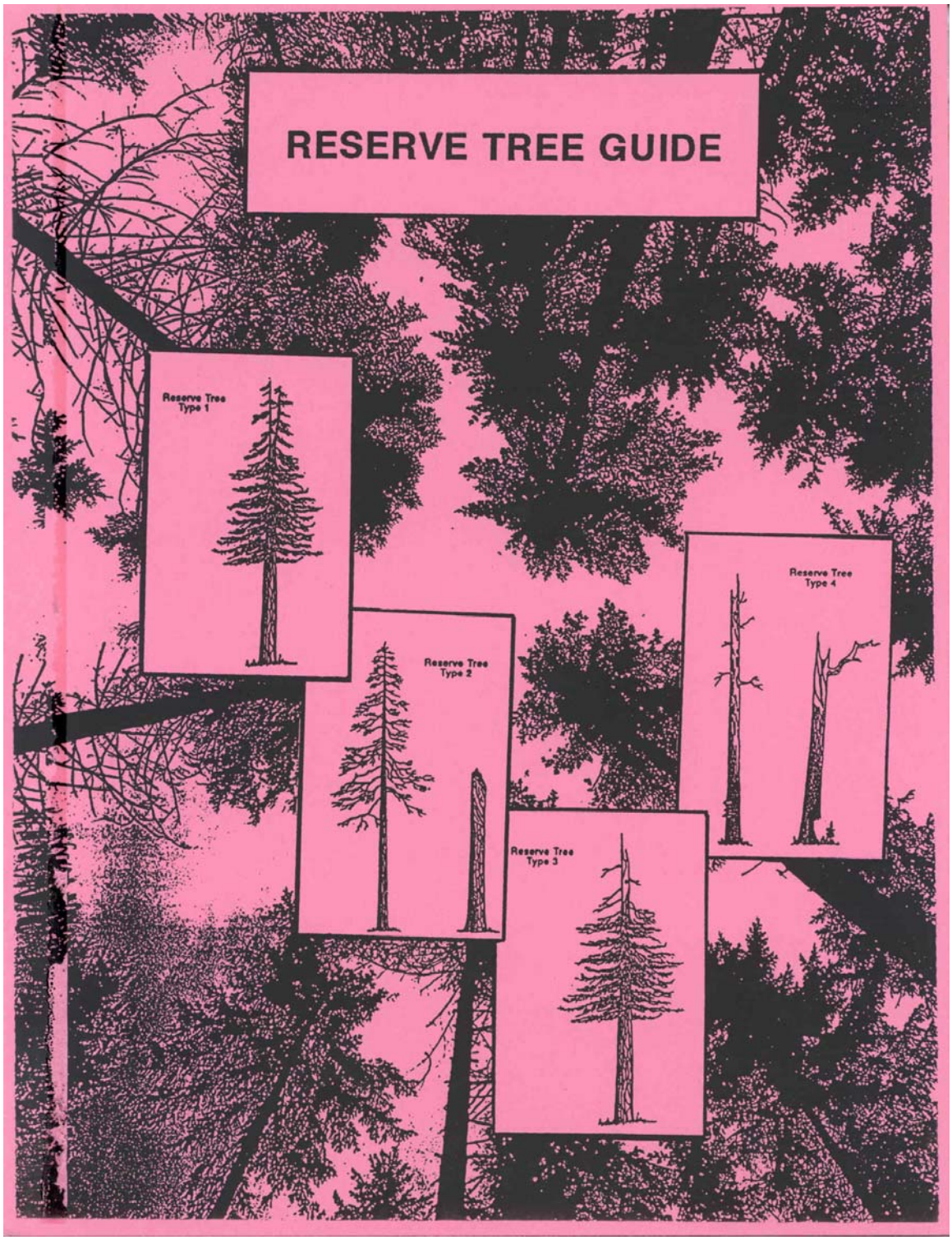
RESERVE TREE GUIDE



ID TEAM GUIDANCE FOR RESERVE TREES

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ID TEAM GUIDANCE FOR RESERVE TREES

INTRODUCTION

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Dead, dying and live defective trees are an important part of the ecosystem. They provide habitat for birds, mammals, amphibians, reptiles, insects and a variety of plants as well as providing benefits to the watershed in the form of water retention and potential shade. In addition, these trees can provide social benefits to communities in the form of jobs and community stability. On a national level, these trees provide dollars to the treasury as well as much needed timber products.

These guidelines are intended to provide a technical framework for achieving the objective of retaining reserve trees while providing for safe working practices in the woods. THEY ARE NOT POLICY. The guides should provide a basis for a common understanding and consideration as silvicultural prescriptions are developed through the Interdisciplinary Team (ID Team) process. In addition, the guides should lay the foundation for informed decisions about safe working practices and resource objectives. It is unrealistic to expect that comprising safety will accomplish our objectives.

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PLANNING

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Safety planning is essential to ensure workers are not exposed to hazards of reserve trees, and that the objectives for retaining reserve trees are achieved.

Know the reserve tree objectives: reserve tree objectives will determine the kinds, sizes, characteristics and locations of trees. Knowing what the needs are, and why, will help in knowing what is useful and not useful when considering which cutting and logging techniques to use. This helps to identify the options to work with when designing a safety plan.

In 1995, the Occupational Health and Safety Administration implemented new safety regulations on logging operations. It is imperative that considerations for safety be an integral part of the planning process.

The following matrix can be used as a guide in determining silvicultural opportunities while at the same time considering safety. It is not not intended to represent every scenario that may be encountered, it is intended to give a general understanding of options available as timber sales are analyzed.

Under all the scenarios, a couple of points need to be made: the Forest Service is not going to require the cutting of every danger tree, if a tree is felt to pose a danger, the operator has the flexibility to cut that tree as a hazard tree. The operator needs to assume their responsibility for employee safety. However, the Forest Service should not base resource decisions on the expectation that all reserve trees will remain standing during the life of the timber sale contract. The RISK ASSESSMENT FOR IDENTIFYING RESERVE TREES should be used as a guide to base remaining tree expectations.

Another point is that all scenarios are not fool-proof. An example is when high mortality/high defect groups of trees are being retained within a cutting unit. In this scenario, there will be trees along the perimeter of the leave group that may fit into a Type 3 or 4 category according to the RISK ASSESSMENT FOR IDENTIFYING RESERVE TREES, there will be a certain amount of risk involved with these trees, it becomes imperative that the flexibility to cut hazard trees is maintained.

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PLANNING 1995

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APRIL 1995

UNIT TYPE/COND	LANDSCAPE CONSIDER-ATION	NO CATEGORY 3 & 4 RESERVE TREES W/I 2 HGTS OF LANDING	NO CATEGORY 3 & 4 RESERVE TREES W/I 2 HGTS OF CORR	NO CATEGORY 3 & 4 RESERVE TREES W/I 2 HGTS CUT TREES	LV GRP FOR SELECTED SNAGS	ASSUME NO DANGER TREES BTW LV GRP	EVERY TREE A DANGER	EXTRA CUT FOR HANGUP
High Mortality/Defect								
Cable	X	X	X	X	X	X	X	
Tractor	X	X		X	X	X	X	
Helicopter	X	X		X	X	X	X	
Mechnical	X	X						
Intermediate Cut in Healthy Stand								
Cable	X	X	X	X				
Tractor	X	X		X				
Helicopter	X	X		X				
Mechnical	X	X						
Light Mark								
Cable	X	X		X				X
Tractor	X	X		X				X
Helicopter	X	X		X				X
Mechnical	X	X						

ID TEAM RESERVE TREE EXPECTATIONS

Landscape Considerations - Consider a larger land area than just the unit when determining needs for snag dependent species. Possibly harvest prescriptions need not be modified to provide for snags/cull trees if there are adequate numbers of them in the surrounding landscape.

Landings and Firelines - Recognize that there probably will be no "reserve trees" remaining (snags/culls that lean toward work areas) within two tree lengths around landings, and near fire lines.

Cable Yarding Units - In cable yarding units (except in light marking prescriptions) recognize that there will be no reserve trees remaining within two tree lengths of the corridors. An exception to this would be where a corridor runs through a leave tree clump where no falling operations would occur.

High Mortality/Defect Stands - In high mortality stands, or stands that are highly defective (cull trees), assume every tree that could create a hazard will be felled. Consider leaving groups of trees at least two tree lengths in radius. Assume, regardless of the intended prescription, that areas between leave islands will essentially be free of danger trees.

Lightly Marked Cut Tree Units - Assume that there will be no reserve trees left within two tree lengths of a tree designated for cutting. This is especially critical for lightly marked cut tree units where the intent is to leave all but the marked trees. An assumption that should be made in lightly marked cut tree units is that for every cut tree there could be another 2-3 trees cut due to hangups.

Mechanical Operations - There is much more flexibility to leave reserve trees in operation areas when mechanical harvesting is allowed (i.e. feller/bunchers, grapple skidders, etc). This minimizes the number of people working in the hazard areas, and they are protected by the cabs.

Minimizing Risk - Recognize that not all hazardous situations can be avoided. For example, there will still be some high risk areas immediately adjacent to clumps of leave trees or strips. The objective is to minimize the risk as much as possible through up front planning.

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CABLE LOGGING

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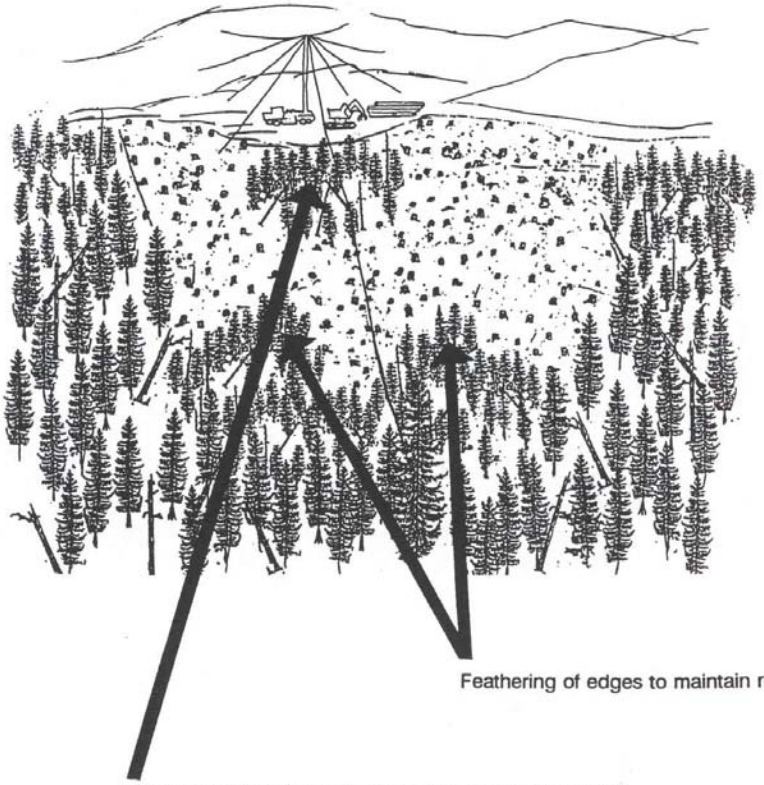
HIGH MORTALITY/HIGH DEFECT STANDS



Feathering of edges to maintain reserve trees.

Group selection of reserve trees. Groups can be yarded through but not within. Trees around the edges and next to cable corridors will need to be assessed on a case-by-case basis.

All types of reserve trees can be left in these groups.

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CABLE LOGGING

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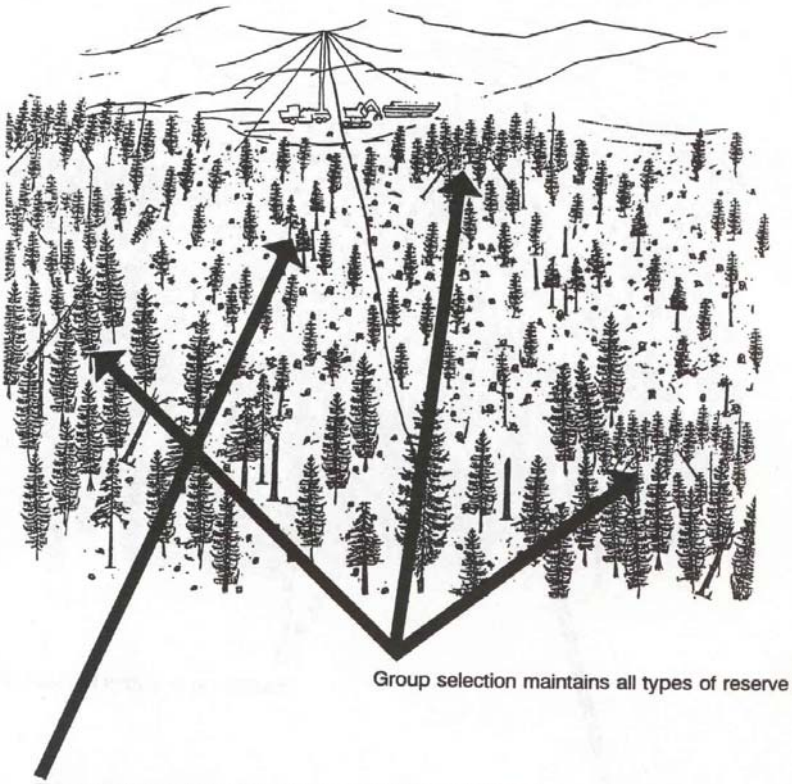
INTERMEDIATE/LIGHT HARVEST



Group selection maintains all types of reserve trees.

Types 1 & 2 reserve trees can generally be maintained individually in harvested areas but need to be assessed on a case-by-case basis.

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TRACTOR LOGGING

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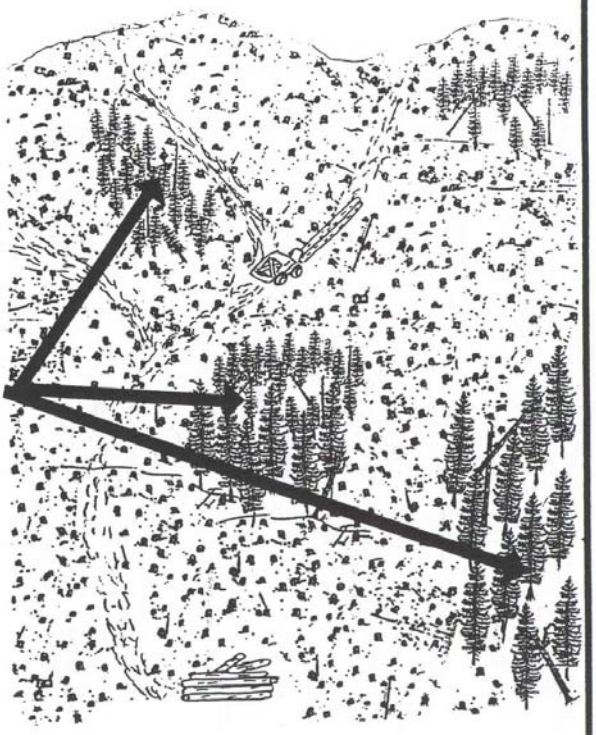
HIGH MORTALITY/HIGH DEFECT STANDS



All types of reserve trees can be maintained in these groups. However, reserve trees on the perimeter of the groups need to be assessed individually by the purchaser.

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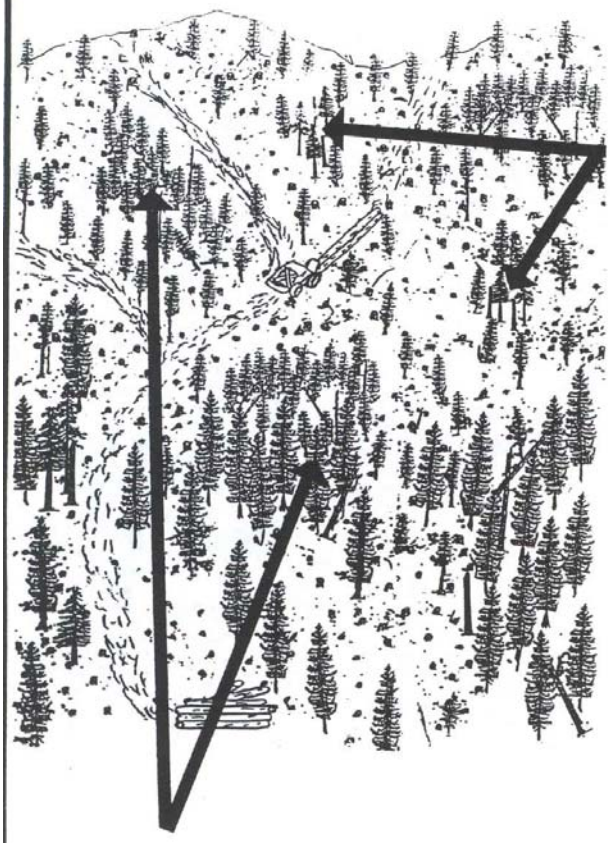
TRACTOR LOGGING 1995

INTERMEDIATE/LIGHT HARVEST



Types 1 & 2 reserve trees can be maintained individually in harvested areas, but need individual assessment by the purchaser.

Group selections maintain all types of reserve trees.

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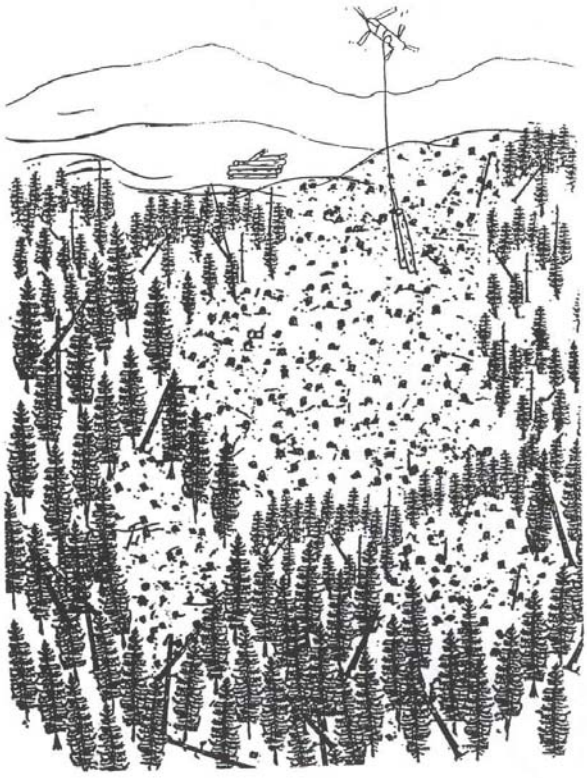
HELICOPTER LOGGING

1995

HIGH MORTALITY/HIGH DEFECT STANDS



Reserve trees maintained in uncut areas only.

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HELICOPTER LOGGING

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INTERMEDIATE/LIGHT HARVEST

Types 1 & 2 reserve trees can be maintained individually in harvested areas but need individual assessment by purchaser.

Reserve trees of all types can be maintained in uncut groups.

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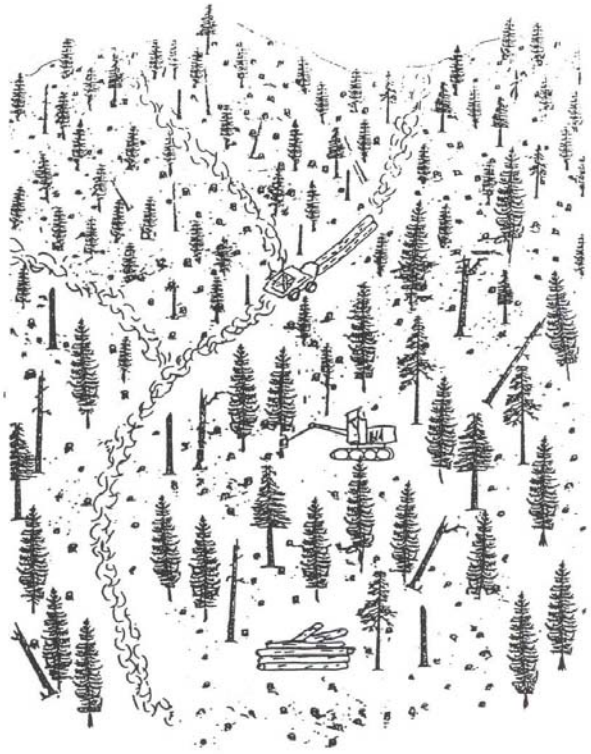
MECHANIZED HARVESTING

1995



The basic philosophy of mechanized harvesting is the majority of reserve trees can be maintained on site due to protection of individuals by equipment canopies.

All types of reserve trees can be left individually, or in groups, in these areas.

ID TEAM GUIDANCE FOR RESERVE TREES

RESERVE TREE IDENTIFICATION CRITERIA 1995

Reserve Tree Types - Conifer Only

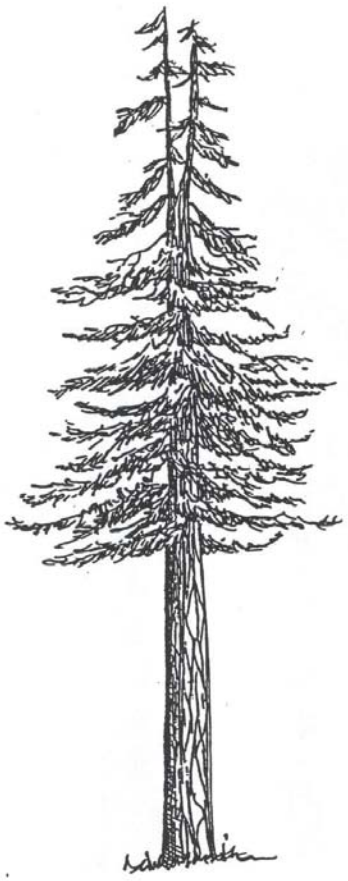


FIGURE 1

Recognizing reserve tree types (those trees planned for retention to meet management objectives) is the first step in identifying potential hazard areas. These definitions are based upon conditions that affect the tree's stability and are visible to an observer on the ground.

They are divided into four classifications, ranging from the safest to the most dangerous. For example, Type 1 trees have low-hazard and low-failure probability, while Type 4 trees have extreme-hazard and extreme-failure probability. Non-defective, healthy green trees are not classified.

Specific defects which could cause failure must be evaluated for each type of reserve tree.

When a reserve tree is questionable, it should be assigned the next higher type.

TYPE 1

Type 1 trees are live trees that are defective or deformed with sound tops, trunks and roots (Figure 1). Type 1 trees are generally not considered "danger trees."

They may have part of the top broken out or have evidence of other defects that include "cat face," animal chewing, old logging wound, weather injury, insect attack, or lightning strike.

Because these trees are stable, they pose the least hazard to workers.

ID TEAM GUIDANCE FOR RESERVE TREES

RESERVE TREE IDENTIFICATION CRITERIA 1995

TYPE 2

Type 2 reserve trees are dead trees with sound tops, trunks, and roots (Figure 2), are reasonably safe to work around and gemerally not considered danger trees. Identifying Type 2 trees requires careful observation.

Mortality may have been caused by diseases, insects, fire, adverse weather or lightning. Douglas-fir, spruce, lodgepole pine and subalpine fir deteriorate rapidly after death. In such species the presence of needle and small twig retention is evidence of recent death, which may be an indicator of stability.

Fire-scorched trees may remain stable for many years if the trunk and root systems are not badly burned.

However, not all fire-scarred trees may be safe. Pre-exisiting defects may be charred and difficult to detect, rendering a tree that was dangerous before the fire even more dangerous afterward.

If the fire burned the root system, it may be damaged, changing it from a Type 2 reserve tree. Of special concern are Douglas-fir stands infected with root rot. Trees infected with root rots have weakened root systems that require a more thorough evaluation.

Another Type 2 tree can be defined as a sound long-standing snag with no evidence of root rot, no lean, and without a top. Frequently, these are western larch, ponderosa pine or western redcedar that have been dead and standing for a period of time.

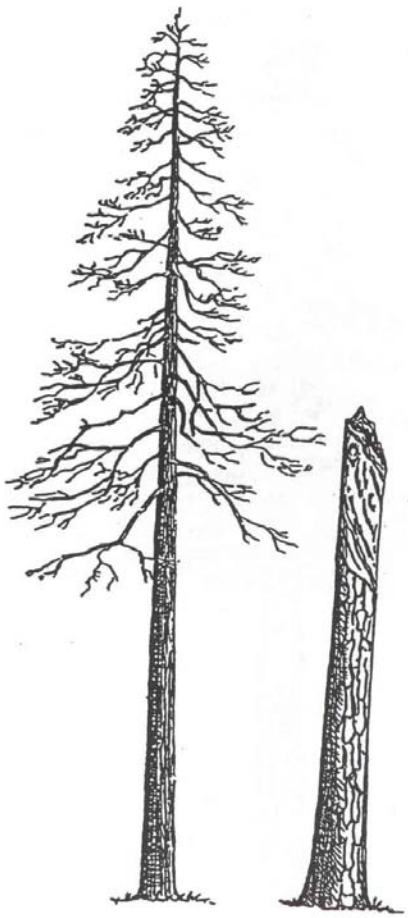


FIGURE 2

ID TEAM GUIDANCE FOR RESERVE TREES

RESERVE TREE IDENTIFICATION CRITERIA 1995

TYPE 3

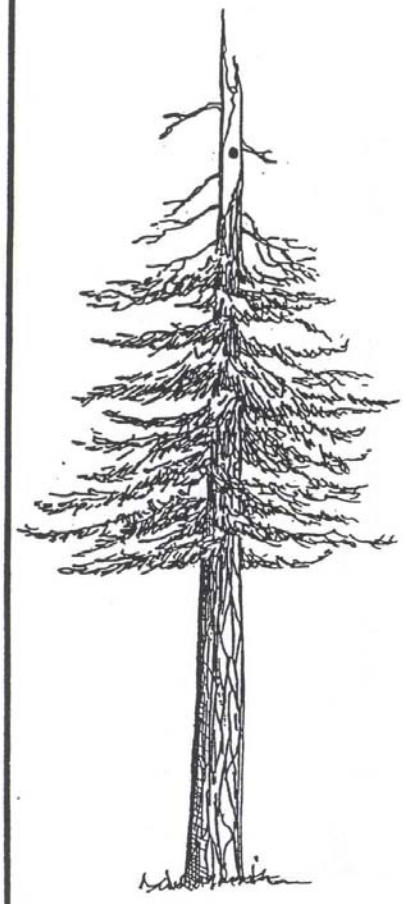


FIGURE 3

Type 3 trees are live or dead trees with broken or unstable tops or upper portions (Figure 3). Western larch with tall "spike tops" that appear unstable fall in this category.

Although the roots and main portions of the trunk are sound, these reserve trees pose high hazard because of defects in live or dead wood higher up in the tree. Ground vibration from falling trees, wind, flying debris, heavy equipment or other harvesting activity can dislodge slabs, chunks, limbs, or the entire upper portion of the tree.

Because these reserve trees do not collapse at the base, but somewhere above, testing the tree at breast height will not give an accurate indication of the tree's condition at a higher location where failures are likely to occur.

The area on the ground that could be reached by a dislodged top or limb is called the "hazard area" for a Type 3 tree. Should forest practices take place within the hazard area the tree must be felled or removed using techniques that minimize employee exposure before felling is commenced.

In determining the hazard area, evaluate the following criteria:

- --slope of the ground;
- --amount and direction of lean; and
- --length of the top portion that would dislodge.

RESERVE TREE IDENTIFICATION CRITERIA 1995

TYPE 4

Type 4 reserve trees are live or dead with unstable trunk or roots, with or without bark (Figure 4). This includes "soft" snags as well as live trees with unstable roots caused by root rot or fire. They are considered the most dangerous type.

Identifying Type 4 trees requires careful consideration. Conks are a good indicator of stem decay which often suggests an unstable trunk. Pockets of root rot can often be determined by the lean or clumping of dead trees. Burned out trunks and/or roots may also suggest severe instablilty..

Short, brokentop dead trees that lack limbs or bark do not necessarily constitute a Type 4 tree, and may be classified as Type 2 (Figure 2) if the trunk and roots appear sound and the species is of a type that remains stable for long periods (larch, ponderosa pine or redcedar).

Unexpected collapse could occur from any portion of the roots or trunk. Testing the snag at breast height will not give an accurate indication of the tree's condition higher up where failures can occur. Type 4 trees must always be considered danger trees.

The hazard area for a Type 4 tree is defined as the area on the ground that could be reached by any portion of the tree that may collapse.

Should forest practices take place within the hazard area the tree must be felled or removed using techniques that minimize employee exposure before felling.

In determining the hazard area, the following criteria must be evaluated:

- –slope of the ground;
- –direction of the lean; and
- –height of the tree.

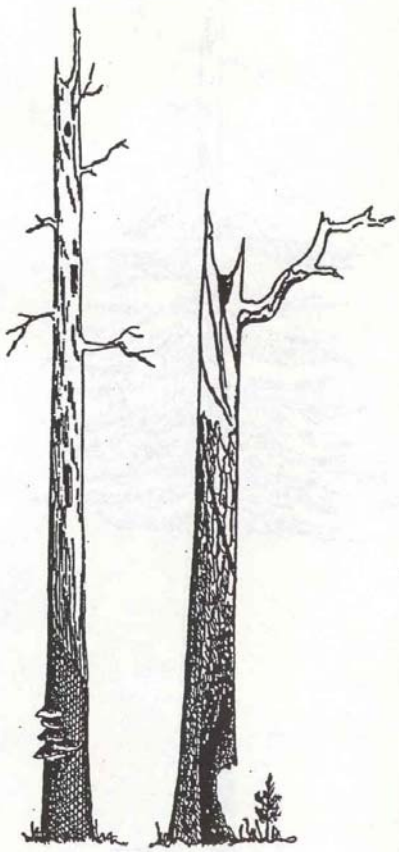


FIGURE 4