Appendix A

STATEMENT OF OBJECTIVES

The intent of this contract is to begin restoring the ponderosa pine forest type to a condition more representative of historic conditions. Currently there are too many trees per acre and more expanses of even-aged stands than were present historically. These conditions have left forests that are susceptible to high intensity stand replacing crown fire and bark beetle infestations. The end result of this contract is to leave a forest that is less susceptible to these risks. The desired outcome is a forest with groups of trees of similar size or age, fewer trees per acre, and openings between groups of trees. The groups and openings will be well distributed across the landscape. This first entry treatment is designed to begin the process of converting these dense, mostly even-aged stands to clumpier, open, uneven-aged stands of trees with a vigorous grass and forb understory.

The restoration will be conducted at a landscape scale, at the least cost to the government, with maximum biomass utilization, and leaving quality results on the ground. The goal is to treat approximately 300,000 acres over the 10 year contract period and to ensure the availability of forest raw materials at a scale resulting in efficiencies that reduces cost to government to as close to zero as feasible.

The area covered under this contract is within the ponderosa pine dominated forests of Northern Arizona. Ponderosa pine is prevalent, but other species are present such as Gambel Oak, Juniper, and Pinyon Pine. More infrequently, species such as aspen, Southwestern White Pine, Douglas-fir, White Fir, and Blue Spruce may occur as individual trees. The Ponderosa Pine dominated forest vegetation community typically occurs with an understory of grasses and forbs although it sometimes includes shrubs.

DESIRED CONDITIONS

The following descriptions refer to the **condition of the treatments areas after all treatments have been completed.** The majority of the treatment areas will be Ponderosa Pine forests but some may occur in mixed conifer forests. Desired conditions are included for both forest types. The desired conditions are based on the existing Forest Plans and are consistent with those plans. The Kaibab, Coconino, and Apache-Sitgreaves National Forests are in the process of revising their Forest Plans. The Tonto National Forest is scheduled to start their revision in about 3 years. These revisions may result in a change to the desired conditions. If that occurs, the contract would be modified accordingly. **Photos of representative desired conditions are included in appendix E.** We will be **conducting a pre-bid meeting in June (See Section L for details)** to visit sites in both forest types that would show a range of conditions to be treated.

Ranges of values presented in desired conditions account for the natural variation in the composition and structure of a forest. Desired conditions may differ within a vegetation type due to variability in soils, elevation, or aspect. It may also be desirable to have different desired conditions within a vegetation type, such as a lower density of vegetation in the wildland urban

interface (WUI) than outside of the WUI to achieve the desired fire behavior near private property and human occupancy. Any variation from the general conditions described below will be clearly identified in a task order.

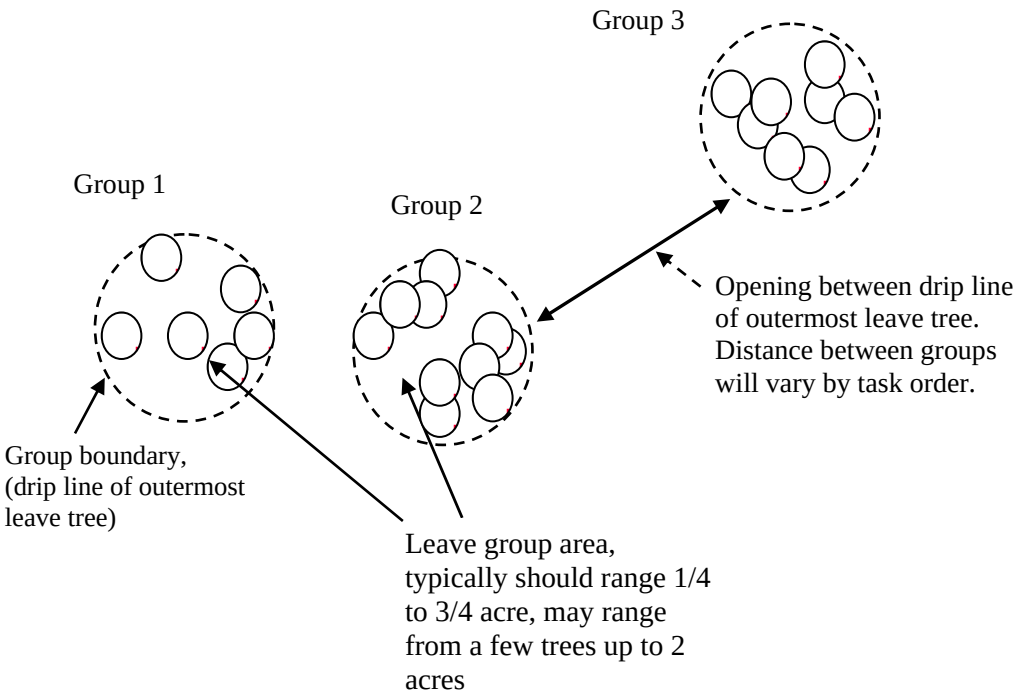
After treatments, the Forest Service will determine if a contractor has met the desired conditions by visual methods of determining:

- Remaining trees per acre
- Amount of Coarse Woody Debris (see Appendix E for sample photos of coarse woody debris)
- Size and distribution of groups

These descriptions apply at what we call a mid-scale, between 100 and 1,000 acres. This doesn't mean that every acre meets the description below, but a treatment unit, or combination of treatment units, meets these conditions.

The following figure graphically displays how groups of trees are envisioned to be arranged after treatment under this contract.

Figure 1 – Desired spatial arrangement of leave groups



Ponderosa Pine

The ponderosa pine forest vegetation community is dominated by ponderosa pine and commonly includes other species such as oak, juniper, and pinyon. More infrequently species such as aspen, Douglas-fir, white fir, and blue spruce may be present, and occur as individual trees. This forest vegetation community typically occurs with an understory of grasses and forbs although it sometimes includes shrubs.

The ponderosa pine forest vegetation community is a composed of trees from structural stages ranging from young to old. Forest appearance is variable but generally uneven-aged and open; occasional areas of even-aged structure are present. The forest arrangement is in individual trees, small clumps, and groups of trees interspersed within variably-sized openings of grass/forbs/shrubs vegetation associations similar to historic patterns.

Openings typically range from 10 percent in more productive sites to 70 percent in the less productive sites. The size, shape, number of trees per group, and number of groups per area are variable across the landscape. Denser tree conditions exist in some locations such as north facing slopes and canyon bottoms. Tree groups are between ¼ and 2 acres (typically ¼ to ¾ acres) in size with openings between groups. Groups at the mid-aged to old stages consist of 2 to approximately 40 trees per group.

While the ponderosa pine forest vegetation community is composed predominantly of vigorous trees, declining trees are a component and provide for snags, top-killed, lightning- and fire-scarred trees, and coarse woody debris (>3 inch diameter), all well-distributed throughout the landscape. Ponderosa pine snags are typically 18 inches or greater at DBH and average 1 to 2 snags per acre. Where oak is present, large oak snags (>10 inches) are a well-distributed component. All snags not identified by the Contractor as a safety hazard shall be retained unless otherwise agreed to by the COR. Downed logs (>12 inches at mid-point, >8 feet long) average 3 logs per acre within the treatment unit.

To maintain soil productivity and general ecological integrity, coarse woody debris (CWD) shall be maintained across the project area. Coarse woody debris is defined as pieces of wood greater than 3” at the small end. The current Forest Plans call for 3-5 tons per acre of CWD to be retained following treatment. If there is more than 5 tons per before the treatment, the contractor shall remove all the material created by the treatment, but not the material that already exists, unless directed otherwise. in which this case, a minimum of 3 tons per acre shall be left. Following treatment there shall be few, if any, slash piles left for disposal by the Forest Service.

Forest conditions in goshawk post-fledging family areas (PFAs) are similar to general forest conditions except these forests contain 10 to 20 percent higher basal area in the mid-aged to old tree groups than goshawk foraging areas and the general forest. Goshawk nest areas have forest conditions that are multi-aged but are dominated by large trees with relatively dense canopies. In goshawk foraging areas and post fledging areas (PFAs), groups of 3-5 reserve trees shall be retained within management-created openings greater than 1 acre in ponderosa pine except where the strong potential for wind-throw prevents the possibility of viable reserve trees, or

insect and/or disease prevent the eventual development of regeneration into large trees. Approximately 5% of the area is within PFAs.

Dry Mixed Conifer

Dry mixed-conifer forests are dominated by mainly shade intolerant trees such as ponderosa pine, southwestern white pine, limber pine, quaking aspen, and Gambel oak, with a lesser presence of shade tolerant species such as white fir and blue spruce. Douglas-fir is common. Aspen may occur as individual trees or small groups. This forest vegetation community typically occurs with an understory of grasses, forbs, and shrubs.

The dry mixed conifer forest is composed of trees from structural stages ranging from young to old. Forest appearance is variable but generally uneven-aged and open; occasional areas of even-aged structure are present. The forest arrangement is in individual trees, small clumps, and groups of trees interspersed within variably-sized openings of grass/forbs/shrubs vegetation associations similar to historic patterns.

Openings typically range from 10 percent in more productive sites to 50 percent in the less productive sites. The size, shape, number of trees per group, and number of groups per area are variable across the landscape. Denser tree conditions exist in some locations such as north facing slopes and canyon bottoms. Tree groups are between ¼ and 2 acres (typically ¼ to ¾ acres) in size with openings between groups. Groups at the mid-aged to old stages consist of 2 to approximately 40 trees per group.

The dry mixed conifer forest vegetation community is composed predominantly of vigorous trees, but declining trees are a component and provide for snags, top-killed, lightning- and fire-scarred trees, and coarse woody debris (>3 inch diameter), all well-distributed throughout the landscape. Snags are typically 18 inches or greater at DBH and average 3 per acre. Downed logs (>12 inch diameter at mid-point, >8 feet long) average 5 per acre within the forested area of the landscape.

To maintain soil productivity and general ecological integrity, coarse woody debris (CWD) must be maintained across the project area. Coarse woody debris is defined as pieces of wood greater than 3” at the small end. In dry mixed conifer forest, our current Forest Plans call for 10-15 tons per acre of CWD to be retained following treatment. Revisions over the next couple of years may change this number but it will likely be to allow leaving more material, not less. If there is more than 15 tons per before the treatment, the contractor shall remove all the material created by the treatment, but not the material that already exists, unless they want the additional material. In this case, a minimum of 10 tons per acre shall be left. If there is not currently 15 tons per acre, the contractor shall remove anything over 15 tons per acre. Following treatment, few if any, slash piles would be left for disposal by the Forest Service.

Trees typically occur in irregularly shaped groups and are variably-spaced with some tight clumps. Crowns of trees within the mid-aged to old groups are interlocking or nearly interlocking. Openings surrounding tree groups are variably-shaped and comprised of a grass/forb/shrub mix. Some openings contain individual trees. Trees within groups are of similar

or variable ages and contain a variety of species. Tree groups are between ¼ and 2 acres (typically ¼ to ¾ acres) in size with openings between groups. Groups at the mid-aged to old stages consist of 2 to approximately 40 trees per group.

EXAMPLE SPECIFICATIONS FOR PERFORMANCE WORK STATEMENTS

The specifications listed below are the standard specifications the Forest Service uses for these specific work items. These are provided as examples for you to consider when completing your performance work statements.

Precommercial Thinning

This class of material will be designated to be cut or left, by prescription or with Forest Service tracer paint when the product material has been designated (usually down to 5" dbh).

In the case of "Designation by Prescription", the Forest Service will supply the contractor with cutting guidelines and may sample mark up to 5 acres. The cutting guidance will include instruction on leave tree spacing, arrangement and the types of trees that must be cut. The operator will work through the sample mark then proceed to cut the remainder of the unit with or without non-tracer paint marking at the expense of the contractor.

Precommercial thinning will reduce crown density, raise crown base height and reduce crown fire potential. The intent is to leave variable spaced groups and clumps of healthy trees. Cutting guidelines will vary between task orders due to varying site conditions, including insect and disease processes.

Other Requirements:

1. Cut trees shall be completely severed. Cutting shall be below the lowest live limb unless prevented by natural obstacles.
2. Stump height shall not exceed 6 inches in height on the uphill side unless cutting is obstructed by natural obstacles. Stumps shall be horizontal as possible to avoid sharp spikes. Product materials require a 12" stump height maximum (see Appendix B).
3. Cut trees shall be cleared away from unit boundaries, roads, telephone lines, established trails, stock driveways, fence lines, established land corners, stream or watercourses by a prescribed distance. Each task order will provide specific guidance.
4. No cut trees shall be permitted to suspend above the ground by a leave tree.
5. If operations cause damage to any posted monuments, fences or other improvements the COR will be notified immediately. Contractor will be responsible for restoration or replacement cost. Each task order will provide a map of these improvements to protect.
6. Operations will be conducted to avoid damage to leave trees and other resources.
7. Special mitigation will be employed between January and May to suppress bark beetle activity namely a 30 day requirement to treat or remove fresh-cut vegetation.

Felling Damaged Trees

Damaged or destroyed trees are all trees which are over 3 feet in height that are knocked down or damaged to the extent that mortality or serious deterioration will occur, and such trees partially pushed over so as to result in permanent lean and visible damage to the root system, all as a result of the Contractor's operation. Such damaged or destroyed trees shall be felled and further treated by the slash treatment method specified in the Task Order. Materials of merchantable species meeting the minimum piece specifications of would be removed and utilized by the Contractor.

Slash Treatments

In the case that all slash (residue or biomass) is not skidded to approved landings and removed, vegetative biomass larger than 1 inch in diameter and 3 feet long resulting from Contractor's operations in the cutting of green trees is created fuel (slash), and must be treated according to Task Order specifications or accepted method proposed by offeror.

Snags (if they are required to be felled) and dead and down woody material larger than 3" in diameter and 4 feet long existing on the site prior to Contractor's operations are existing slash.

Task order unit information will describe what slash treatments are to be done, and whether the treatment is to include created slash, existing slash, or both. Any variations in the slash disposal methods listed below will be described in the Task Order information. The information to be filled in the general descriptions below will be described in the Task Order information.

By agreement in writing, certain slash may be left for fuel wood. When the specified treatment is by a combination of methods, slash not treated by one of the methods shall be treated by the other(s).

Slash treatment along roads shall be accomplished without affecting the proper functioning of channels leading to and from drainage structures.

Material meeting utilization specifications, Appendix B, Division A, accumulated at landings and disposal sites shall be decked and removed by Contractor. Other slash accumulated at landings and disposal sites shall be kept separate from merchantable material and treated by the method described in Task Order information.

All vegetative debris (residue or slash) associated with construction of temporary roads construction such as unutilized timber, brush and grubbed stumps is construction slash. Measures to be taken by Contractor for treatment of construction slash will be described in specific task orders as part of the road work.

Forest Service and Contractor shall jointly develop a schedule for completion of slash treatment on the various portions of the Project Area prior to Contractor's Operations. Slash treatment plan may be made a part of the annual operating plan.

General descriptions of slash treatment measures that may be taken by Contractor for treatment of created slash are set forth below. This is not an all inclusive list of alternatives.

Chipping

Chipping work consist of altering the structure of activity or residual slash that has been lopped, bucked and scattered, hand piled, or machine piled. In the chipping process slash is forced through a chipping machine, reducing the larger pieces of slash to small chips that are spread over the site to be burned at a later date, left on site to naturally decompose, or transported of the site. The following specifications shall be followed in a chipping operation:

(a) Contractor shall use an approved chipping machine to chip slash 10 feet in length.
  (1) Chipping from a landing site shall be done by a commercial chipper
  (2) Scattered chips throughout an area shall be done by a chipper that can easily be towed that will not cause resource damage.
(b) Slash specified in the task order up to 10 inches in diameter shall be processed through a chipping machine.
(c) Chips shall be scattered to a loose depth less than 1 inch, unless specified.
(d) Chips shall be spread on bare soil and rocks. Chips spread in understory vegetation are acceptable if there are no areas of bare soil or rocks and approved with the task order.
(e) Chips shall not be spread under trees crowns where possible and never allowed to lie against tree boles.
(f) Contractor shall not spread chips to the extent that the understory is matted down, suppressing grasses and forbs.

Removal of slash

This method removes slash to a designated landing where it will be disposed of there or transported off the National Forest. This method of treatment, in conjunction with dozer piling, is common when whole tree yarding is conducted because the tops and limbs are removed to a designated landing, attached to the Product.

Logging Slash shall be moved or hauled off the National Forest, or to approved locations shown on Project Area Map and designated on the ground where it shall be piled.

Short-bucking

This method is used as an alternative to piling, where piling of green slash is not acceptable due to risk of bark beetle brood creation. All cut coniferous boles over 4” small-end diameter that will not be removed from the contract area, or chipped or buried, shall be bucked to a maximum length of 16”, and the resulting pieces shall be scattered apart to receive full sunlight.

Note: May be required in combination with lop and scatter to mitigate bark beetle issues.

Hand piling

Slash to be piled generally constitutes material from 1 inch diameter up to and including 9 inches in diameter. There may be some units where larger slash may need to be piled. All of the following apply for hand piling:

(a) All activity slash created by thinning operation exceeding 1 foot in length will be piled.

(b) Piles shall be constructed by hand to facilitate full consumption when they are burned.

(c) All piles shall be built and compacted by laying limbs, stems, cut boles, and other slash so there are no air spaces. Each pile shall include an area of kindling for prompt ignition and to aid in combustion of larger slash. These fuels shall be placed in the center or bottom of the pile. The piles will be constructed so that they will burn after a snow event or rainstorm.

(d) Specifications on size of piling slash will be provided in the Detailed Information Sheet.

(e) As a minimum all slash shall be bucked to the pile diameter.

(f) The minimum pile size will be 6 feet high and 7 feet in diameter. The pile diameter will be symmetrical to each side, in a circle shape. The minimum distance between piles will be the pile height. Measurement is taken at the bottom of the pile for pile size and distance. The maximum size of the piles will be determined by the opening dimension of the residual forest canopy and tree susceptibility to crown scorch or mortality.

(g) All material will be contained within the general contour of the pile and any material protruding out 2 feet or more will be sawed off and placed back on the pile.

(h) The government may designate maximum, minimum, or both pile sizes when it determines this is required to meet resource objectives.

(i) The piles will be constructed so that there will be a break in residual slash around the pile of at least 10 feet. This is needed to protect wildlife features such as logs. This is also needed to prevent fire from spreading when piles are burned.

(j) Piles shall be located so that burning will not damage standing live trees or physical improvements such as fences, poles, buildings, signs, tables, grills or cattle-guards.

(k) Piles shall not be located on roads, bearing survey markers, in drainage ditches, or within stream-courses

(l) On the south and west side of yellow bark trees, yellow pines, larger than 16" dbh, piles will not be constructed within 25 feet of the tree.

(m) Piles will be located outside the drip-line of trees where possible. Forest canopy openings will be utilized for acceptable piling areas.

(n) The following is a list of preferred pile placements that the contractor will follow:

a. Outside of the drip-line of trees on the south west side of an opening.

b. In the center of large openings.

c. Outside of the drip-line of trees on the downhill to middle of an opening on a slope.

Note: Handpiling is used only sparingly where machines cannot operate or pose a safety issue. Often used on steep pitches, within WUI's, or adjacent to streams.

Machine piling

Machine piling refers to Dozer piling and/or Grapple piling. All machines for piling of slash shall follow these provisions:

(a) All activity slash created by thinning operation exceeding 2 foot in length shall be piled.

(b) Piles shall be constructed by machine to facilitate full consumption when they are burned.

(c) Machine piles shall be compacted by pushing slash from all sides towards the center of the pile or stacking slash to avoid air pockets in the center. The piles will be constructed so that they will burn after a snow event or rainstorm.

(d) Piling shall be accomplished in a manner that will prevent the accumulation of dirt in the piles.

(e) Specifications on size of piling slash will be provided in the Detailed Information Sheet.

(f) As a minimum all slash shall be bucked to the pile diameter.

(g) The minimum pile size will be 8 feet high and 9 feet in diameter. The pile diameter will be symmetrical to each side in a circle shape. Measurement is taken at the bottom of the pile for pile size and distance. The maximum size of the piles will be determined by tree canopy opening size and tree susceptibility to crown scorch or mortality.

(h) A machine pile will not exceed a diameter of 25 feet and pile height shall not be less than one-third the average diameter of the pile.

(i) The government may designate in detailed information sheet maximum, minimum, or both pile sizes when it determines this is required to meet resource objectives.

(j) All material will be contained within the general contour of the pile and slash which protrudes 4-feet or more from outer edge of the pile shall be bucked off and placed in the pile. The 4 feet of non compacted pile will not count in pile height.

Machine Pile Placement:

(a) The minimum distance between piles shall be the pile height.

(b) If conditions make it impractical to locate piles where damage to live trees and physical improvements can't be avoided, a space may be cleared in a location designated and agreed to by the Government or constructed adjacent to less desirable, smaller trees.

(c) It shall be the government's discretion if the contractor's pile placement is unacceptable. A pile shall be relocated, consolidated or a space shall be cleared to prevent residual tree mortality.

(d) The piles will be constructed so that there will be a break in continuous fuels around the pile of at least 10 feet. This shall be done to prevent fire from spreading and protecting wildlife features, such as logs, when piles are burned.

(e) Piles shall not be located on roads, bearing survey markers, in drainage ditches, or within stream-courses.

(f) Piles shall not be constructed within 20 feet of unit boundaries.

(g) On the south and west side of yellow bark trees, yellow pines larger than 16" dbh and 16" dbh oak, piles will not be constructed within 35 feet of the tree.

(h) Piles will be located 10 feet outside the drip-line of trees where possible. Forest/stand canopy openings will be utilized for acceptable piling areas.

(i) The following is a list of preferred pile placement that the contractor will follow:

(1) Outside of the drip-line of trees on the south west side of an opening.

(2) In large openings, close to the center to guarantee zero mortality

(3) On a slope, outside of the drip-line of trees on the downhill to middle of an opening. .

Machine piling and lopping

Concentrations of slash marked on the ground by the Forest Service shall be machine piled by a tractor equipped with a brush rake as per Machine Piling Specifications. The remaining slash, not in concentrations, shall be lopped and scattered as per specification for "Lopping."

Acceptable Equipment.

(a) Piling will be accomplished with a crawler tractor not to exceed overall width of 10 feet (crawler tractors will not be larger than a D-6 and the work can typically be accomplished using a tractor size comparable to a John Deere 450).
(b) Tractor will be equipped with a brush blade having teeth extending a minimum of 11 inches below the frame.
(c) The teeth shall number at least 8 and no more than 14. The teeth shall be of sufficient strength so that they shall not bend or break through normal slash piling.
(d) Other types of machines to aid in piling operation will not be required. If the contractor strives to use other equipment, such as forwarders, grapplers, ect., clearance from the Contracting Officer would need to be obtained by the contractor.

Location of Piles. Landings, temporary roads, and natural openings shall be utilized so that piles are located such that burning will not damage standing live trees, leave snags, or physical improvements such as fences, utility lines and poles, buildings, signs, tables, grills, and cattle guards or other improvements. The minimum spacing between piles shall be equivalent to one and one-half the diameter of the adjacent pile. If conditions make it impractical to locate piles where damage to live trees and physical improvements can be avoided, a space shall be cleared in a location designated by Forest Service. Slash within partial cut areas and road construction clearings shall be moved to take advantage of previously constructed or natural clearings in order to minimize the construction of new clearings. Slash shall not be moved more than 120 feet to achieve the location requirement. Piles shall not be made on permanent roads. The minimum allowable distance of location of piles from the high water marks of live streams, intermittent or ephemeral stream courses, or drainage ditches is:

75 feet on low erosion potential areas – identified in Unit Information.
150 feet on mod/high erosion potential areas – identified in Unit Information.

Construction of Piles. Machine piles shall be compacted by pushing slash from all sides towards the center of the pile. A machine pile will not exceed an average diameter of 25 feet and pile height shall not be less than one-third the average diameter of the pile. All slash which protrudes 4 feet or more from outer edge of the pile shall be bucked off and placed on the pile. Piling shall be accomplished in a manner that will prevent the accumulation of dirt in the piles.

Logs and tops from felled trees within leave groups of trees inside or outside the cutting unit shall be yarded out of such leave groups to approved locations and piled. Where there is danger of damaging leave trees, long material shall be end lined out of leave tree groups.

Landing piling

Landing Piling occurs with whole tree logging where residue accumulates at a landing. Construction and location of residue piles will be in accordance with Machine Piling Specifications.

Grapple piling

This contract includes projects that require the services of a tracked hydraulic excavator to perform grapple piling of slash. The work consists of using a grapple on a hydraulic excavator to "lift and pile" activity slash. Grapples generally create taller and well stacked piles that will shed snow and will provide better combustion. The following provisions will be followed when grapple piling:

(a) Piling will be accomplished with a hydraulic excavator which shall meet the following requirements:
  (1) The machine must have a minimum reach of at least 10 feet from center of machine to perform the work described in the scope of the contract.
  (2) Sufficient size, weight, and horsepower to provide safe and efficient operation.
  (3) Must have sufficient horsepower to have the ability to move logs up to 40-inch diameter and 30 feet in length when logs obstruct travel routes within the unit.
  (4) Track-type undercarriage
  (5) Shall be capable of working on slopes up to 30 percent.
  (6) Shall be equipped with a hydraulic attachment mechanism of not less than 36 inches in width capable of constructing piles that are compact and free of dirt and rocks. Equipment must be equipped with a grapple and not a bucket with thumb.
  (7) Cannot exceed ground pressure of 6 pounds per square inch.
  (8) Acceptable equipment shall have the ability to lift and pile slash with a minimal amount of soil disturbance, while avoiding picking up dirt.

(b) All Standards and Requirements in Machine piling apply in grapple piling operations.

(c) The Contractor may substitute, during the course of the contract, a like piece of equipment, provided that the substitute equipment meets specifications and requirements and provided that such equipment is made available for substitution at no cost to the Government and is cleared by the Contracting Officer. (See note below)

(d) Equipment shall operate on surfaces that will not expose additional soil by operations. Unnecessary abrupt turns that cause soil damage shall be avoided. Contractor shall be responsible for damages due to negligence.

Note: Grapple piling is a common practice near residential homes or where landings are becoming choked from whole tree operations. Modifications of this technique using grapple skidders may be acceptable.

Scattering

Contractor shall remove all slash greater than _2_ inches in diameter and/or _3_ feet long, a minimum of _5__ feet away from each leave tree _5__ inches dbh and larger. Slash shall be placed upslope from, or along the upslope from, or along the contour from, leave trees. Slash shall not be placed down slope from leave trees.

Lopping

Slash shall be treated by limbing or severing, or both, and scattered as necessary to place slash within __3_ feet of the ground over entire area of cutting unit. Occasional slash which exceeds the maximum height, not to exceed 5 percent of slash to be lopped and scattered, is acceptable. When agreed in writing between Contractor and Forest Service, crushing or chopping with mechanized equipment is permissible, where residual trees will not be excessively damaged and ground conditions are suitable.

Note: Harvesting with precommercial thinning followed by lopping and scattering is a common practice associated with whole tree or tree/log length skidding under light to moderate slash conditions outside designated WUIs.

Pullback

Used for cases where some slash or woody materials (like loop and scatter) will be left on-site, to reduce fire danger to specific resources when broadcast burned later. Location of slash will be a minimum of _5_ feet away from boundaries, drainages, private lands, roads, fences, utilities, burner trench edges, trees over _5_"DBH/DRC, and other improvements or resources as specified.

Crushing

Mastication work consist of altering the structure of activity or residual slash that is standing(live or dead), has been loped, bucked and scattered, hand piled, or machine piled. The mastication process shall reduce larger pieces of slash to broken up material that is spread over the site to be burned at a later date, left on site to naturally decompose, or transported off the site. The following specifications shall be followed in a mastication operation:

(a) Mastication will be accomplished with a machine which shall meet the following requirements:
    (1) Ground pressure shall not exceed a maximum of 7.5 psi.
    (2) Machine width maximum shall not exceed 12 feet.
    (3) Machine shall be equipped with a masticating or mulching head. The machine must have a boom capable of reaching at least 10 feet from center of machine to perform the work described in the scope of the contract.
(b) All slash and other vegetative debris shall meet the following specifications:
    (1) No vegetative slash or debris shall be more than 8 inches deep as measured from the

ground level.
(2) No individual pieces of slash or vegetative debris shall be greater than 4 feet in length.
(3) All boles or pieces up to 10 inches in diameter shall be masticated.
(4) All cut vegetation shall be kept within unit boundaries. Any cut vegetation falling into ditches, roads, road banks, trails or adjacent units shall immediately be removed.
(5) Specified brush, saplings or seedlings within the work areas shall be masticated to within 2' of leave trees without damage to the leave trees.
(6) No masticated or cut material shall lean against or be suspended by a leave tree.

Mastication

Mastication work consist of altering the structure of activity or residual slash that is standing (live or dead), has been loped, bucked and scattered, hand piled, or machine piled. The mastication process shall reduce larger pieces of slash to broken up material that is spread over the site to be burned at a later date, left on site to naturally decompose, or transported off the site. The following specifications shall be followed in a mastication operation:

(a) Mastication will be accomplished with a machine which shall meet the following requirements:
(1) Ground pressure shall not exceed a maximum of 7.5 psi.
(2) Machine width maximum shall not exceed 12 feet.
(3) Machine shall be equipped with a masticating or mulching head. The machine must have a boom capable of reaching at least 10 feet from center of machine to perform the work described in the scope of the contract.
(b) All slash and other vegetative debris shall meet the following specifications:
(1) No vegetative slash or debris shall be more than 8 inches deep as measured from the ground level.
(2) No individual pieces of slash or vegetative debris shall be greater than 4 feet in length.
(3) All boles or pieces up to 10 inches in diameter shall be masticated.
(4) All cut vegetation shall be kept within unit boundaries. Any cut vegetation falling into ditches, roads, road banks, trails or adjacent units shall immediately be removed.
(5) Specified brush, saplings or seedlings within the work areas shall be masticated to within 2' of leave trees without damage to the leave trees.
(6) No masticated or cut material shall lean against or be suspended by a leave tree.

Note: This is a common practice where slash is moderate to heavy. Mastication may not be allowed where residential homes are adjacent to the treatment areas.