

# Guide to Forest Aesthetics in Montana

Actively managing forests to insure their health and value often requires activities such as road building and commercial logging. In some situations, such activities dramatically impact a forest's visual appearance. Since a forest's appearance is subject to public perception and opinion, forest landowners, loggers, and foresters need to be aware of *forest aesthetics*—applying visual resource management practices to enhance the scenic quality of forest management activities.

This guide outlines timber harvesting practices that can be implemented to manage the visual impacts associated with active forest management. It is divided into four sections. The first, *identifying visually sensitive landscapes*, explains why a particular landscape is visually sensitive. The second, *harvest practices that people do or do not like*, includes a discussion about which harvest practices are liked and disliked by the public. The third, *Why People Don't Like Certain Harvest Practices*, explains why those harvests are liked and disliked, and the final section *Putting it All Together—What can be done to Mitigate Visual Impacts*, lists activities that can be used to minimize the visual impacts of forest management. This Guide is meant to complement Montana's existing guide to Best Management Practices (BMP's) for water quality.



## Identifying Visually Sensitive Areas

Just as riparian forest management practices are confined to riparian forest zones, **visual resource management practices** should only be applied on visually sensitive forest landscapes. To determine whether a parcel slated for management activity is in a visually sensitive landscape consider the following:

### Sight Distance

The distance between a viewer and forest management activities affect visual sensitivity. Sight distance can be organized into three categories.

In foreground views, which are not more than one-half mile from the viewer, details such as stumps, slash, and snags dominate the view. Less noticeable to the viewer are the shape and size of the harvest unit. Foreground views are characteristic of landscapes along travel corridors.

In middleground views, which are between one-half and five miles from the viewer, site details are less of a concern, instead patterns such as color and texture are most noticeable to the viewer. Another factor in middleground views is how the shape and size of the harvest unit conforms with the surrounding terrain.

Finally, in a background view, which is anything greater than 5 miles from the viewer, no site detail and texture are evident. Harvest shape and size based on color differences are about all the viewer can discern.

### Foreground Scene

Visual sensitivity in this scenarios is increased by the presence of stumps, slash, and snags.



### Middleground Scene

Site details such as stumps, slash, and snags are less noticeable. Instead the color and texture of the harvest unit is the most noticeable feature.



### Background Scene

No site details are evident nor is the texture of the harvest unit. Most noticeable are harvest shape and size based on color differences.





## Identifying Visually Sensitive Areas ...continued

### Viewer position

The elevation of the viewer relative to a harvest unit is also important in determining visual sensitivity. A harvest can be screened from view if a viewer is below or even with level of the harvest unit. On the other hand, a viewer above a harvest is offered a clear look at the harvest. This is the most sensitive situation and creates the most difficulty for separating harvest units from landscapes with more aesthetic objectives. In these cases, where separation is likely to be unsuccessful, using visual resource management techniques is essential.

### Viewer Position

The two pictures above are of the same area. The picture on the left, however, is viewed from above the harvest unit and the viewer can clearly see down into the harvested area. In the picture on the right, in contrast, the remaining trees screen the harvested area from direct view because the viewer is slightly below the level of the harvest unit.



### Topography

The steeper the topography or slope, the more visually sensitive the landscape. Harvest practices on steep slopes are more difficult to screen, and because of the steepness, or angle of exposure of the site, more of the site is exposed to the viewer.

### Topography

In both of the pictures, the number of trees retained after harvesting is roughly the same. The picture on the right, however, is distinct in this landscape because it is located on a steeper slope.



## Identifying Visually Sensitive Areas ...continued

### Duration

The length of time a viewer is exposed to a site is important in determining visual sensitivity. Research has shown that people only need 5 to 10 seconds to view a harvest unit and decide whether or not they like it.

### Duration

Travelers along this busy highway need only 5 to 10 seconds to view the harvest area and decide whether or not they like it.



### Ephemeral Characteristics

Ephemeral characteristics are temporary conditions that affect the visual sensitivity of the landscape. For example, southern slopes are illuminated by the sun, thereby making harvest patterns more noticeable. Northern slopes, on the other hand, are shaded and harvest patterns may be less noticeable.

### Ephemeral Characteristics

The distant mountains in this picture are in partial shade, which makes harvest patterns less distinct.



### Stand Characteristics

The forest canopy is important in determining visual sensitivity. For example, removing any trees from a closed canopy, even-aged stand will be readily apparent. Harvesting trees in an uneven-aged stand with an open canopy structure will not be as visually disruptive.

### Stand Characteristics

Timber harvesting in this closed canopy, even-age stand will be readily visible.





## Harvest Practices That People Do Not Like

Research using focus groups and preference studies have revealed the types of forest management practices that are desirable or undesirable from a visual resource management perspective. The major concerns of the viewing public are:

### Tree Retention

The more standing green trees left in a harvest unit, the less the visual impact. In practice, this means that partial or selective harvesting is preferred over clearcutting. Research has not revealed a fixed number of trees per acre that the public finds acceptable or unacceptable.

### Tree Retention

This photo shows a variety of tree retention levels. In the foreground no trees are retained. A bit farther back many trees have been retained. A little farther back fewer trees have been retained. The differences in visual impact are obvious.



### Residual Material

Tree remnants such as tree stumps, snags, limbs, and brush are a major visual concern. Removing residual material, however, may conflict with wildlife objectives, or hamper nutrient cycling.

### Residual Material

Tree remnants left on the harvest unit or at the roadside tend to create a cluttered or messy appearance. Burning logging slash is the traditional method of dealing with residual material, however, the black appearance of the landscape after burning also has a very negative visual impact.



### Color Contrasts

Forests are generally green, whereas harvested areas are likely to be brown or black. The contrasting colors resulting from the harvest are disliked. As trees regenerate on the site and the harvest unit "greens up" negative reactions diminish.

### Color Contrasts

This photo shows the color contrast between a green unharvested area in the foreground and a brown harvested area in the background.



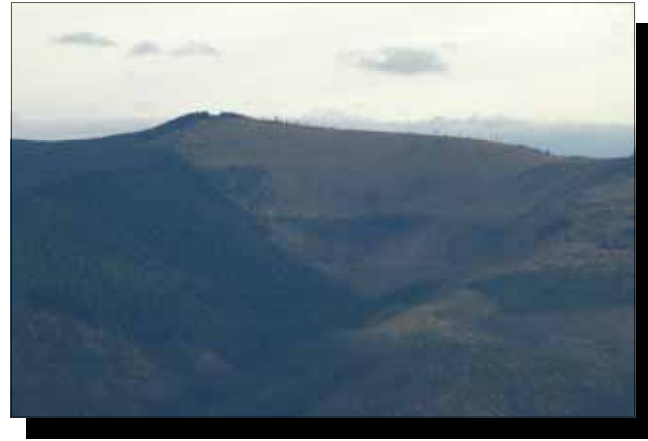
## Harvest Practices That People Do Not Like...continued

### Shape and location of harvest unit

Square or rectangular harvest units create a greater visual impact than those with more rounded edges. Regarding location, one of the most sensitive locations for harvest units is along ridges.

### Shape and Location of Harvest Unit

In the upper photo a square harvest area creates a significant visual impact. In the lower photo a harvest along a ridgeline also creates a significant visual impact.



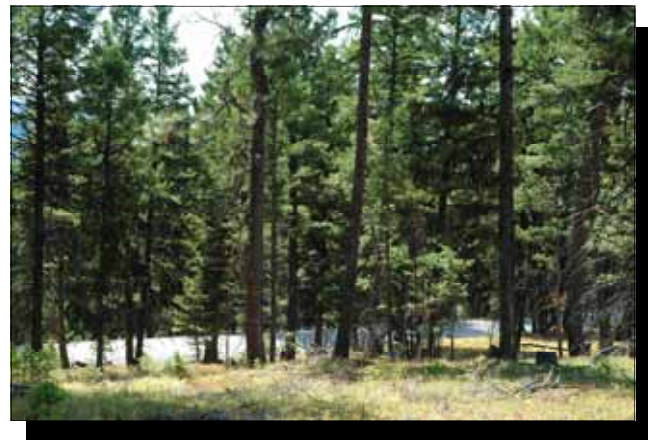
## Harvest Practices That People Do Like

### Buffers

A buffer is a strip of trees or other vegetation that screens a harvest area from view. If buffers are used they should be wide enough to effectively screen the harvest area (generally between 50 and 300 feet).. Thin, wispy buffers gives people the notion that something is being hidden from them.

### Buffers

This photo, taken from inside a harvest unit, shows a buffer strip left between the harvest unit and road.



### Information Signs

most people view signs that convey when trees were harvested, planted, thinned, etc. Well placed signs are useful in letting people know that a forest is being tended under a sound stewardship program.

### Information signs

This sign, placed by the Bureau of Land Management, explains three timber harvesting methods used in the viewshed.





## Why People Don't Like Certain Harvest Practices

Despite the common notion that beauty is in the eye of the beholder, there is a high level of agreement among diverse populations regarding what makes a landscape attractive, or unattractive. Research has shown that when people do not like what they see on a landscape, it is because some element of the landscape doesn't "fit". Not fitting can be explained in terms of line, form, color, and texture; four elements that can be used to describe a landscape.

### Lines

Lines in a landscape often appear as a horizontal ridgeline, or as vertical lines in tree trunks.

### Forms

Three-dimensional configuration of lines on the landscape, e.g. hills and mountains. The two-dimensional configuration of forms are shapes and are useful in describing middle and background views of harvest patterns on the landscape. The shape of many harvest patterns are square, or rectangular.

### Colors

A feature of the landscape that distinguishes its different elements. For example, in a foreground view tree leaves and needles are green, soil and tree bark are brown, and sky and water are blue. In distant views colors lose their ability to distinguish the landscape features. Instead they become shades of light and dark.

### Texture

The relative smoothness of a landscape, e.g. craggy rocks versus relatively smooth forest canopy. In foreground views, textures are easily distinguished but are lost in distant views.

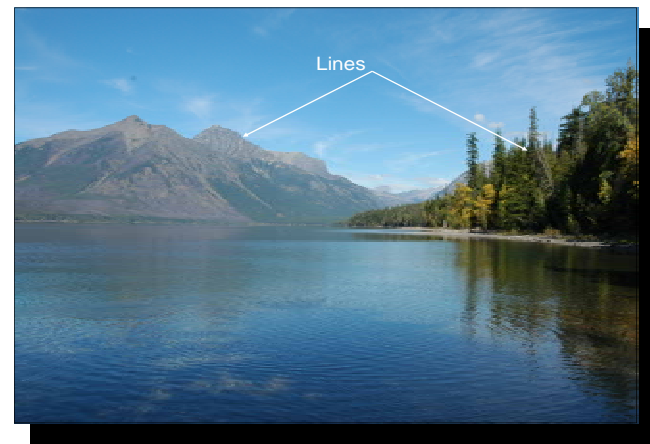
In a landscape, these four elements combine in certain patterns that viewers come to expect. When something, e.g. a timber harvest, alters that expected pattern of lines, forms, colors, and texture viewers may not like the change if it doesn't "fit" with their expectations.

### Scale

If in addition to not fitting into the landscape, the harvest unit is large and dominates the landscape, the discordance is further increased creating a greater visual impact.

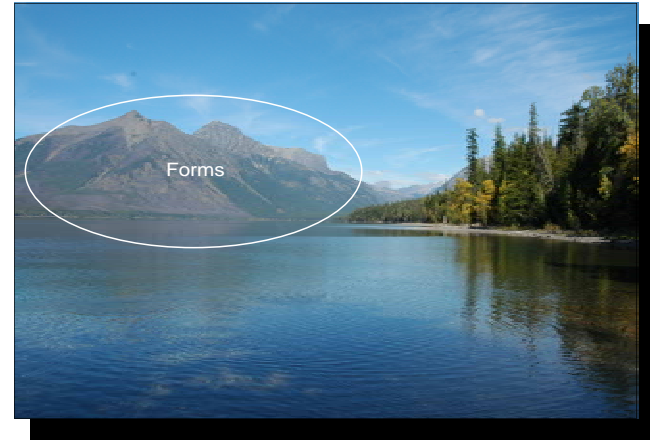
### Lines

The lines in this landscape include the ridgeline and the vertical lines of standing trees in the foreground



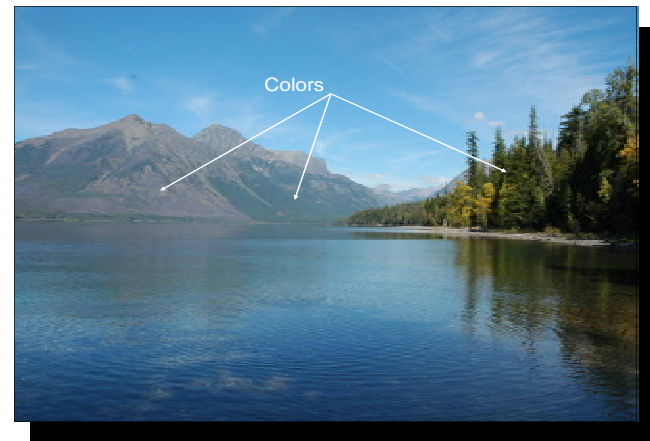
### Forms

The ridgelines in this landscape all fit together to create a 3-D form—the mountain



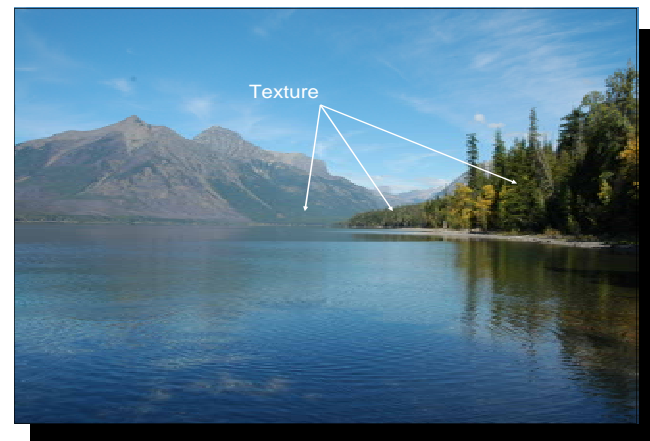
### Colors

The color differences in this landscape distinguish the trees, rock, sky, and lake.



### Texture

Though a little difficult to see in this photo the forest in the foreground has a much "rougher" texture than the "smoother" texture in the distant background



Knowing the visual impacts of timber harvesting that the public likes and dislikes and the reasons why those visual impacts are liked or disliked is essential knowledge for planning and conducting harvest practices in visually sensitive areas. Recall for the subsequent discussion that visual management practices don't necessarily have to be applied in all timber harvesting operations.

### **Planning for the Viewshed**

Rather than planning timber harvests on a case by case basis, it is essential to plan timber harvesting in an entire viewshed—the landscape seen from a particular area or along a transportation corridor. Such planning minimizes the potential for conflict with adjacent landowners and ensures that old units green-up before new units are harvested.

### **Evaluating the Need For Buffers**

Part of the preliminary viewshed assessment is the task of evaluating the need or opportunities for buffers. By leaving visually impenetrable stands of vegetation in strategic locations, visually sensitive areas can often be separated from more utilitarian landscapes where routine harvesting takes place. Buffers should not be considered set-asides or reserves. In most cases they can be thinned to create openings, varied densities of tree stands, understory regrowth and opportunities for deeper views into the buffer (but not through the buffer to the harvest area).

### **Harvest Practices in Foreground Situations**

The following is a list of visual management practices that are appropriate in foreground landscapes. Keep in mind that in all cases, the application of these principles is more critical on steeper slopes where the impacts of removing trees are more apparent.

- Avoid high stumps
- Not piling brush
- Retaining trees in groups
- Keep trees with substantial crowns
- Replanting with multiple-aged trees
- Replanting with a variety of species
- Increasing planting density



The primary concern in the foreground is to minimize the cluttered appearance of residual material left after tree harvesting. Scattered stumps, limbs and non-merchantable trees all contribute to a setting that appears messy and unkempt. While in some cases pursuing aesthetic objectives in foreground landscapes may be in conflict with achieving wildlife and other biological objectives where the retention of downed material is desirable, it may be necessary to defer to aesthetics in visually sensitive areas.

Where trees are to be retained, it is important that the remaining trees have full crowns. People prefer the appearance of large, full trees and view tall wispy trees as evidence of highgrading (harvesting only the best trees from a commercial standpoint). Finally, if several trees per acre are going to be left, they should be randomly spaced or preferably grouped, rather than spaced evenly throughout the site.

Replanting in a foreground landscape should be done with large and diverse stock if at all possible. Diversity in plant material adds visual variety to the landscape and is more pleasing aesthetically. Planting older, or larger material results in rapid green-up, which is also desirable in recently harvested landscapes.

### **Harvest Practices in Background Situations**

The following is a list of visual management practices that are appropriate in background situations.

- Reduced size of units
- Units distributed across the landscape
- Curved and undulating edges
- Feathered edges
- Harvest lines diagonal to ridge lines
- Selective cutting
- Trees retained in groups

Treatment of the borders of harvest units is a critical factor in minimizing the visual impact of harvest practices. Edges should be curving and undulating, rather than straight. By borrowing from existing patterns in the landscape, a harvest unit can replicate those patterns and consequently create a better fit. If patterns are not readily apparent on the landscape, which is usually the case in even-aged, closed

## Visual Resource Management Practices...continued

canopy forests, then harvest units should run parallel to the dominant line of the landscape. For example, if the harvest unit is planned for a long, narrow hillside where the dominant line is along the horizontal ridge, then the unit should be elongated, running along the hillside and not up and down the hillside.

In addition to laying out curved and flowing lines that follow the contours, whenever possible the edges should be feathered to soften them. Harsh edge effects are created when an area is clear cut and the borders go from 100% removal to 100% tree retention. To soften the edges and create a transition from the cleared area to the remaining forest, trees should be selectively harvested along the border. The depth of the transition area usually increases with distance. In a foreground landscape, this may be only 25 to 75 feet, but in a background landscape the transition border may need to be 100 to 200 feet to be effective.

Harvest units that are planned to run over a ridge or hilltop should be laid out so that the border lines run diagonal rather than perpendicular to the ridge. This will generally avoid the problem of abrupt tree lines that create significant visual impacts.

Retention of trees along ridge lines should be an all or nothing proposition. Leaving a few wispy trees is less desirable than removing all of the trees. If at all possible, full retention of trees along ridge tops is most desirable. Harvest units can be planned in phases where the upper portion of a ridge can be harvested after the harvest unit in the foreground greens-up.

Where landscapes are extremely sensitive visually, a good way to minimize negative visual harvesting effects is through selective cutting. In most cases much of the volume and value can be removed while still retaining a landscape that does not appear to be harvested. Selective cutting can serve visual resource management objectives while also maintaining wildfire habitat objectives, even in critical situations.

In areas where partial cutting removes over 80% of the trees, it is important to leave residual trees in patches or randomly spaced on the landscape.

Finally, roads should be located at the bottom or top of harvest units, rather than along mid-slopes, to avoid the visual impact of a line running through the harvest unit. This practice is more critical in units that have been clearcut than those that have been selectively harvested.

The following summary contrasts the landscape architectural principles utilized in visually sensitive areas with harvest practices that are less visually sensitive.

### Visually sensitive practices:

- Curved lines
- Feathered edges
- Small to medium sized units
- Multiple species stands
- Uneven aged trees
- Undulating buffer lines
- Connecting units
- Patches
- Ridge roads
- Selective harvests
- Single corridors
- Clumps of trees
- Rapid green up
- Low stumps
- Plan for total view shed
- Harvest into the wind

### Practices that are less visually sensitive:

- Straight lines
- Sharp edges
- Large units
- Single species stands
- Even aged trees
- Straight buffer lines
- Separate units
- Blocks
- Mid slope roads
- Clearcutting
- Multiple corridors
- Evenly spaced trees
- Slow green up
- High stumps
- Plan for single harvest
- Harvest away from wind