and Long-term Productivity**

There would be no impacts from short-term uses and long-term productivity on hydrologic resources resulting from any alternative.

### **Unavoidable Adverse Effects**

There would be no unavoidable adverse effects resulting from any alternative.

### **Irreversible and Irretrievable Commitments of Resources**

There would be no irreversible or irretrievable commitment of resources resulting from any alternative.