

# INDIAN FOREST MANAGEMENT HANDBOOK

**53 IAM 5-H**



# FOREST DEVELOPMENT

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**CHAPTER 1. INTRODUCTION**

**1.1 General.** Forest Development (FD) is that segment of the Forestry program that addresses the improvement of the commercial forest resource. Specifically, FD is described in 25 CFR § 163.32 as follows:

*“Forest development pertains to forest land management activities undertaken to improve the sustainable productivity of commercial Indian forest land. The program shall consist of reforestation, timber stand improvement projects, and related investments to enhance productivity of commercial forest land with emphasis on accomplishing on-the-ground projects. Forest development funds will be used to re-establish, maintain, and/or improve growth of commercial timber species and control stocking levels on commercial forest land. Forest development activities will be planned and executed using benefit-cost analyses as one of the determinants in establishing priorities for project funding.”*

**1.2 Purpose.** This *Handbook Volume* is designed to provide broad national-level guidance on procedures and processes necessary to prepare, administer, and report on FD projects on Indian forest lands. For additional guidance on statutory, regulatory, and policy requirements, the user should refer to 25 CFR Part 163, General Forestry Regulations; and 53 IAM Chapter 5, Forest Development. Additional guidance on specific FD practices and procedures, such as regional handbooks and policy memoranda, as well as agency/tribal guidelines and directives may also be available.

**1.3 Policy.** It is the policy of the Bureau of Indian Affairs that the overall direction for the FD program shall be incorporated into the approved Forest Management Plan (FMP) or the forest management section of the approved Integrated Resources Management Plan (IRMP). An FD Plan shall be developed from which all FD projects are planned and implemented. FD projects and activities on Indian lands shall have tribal/individual Indian owner input and tribal approval. Non-recurring FD funds will only be used for the improvement or enhancement of identified FD inventory needs (as reported) utilizing appropriate silvicultural treatments. FD activities shall be planned and executed with emphasis on accomplishing on-the-ground projects using benefit-cost analyses as one of the determinants in establishing priorities for project funding. Reforestation immediately after a timber sale is not an approved use of Non-Recurring FD funds<sup>1/</sup> FD inventory needs will be kept current and up-dated on an annual basis.

**1.4 Scope.** This *Handbook Volume* deals with the practices and procedures of the FD program on Indian lands. It is meant to give the user a broad national perspective on the BIA FD program. More site specific guidance may be available from regional, agency, and/or tribal offices. Regardless of the means of program execution, the appropriate Federal official shall assure that the practices and procedures prescribed herein are followed. Compact tribes may not be required (refer to the tribe’s compact) to abide by the practices and procedures contained in this *Handbook Volume*, but may use it as a guiding document in the performance of their FD projects.

**1.5 List of Acronyms.**

<b>B/C</b>	Benefit/Cost	<b>FP</b>	Forestry Project (project funds held by OST)
<b>BIA</b>	Bureau of Indian Affairs	<b>FR</b>	Federal Register
<b>BIAM</b>	Bureau of Indian Affairs Manual	<b>FRCC</b>	Fire Regime Condition Class
<b>CatEx</b>	Categorical Exclusion	<b>FS</b>	U.S. Forest Service
<b>CFR</b>	Code of Federal Regulations	<b>GPS</b>	Global Positions System
<b>CFSI</b>	Commercial Forest Stand Improvement	<b>HFR</b>	Hazardous Fuel Reduction
<b>DOI</b>	Department of Interior	<b>IAM</b>	Indian Affairs Manual
<b>EA</b>	Environmental Assessment	<b>IFLAA</b>	Indian Forest Land Assistance Account
<b>EIS</b>	Environmental Impact Statement	<b>IRMP</b>	Integrated Resource Management Plan
<b>EPA</b>	Environmental Protection Agency	<b>NEPA</b>	National Environmental Policy Act
<b>ESA</b>	Endangered Species Act	<b>NFP</b>	National Fire Plan
<b>FD</b>	Forest Development	<b>NIFC</b>	National Interagency Fire Center
<b>FHP</b>	Forest Health Protection	<b>OST</b>	Office of the Special Trustee

<sup>1/</sup> Refer to Chapter 3.5 of this *Handbook Volume* for more discussion on approved use of Non-Recurring FD funds.

<b>FIFRA</b>	Federal Insecticide, Fungicide, and Rodenticide Act	<b>PCT</b>	Precommercial Thinning
<b>FIREMON</b>	Fire Effects Monitoring and Inventory System	<b>TFAS</b>	Trust Fund Accounting System
<b>FMD</b>	Forest Management Deduction	<b>TPA</b>	Tribal Priority Allocation
<b>FMP</b>	Forest Management Plan	<b>U.S.C.</b>	United States Code
<b>FONSI</b>	Finding of No Significant Impact	<b>WUI</b>	Wildland Urban Interface

**1.6 Terminology.** The following terms have been included to assist in working with this volume of the Handbook. Terminology should be used consistently at all locations to maintain clarity when planning projects and reporting accomplishments.

- A. Beneficial Owner.** An individual or entity who holds an ownership interest in Indian land.<sup>2/</sup>
- B. Commercial Forest Land.** Forest land that is producing or capable of producing crops of marketable forest products and is administratively available for intensive management and sustained production.<sup>2/</sup>
- C. Fire Condition Class.**<sup>3/</sup> Based on coarse scale national data, Fire Condition Classes measure general wildfire risk as follows:

- **Condition Class 1** - For the most part, fire regimes in this Fire Condition Class are within historical ranges. Vegetation composition and structure are intact. Thus, the risk of losing key ecosystem components from the occurrence of fire remains relatively low.
- **Condition Class 2** - Fire regimes on these lands have been moderately altered from their historical range by either increased or decreased fire frequency. A moderate risk of losing key ecosystem components has been identified on these lands.
- **Condition Class 3** - Fire regimes on these lands have been significantly altered from their historical fire return interval. The risk of losing key ecosystem components from fire is high. Fire frequencies have departed from historical ranges by multiple return intervals. Vegetation composition, structure and diversity have been significantly altered. Consequently, these lands verge on the greatest risk of ecological collapse.

**D. Fire Regime.**<sup>3/</sup> A generalized description of the role fire plays in an ecosystem. It is characterized by fire frequency, predictability, seasonality, intensity, duration, scale (patch size), as well as regularity or variability. Five combinations of fire frequency, expressed as fire return interval in fire severity, are defined:

- **Groups I and II** include fire return intervals in the 0 - 35 year range. Group I includes ponderosa pine, other long needle pine species, and dry site Douglas fir. Group II includes the drier grassland types, tall grass prairie, and some Pacific chaparral ecosystems.
- **Groups III and IV** include fire return intervals in the 35-100+ year range. Group III includes the interior mixed fire regime including wet Douglas fir habitat types, woodlands, Bosque, and dry site shrub communities such as sagebrush and chaparral ecosystems. Group IV includes lodgepole pine and jack pine.
- **Group V** is the long interval (infrequent), stand replacement fire regime and includes temperate rain forest, boreal forest, and high elevation conifer species.

**E. Forest or Forest Land.** An ecosystem at least one acre in size, including timberland and woodland, which: is characterized by a more or less dense and extensive tree cover; contains, or once contained, at least ten percent tree crown cover, and is not developed or planned for exclusive non-forest resource use.<sup>2/</sup>

**F. Forest Development.** Forest land management activities undertaken to improve the sustainable productivity of commercial Indian forest land, consisting of the following: reforestation, timber stand improvement projects,

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<sup>2/</sup> Definition taken from 25 CFR §163.1.

<sup>3/</sup> Definitions taken from the BIA *Fuels Program Business Management Handbook*, February 2006.

and related investments to enhance productivity of commercial forest land with emphasis on accomplishing on-the-ground projects.

**G. Forest Development Plan.** A planning document approved by the tribe and tiered to the FMP and/or IRMP that contains the goals, objectives, priority treatment areas, schedule of proposed projects, and the FD program's silvicultural, reforestation, and CFSI guidelines.

**H. Forest Management Deduction.** A percentage of gross proceeds from the sales of forest products harvested from Indian land which is collected by the Secretary pursuant to 25 U.S.C. 413 to cover in whole or in part the cost of managing and protecting such Indian forest lands.<sup>2/</sup>

**I. Forest Management Plan.** The principal document, approved by the Secretary, reflecting and consistent with an integrated resource management plan, which provides for the regulation of the detailed, multiple-use operation of Indian forest land by methods ensuring that such lands remain in a continuously productive state while meeting the objectives of the tribe and which shall include: standards setting forth the funding and staffing requirements necessary to carry out the management plan; a report of current forestry funding and staffing levels; and standards providing quantitative criteria to evaluate performance against the objectives set forth in the plan.<sup>2/</sup>

**J. Indian Forest Land.** Indian land, including commercial, non-commercial, productive and non-productive timberland and woodland, that are considered chiefly valuable for the production of forest products or to maintain watershed or other land values enhanced by a forest cover, regardless of whether a formal inspection and land classification action has been taken.<sup>2/</sup>

**K. Indian Land.** Land title which is held in trust by the United States for an Indian tribe, an individual of Indian or Alaska Native ancestry; or which is held by an Indian tribe, an individual of Indian or Alaska Native ancestry, but subject to a restriction by the United States against alienation.<sup>2/</sup>

**L. Integrated Resource Management Plan.** A document, approved by an Indian tribe and the Secretary, which provides coordination for the comprehensive management of the natural resources of such tribe's reservation.<sup>2/</sup>

**M. Reservation.** An Indian reservation established pursuant to treaties, Acts of Congress, or Executive Orders, and public domain Indian allotments, Alaska Native allotments, rancherias, and former Indian reservations in Oklahoma.<sup>2/</sup>

**N. Silviculturist.** A forester with detailed knowledge of silviculture and related sciences, who also possesses a working knowledge of a wide range of virtually all other components of natural resources management including ecological, social and economic issues. The silviculturist must be able to analyze site, vegetation and other variables, in order to develop action plans in the form of treatment prescriptions, all within the framework of management direction.

**O. Sustained Yield.** The yield of forest products that a forest can produce continuously at a given intensity of management.<sup>2/</sup>

### 1.7 **Frequently Asked Questions (FAQs).** The most commonly asked questions include:

**A. Why do we need a Forest Development Handbook?** To provide procedures and protocol; inform decision makers; teach/train employees in the Forest Development process; provide consistency; provide accountability; and document the Forest Development program for the beneficial Indian owners and the historical record.

**B. What does this Handbook replace?** This handbook supersedes Supplement 5 of 53 BIAM and complies with current statutes, regulations, and policy, and does not automatically replace other handbooks that are also in compliance. This handbook is to be used as a guide.

**C. What do FD activities include?** Forest Development activities are made up of silvicultural treatments and program support activities. Silvicultural treatments are made up of three major categories of activities: site preparation; reforestation and commercial forest stand improvement (CFSI). The site preparation group of sub-activities includes the planning for site preparation and the methods of accomplishing site preparation. These methods are further divided into: mechanical methods (mechanized and hand treatments); prescribed fire; and chemical methods of site preparation. The sub-activities that are included under reforestation are: developing the reforestation prescription; the many activities surrounding the promotion of natural regeneration; the artificial regeneration process that includes seed collection, direct seeding, seedling production and care, and tree planting methods; regeneration methods; regeneration evaluation and monitoring,

including survey methods; and limited access road repair. The sub-activities included in CFSI are: silvicultural evaluation; stand selection; project development; the types of projects, e.g., precommercial thinning, understory sanitation, prescribed burning, pruning, release cuttings, and fertilization; and the coordination of projects with other facets of an overall forest management program, e.g., timber sales, fuels management, and other natural resources. The program support component of FD is made up of the following activities: development of a FD Plan and related NEPA documents (if required); planning of annual projects and activities; benefit/cost analyses; project ranking and funding priorities; record keeping; monitoring and evaluation; reporting; and technical training. Other FD program activities are: tree improvement programs; greenhouse operations; woody biomass utilization; and carbon sequestration.

**D. What types of FD funding are there?** The primary funding sources for Forest Development activities are: the congressionally appropriated BIA Non-Recurring Programs fund; tribal priority allocations (TPA); and forest management deductions (FMD). The secondary funding sources to accomplish FD activities are: forest health protection (FHP) funds transferred from the Forest Service; hazardous fuel reduction (HFR) funds; forestry project (FP) funds held in a special account by the Office of the Special Trustee (OST); general tribal funds; and the Indian Forest Land Assistance Account (IFLAA).

**E. Is FD funding restricted to only the above activities?** The Non-Recurring Programs Forest Development funding is restricted just to the activities described above. A further restriction on the Non-Recurring funding is that it cannot be used for the initial reforestation of a regeneration harvest that is part of a timber sale. Some of the other funding sources have restrictions also. For details on each of those, refer to *Chapter 3* of this *Handbook Volume*.

**F. Does the BIA have to approve the FD Plan?** The FD Plan requires tribal approval, although concurrence by the BIA is recommended to better coordinate FD projects with available funding. FD Plans must be tiered to the forest management plan (FMP), which does require BIA approval.

**G. Does the BIA have to approve FD contracts?** The type of FD contract dictates whether BIA approval is required. If the BIA implements the FD program and standard government service contracts are used to accomplish the work, then BIA signatures are required. But in most cases, the FD program is tribally implemented with tribal contracts being the vehicle of execution. These do not require BIA signatures.<sup>4/</sup>

**H. Can FD projects generate revenue?** FD projects are performed under service contracts where funds are expended in order to accomplish the project. Service contract mechanisms are not designed for the receipt and distribution of revenue. If the market became such that the by-products of a FD project were to generate positive revenue, then the timber sale permit process or timber sale contract process should be initiated to facilitate the distribution of revenue.<sup>5/</sup> It is possible, however, to employ another mechanism when FD by-products are able to generate revenue. In this mechanism, the value of the by-products can be used to offset the project costs. In other words, the contract can be constructed so that the amount paid to the contractor is reduced by the by-product value that the contractor removes from the project site.<sup>6/</sup>

**I. How have recent developments in biomass utilization impacted the FD program?** As directed by the Secretary, all federal service contracts that generate biomass (which include FD contracts) must have a clause written into them that allows the contractor to utilize the biomass that is generated during the FD treatment. This can be handled within the FD contract itself as an exchange of goods for services, or a forest products permit or timber sale may be entered into whereby any revenue generated by the utilization of the biomass can be collected and distributed to the beneficial owners.<sup>5/</sup>

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<sup>4/</sup> A sample BIA federal service contract is shown in *Illustration 16*. A sample BIA purchase order to pay for FD contractual services is shown in *Illustration 24*. Sample tribal contracts are shown in *Illustrations 13, 14 & 15*.

<sup>5/</sup> Refer to the *Indian Forest Management Handbook - Volumes 3 & 4* for information on the forest products contract sales and permit processes.

<sup>6/</sup> The use of FD by-products is called "biomass utilization" and is covered in Chapter 7.3 of this *Handbook Volume*. Also refer to *Illustration 10* for the Federal Register *Final Rule for Woody biomass Utilization*.



**J. How are payments made to FD contractors?** The payment process to contractors varies as to whether it is a federal FD contract or a tribal FD contract. On a federal purchase order or contract, vendors and contractors must submit Electronic Fund Transfer Information, Financial Institution, and Bank Routing Numeric Codes into the Central Contractor Registration System (if they are not in the system they are not awarded a purchase agreement). After the completed project is inspected and approved, an electronic fund transfer is deposited into the contractor's bank account. Regional Offices should be consulted for further detail on this process. On a tribal contract, the payment process follows the tribe's vendor payment procedure. Individual tribes should be consulted for more information on this procedure at the local level.

**K. Must FD projects comply with environmental laws?** All projects performed with federal funding are subject to federal environmental laws. Specifically, compliance with the following environmental laws is required: National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the National Historic Preservation Act (NHPA), the Clean Air and Clean Water Acts, Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and pertinent tribal laws and ordinances. In many instances, compliance for individual projects is obtained within a programmatic document, e.g., the NEPA document attached to a FD Plan, FMP, and/or an IRMP. If additional environmental work is necessary for a project, then the cost of that work may be structured into the project proposal. Many FD activities are subject to categorical exclusion under NEPA (refer to *Chapter 8.4* of this *Handbook Volume*).

**L. What type of approval process is necessary to perform FD work on allotted lands?** It is a good business practice to obtain the approval of beneficial owners of allotments in order to perform FD work on their allotments. Some Regions and field locations have developed internal policy that requires notification of individual beneficial owners and approval of a majority interest for the FD work to be implemented. Their philosophy on this practice is that tribes are consulted about FD work on tribal land, so an effort should be made to consult with beneficial owners of allotments to advise them of an FD project plan. Whether you adopt this policy or not, there should never be a bias against allotments and in favor of tribal lands when planning for forest development projects. A sample letter notifying a beneficial owner of a proposed FD project is shown in *Illustration 11*.

**M. Can equipment be purchased with FD funds?** First, equipment is defined in this *Handbook Volume* as an individual item costing more than \$5,000 with a life expectancy that is greater than one year. Second, yes, equipment can be purchased with FD funds, but restrictions are as follows: Non-Recurring FD funds must be used in direct support of the FD program; TPA funds are restricted only by the federal acquisition process; FMD and IFLAA funds must be used in direct support of the Forestry program and listed in the approved expenditure plan; FHP funds must be used in direct support of the forest health suppression project; HFR funds must be used in direct support of hazardous fuels reduction; FP funds must be supported in the Forestry Projects Expenditure Plan or the Approved Project Agreement; Tribal Funds are only restricted by the equipment acquisition protocol of the tribe.

**N. Can hazardous fuels funding be used for treating FD project slash?** It is possible, with some advance planning, to cost-share thinning projects and their resulting slash/fuel treatment with the hazardous fuels reduction programs (both wildland urban interface (WUI) and Non-WUI) that are managed by the BIA National Interagency Fire Center (NIFC). It should be noted that these programs cannot be used exclusively for the treatment of activity fuels. Activity fuels, in general, are fuels that result from silvicultural or other cultural treatments implemented to improve site productivity and result in the extraction of commercial forest, woodland, or other products and biomass. However, the use of hazardous fuel reduction program funding does not prevent the combining of natural fuels project treatments with treatments for activity fuels when this is a cost efficient and/or biologically sound way of doing business. Refer to *Chapter 6.6C* of this *Handbook Volume* for more information on this.

**O. Why do we have to report on FD accomplishments each year?** The Forest Development Program Projects/Activities Accomplishment Report is required annually for three primary reasons. First, it demonstrates that the tribal/agency accomplishment is in line with the planned projects/activities for that fiscal year, and that the FD Non-Recurring is being apportioned wisely. Second, it allows the Central Office to compile the accomplishments and submit them annually to Congress, as required by law. And finally, the inventory of acres in need of planting and thinning is updated annually, a necessary requirement, in the second part of the Accomplishment Report.

**P. Can FD funds be used for the tribe's greenhouse operations?** Yes, with some restrictions. For those projects which qualify for the FD Non-Recurring funds, the intent is for the funds to be primarily used for on-the-ground FD activities. Therefore, for these funds to be used in greenhouse operations, they should be use only for that portion of the operations that specifically grow the seedlings for qualifying FD projects. The other funding sources covered in *Chapter 2*

of this *Handbook Volume*, with the exception of HFR and FHP funds, may be used for all aspects of greenhouse operations.

**Q. Doesn't the term "reforestation" by definition refer to planting or seeding areas immediately after the existing forest cover is removed? Shouldn't we replace the word "reforestation" with the word "planting" in this *Handbook Volume*?** In *The Dictionary of Forestry*, Helms defines "reforestation" as, "*the establishment of forest cover either naturally (by natural seeding, coppice, or root suckers) or artificially (by direct seeding or planting) – note reforestation usually maintains the same forest type and is done promptly after the previous stand or forest was removed.*" Since we use all of the mentioned methods of forest re-establishments (not just planting), and the word "promptly" is a subjective term, we will continue to use the term "reforestation" to represent the re-establishment of forest cover in this *Handbook Volume*.

**CHAPTER 2. FUNDING SOURCES**

**2.1 Historical Perspective.** Forest Development (FD) funds, once referred to as “Congressional Add-On” (Add-On) funds, were originally mandated by Congress to have a very specific purpose and use. FD Add-On funds were to deal exclusively with the large “backlog” of acres on Indian lands in need of: 1) reforestation; and 2) CFSI (precommercial thinning and other stand improvement practices). Therefore, policies were developed to insure that FD Add-On funds were to be used only for their congressional intent, with most of the money going for on-the-ground projects that accomplished acres (e.g. thinned or planted) and reduced the “backlog”. One such policy was that Congressional Add-On funds could be used for regeneration of a harvested area only if the area was harvested in 1978 or before, and still did not support a commercial stand of timber. It was also determined that only a maximum of 15 percent of each Region's allocation could be used for administrative costs associated with programmatic activities. Forest development administrative costs were defined as those that could not be assigned to specific forest development project acres. Finally, the policy was that reforestation harvested sale areas was determined to be an essential silvicultural practice to be performed under the terms of the sale contract, not with FD Add-On funds.

**2.2 Funding Sources.** The primary funding source for Forest Development activity is the congressionally appropriated BIA Non-Recurring Programs Activity, hereafter known as Non-Recurring<sup>7/</sup>. The use of Non-Recurring FD funds is limited to reforestation and CFSI activities that are necessary due to failed timber sale prescriptions or natural causes. It still holds that areas harvested in 1978 or before, as described above, can utilize Non-Recurring FD funds for regeneration if they do not support a commercial stand of timber. Because of these limitations, effort should be made to include FD activities with other programs, such as timber sales, fuels management or forest pest management, to make the best use of all funding sources.

Two other primary funding sources for FD activities that do not qualify for Non-Recurring FD funds are tribal priority allocations (TPA)<sup>8/</sup> and forest management deductions (FMD). These are discussed further below.

The secondary funding sources to accomplish FD activity are: forest health protection (FHP) funds, also known as forest pest management funds, transferred from the Forest Service; hazardous fuel reduction (HFR) funds; forestry project (FP) funds held in a special account by the Office of the Special Trustee (OST); general tribal funds; and the Indian Forest Land Assistance Account (IFLAA). The following sections will look at each of these funding sources, and corresponding allowable activities, in greater detail. It should be noted that there are cost-share funding sources that some tribes have received from other entities/agencies; e.g. the Natural Resources Conservation Service's Environmental Quality Incentives Program (EQIP), and the Forest Service's Collaborative Forest Restoration Program (CFRP). These and similar cost-share sources are not explored by this *Handbook Volume*.

**A. Non-Recurring (a.k.a. Forestry Project)<sup>7/</sup>.** These congressionally appropriated funds are intended to be project-based and are first placed in the Central Office budget. They are then allocated to the Regions based upon a formula that considers program size, need, and past performance. Distribution of FD Non-Recurring project funding to Agencies/Tribes is tied to: needs identified in the Forest Development Planned Project/Activities reports; availability of Non-Recurring appropriation; approved Forest Management and FD Plans; project ranking; benefit/cost analysis; tribal approval; silvicultural prescriptions; stand exams; and environmental/cultural clearances.

**B. TPA (a.k.a. Forestry Program)<sup>8/</sup>.** Tribal priority allocation funds are distributed based upon how tribes rank the importance of the various programs funded by the BIA. Tribes that rank Forestry relatively high in their priority receive federally appropriated TPA funds to be used for Forestry activities. Usually TPA funds are used to perform general Forestry program management and to fund the timber sales program, but TPA may be used to accomplish Forest Development activities if desired by the tribe or agency.

**C. FMD.** Forest management deductions are collected by the BIA as a percentage (usually 10%) of the revenue generated by the sale of forest products. FMD are held in an interest bearing account by OST until the tribe or agency develops an approved expenditure plan for them. Once the expenditure plan is approved, tribes may draw down the entire FMD amount covered in the plan, and expend the funds without time constraints on approved forestry activities.<sup>9/</sup>

<sup>7/</sup> Beginning in FY 2006, “Non-Recurring” funds are referred to as “Forestry Project” funds in appropriations language and budget documents.

<sup>8/</sup> Beginning in FY 2006, “TPA” funds are referred to as “Forestry Program” funds in appropriations language and budget documents.

<sup>9/</sup> Refer to the *Indian Forest Management Handbook – Volume 11* for more detail on FMD.

**D. FHP.** Forest health protection funds, a.k.a. forest pest management funds, are project driven federal appropriations that are transferred from the Forest Service to the BIA. FHP funds are awarded competitively to the four land managing agencies (BIA, National Park Service, Bureau of Land Management, and Fish & Wildlife Service) within the Department of Interior. These funds are intended for forest pest suppression projects, and inventories of conditions leading toward these suppression projects. Some forest pest suppression projects function very similar to a FD CFSI (thinning) project. It should be noted that Contract tribes cannot collect “indirect” or “administrative support” costs for administrative expenses from these funds.<sup>10/</sup>

**E. HFR.** Hazardous fuel reduction funds are appropriated for accomplishment of fuels reduction projects associated with the National Fire Plan. There could be considerable overlap between a FD CFSI (thinning) project and a fuels reduction project. The use of HFR funding within the broader context of a FD project is described in the *Fuels Business Management Handbook*. To determine whether a FD project is eligible for partial or complete funding using HFR dollars, the *Activity Fuels Funding Key* contained in the *Fuels Business Management Handbook* should be consulted<sup>11/</sup>.

**F. FP.** Forestry projects funds are optional funds that can be collected by the BIA and deposited into a trust fund account managed by OST. When the FP account was designed into the Trust Funds Accounting System (TFAS), it was envisioned that some tribes had a desire to voluntarily deposit a portion of forest product revenue or other tribal fund into this account in order to accomplish future projects. Generally, funds deposited into these accounts are to pay for the completion of special contract requirements for which money was paid and deposited by the purchaser. The timber sale purchaser may or may not be the contractor who completes the projects. Funds are usually paid directly from the account to the project contractor, although a Tribe (as a project contractor) may request that payments be deposited into their tribal Proceeds of Labor account. The interest that accrues on the principal amount provides a direct benefit to the landowners through increased resource treatments. A Forestry Projects Expenditure Plan or the Approved Project Agreement is needed for OST to transfer the funds. More information on setting up, drawing down, and maintaining the FP account can be found in the “*BIA Forestry Collections and Distributions Handbook*” on the BIA intranet site under “*Directives*” at <http://intranet.bia.gov>.<sup>12/</sup>

**G. Tribal Funds.** Tribes may choose to augment their FD program by funding activities or projects that would not otherwise be funded. This can be done by either direct funding from the tribal budget, by requiring some or all of the FD activities be accomplished by a Purchaser as part of a timber sale, or by requiring timber sale contract Purchasers to pay into a tribal fund a percentage of stumpage or a set dollar amount per thousand board feet harvested. This last approach is used at some locations, in lieu of the FP approach described above, in order to perform FD related work by the tribal FD program on active timber sales.

**H. IFLAA.** The Indian Forest Land Assistance Account was legislated into existence as part of the National Indian Forest Resources Management Act of 1990. The intent of the IFLAA is to establish a special fund within the tribe’s trust fund account that would be used to augment the tribe’s Indian forest land management activities. Funds that may be placed into this account are: unobligated federal forestry appropriations for the benefit of the tribe; non-Federal funds that are related to the tribe’s forest land activities; donations and contributions; user fees or other funds transferred under Federal interagency agreements, as long as they are related to the tribe’s forest land management activities. IFLAA funds are interest bearing and available to the tribe until spent. Refer to the *Indian Forest Management Handbook – Volume 1* for more detail on IFLAA.<sup>13/</sup>

<sup>10/</sup> Refer to *Indian Forest Management Handbook – Volume 6* for more detail on FHP (Volume 6 was not yet completed at the time of the release of this volume).

<sup>11/</sup> The *Activity Fuels Funding Key* is shown in *Illustration 21*. In addition refer to the definitions of “fire regime” and “condition class” in *Chapter 1.6* of this *Handbook Volume*.

<sup>12/</sup> From <http://intranet.bia.gov>, select “Directives”, then “Current Directives”, then “Handbooks”. If you do not have access to the BIA intranet site, a copy may be available on the Intertribal Timber Council website, or contact the Central Office Division of Forestry for a copy on compact disc.

<sup>13/</sup> *Volume 1* of the *Indian Forest Management Handbook* has not yet been written at the time of the release of this volume.

### CHAPTER 3. FUNDED ACTIVITIES

**3.1 General.** Forest Development (FD) program activities are composed of silvicultural treatments and program support activities. Following is a list of activities included within FD silvicultural treatments, other FD program activities, and FD program support; followed by the activities that are allowed by each funding source. *Chapters 4 through 8* of this *Handbook* provide more detail on FD program activities.

The basis for all FD activity shall be an approved Forest Management Plan (FMP), or an Integrated Resources Management Plan (IRMP) containing a forest management component, and an approved Forest Development Plan (FD Plan). The FD Plan shall contain the current inventory acres for reforestation and commercial forest stand improvement (CFSI). Forest Development inventory acres shall be updated annually. Project proposals must be tied to FD Plan goals and objectives. Annual project proposals shall address and conform to the requirements of the National Environmental Policy Act (NEPA) and Endangered Species Act (ESA), where deemed appropriate and not already addressed in the FD Plan or FMP.

The three broad categories that constitute the FD program are: 1) silvicultural treatment activities; 2) other FD program activities; and 3) program support activities. Each of these will be discussed briefly here, but in greater detail later in this *Handbook Volume*.

**3.2 Silvicultural Treatment Activities.** Silvicultural treatments are made up of three major categories of activities: site preparation; reforestation; and commercial forest stand improvement (CFSI).

**A. Site Preparation.** The site preparation group of sub-activities includes the planning for site preparation and the methods of accomplishing site preparation. These methods are further divided into: mechanical methods (mechanized and hand treatments); prescribed fire; and chemical methods of site preparation.

**B. Reforestation.** The sub-activities that are included under reforestation are: developing the reforestation prescription; the many activities surrounding the promotion of natural regeneration; the artificial regeneration process that includes seed collection, direct seeding, seedling production and care, and tree planting methods; regeneration methods; regeneration evaluation and monitoring, including survey methods; plantation maintenance; and limited access road repair.

**C. CFSI.** The sub-activities included in CFSI are: silvicultural evaluation; stand selection; project development; the types of projects, e.g., precommercial thinning, understory sanitation, prescribed burning, pruning, release cuttings, and fertilization; and the coordination of projects with other facets of the program, e.g., timber sales, fuels management, and other natural resources.

**3.3 Other Program Activities.** The sub-activities included in this section are: tree improvement; greenhouse operations; woody biomass utilization; and carbon sequestration.

**3.4 Program Support.** The program support component of FD is made up of the following activities: development of a FD plan; planning of annual projects and activities; benefit/cost analyses; environmental and cultural clearances; project ranking and funding priorities; procurement planning/activities; record keeping; monitoring and evaluation; reporting; and technical training.

**3.5 Activities Allowed by Funding Source.** Some of the eight potential funding sources for performing FD activities arrive with specific requirements regarding what may and may not be accomplished with the funds. Because of this, all funding sources that are used for FD activities shall be reported separately. Each of the funding sources is analyzed individually with respect to allowable activities.

**A. Non-Recurring (a.k.a. Forestry Project)<sup>7/</sup>.** As was the case with Add-On funds, Non-Recurring FD funds are to be used for their original purposes, i.e., the silvicultural treatments of reforestation, site preparation and CFSI, along with associated program support activities including maintaining the inventory of FD need. The intent of the Non-Recurring FD funds is to expend the vast majority directly on approved FD field projects. Some of these funds may be used for administrative costs directly associated with programmatic activities, but these expenditures should be kept to a bare minimum. All of the silvicultural treatment activities listed in Chapter 3.2 above are approved activities for the expenditure of these funds, with one exception: reforestation following a commercial timber harvest operation. The term “reforestation”,

within the context of this exception, includes the performing of the following activities with the intent to regenerate a stand after commercial harvest: site preparation; slashing the site of sub-merchantable material; planting of tree seedlings; all vegetative treatments associated with establishing a plantation.

The most common funding sources for accomplishing reforestation following a commercial timber harvest are FMD, Tribal Funds and FP funds. These are described further below. It should be noted that tribally funded reforestation following a commercial harvest usually occurs in one of two ways: indirect tribal funding, where reforestation is a contractual requirement of the Purchaser; or direct tribal funding, where the Purchaser is required to pay into a tribal account that later funds the reforestation activities.

If the regeneration of a commercial timber harvest unit fails, and it is documented that a genuine good-faith effort was made to reforest the unit with an approved funding source, then Non-Recurring FD funds may be used to reforest the failed regeneration unit. Regional standards or the standards within the silvicultural prescription will define a regeneration failure on a commercial timber harvest.

**B. TPA (a.k.a. Forestry Program)<sup>8/</sup>.** As stated in the previous chapter, tribal priority allocation funds are distributed based upon how tribes rank the importance of the various programs funded by the BIA. While all FD program activities may be funded with TPA, it is not common to use TPA funds in this way. TPA funding usually is used for the timber sale and forest management support activities.

**C. FMD.** Forest management deductions are collected by the BIA and held in an interest bearing account by OST until the tribe or agency develops an approved expenditure plan for the use of these funds. All Indian forest land management activities may be funded with FMD. This includes using the funds for reforestation following the harvest on a commercial timber sale. Construction of facilities, however, may not be funded with FMD. It is critical that all FMD funds be incorporated into an approved expenditure plan before the end of the second fiscal year after they are collected. Those that are not will be collected into the general funds of the U.S. Treasury pursuant to 25 U.S.C. 413.<sup>9/</sup>

**D. FHP.** Forest health protection funds, a.k.a. forest pest management funds, originate with the Forest Service and are transferred to the BIA based upon the acceptance of BIA and tribal forest health suppression projects and projects involving the inventories of forest health conditions that may lead to suppression projects. Some forest health projects may actually function very similar to FD CFSI projects in which densities are reduced to a prescribed basal area (or spacing), and certain species are favored over others. Examples are species selection and density control projects that are in precommercial size classes and result in dwarf mistletoe suppression, or suppression of certain tree engraver beetles and other insects. In these types of conditions, FHP funding may be used to help accomplish FD CFSI acres, and should be counted as an accomplishment. FHP funding must only be used for the specific project and activities that resulted in the funding award.<sup>10/</sup>

**E. HFR.** Hazardous fuel reduction funds are appropriated for accomplishment of fuels reduction projects associated with the National Fire Plan. There could be considerable overlap between a FD CFSI (thinning) project and a fuels reduction project. The use of HFR funding within the broader context of a FD project is described in the *Fuels Business Management Handbook*. To determine whether an FD project is eligible for partial or complete funding using HFR dollars, the *Activity Fuels Funding Key* contained in the *Fuels Business Management Handbook* should be consulted.<sup>13/</sup>

**F. FP.** Forestry projects funds, collected by the BIA and deposited into a trust fund account managed by OST, are used to pay for the completion of special contract requirements and timber sale follow-up activities for which money was paid and deposited by the purchaser. Projects may include, but are not limited to: slash disposal; site preparation; reforestation; herbicide application; road and trail maintenance, rehabilitation and closure; seeding of grasses and other vegetation; log scaling; cultural and archeological site protection; and virtually any other forestry related activity. All FD activities may be performed with these funds, as long as they are a part of the Forestry Projects Expenditure Plan or Approved Project Agreement. More information on setting up, drawing down, and maintaining the FP account can be found in the "*BIA Forestry Collections and Distributions Handbook*" on the BIA intranet site under "*Directives*" at <http://intranet.bia.gov>.<sup>12/</sup>

**G. Tribal Funds.** Tribal funds may be used for any and all FD activities regardless of whether they were obtained: directly from the tribal budget; indirectly by requiring some or all of the FD activities be accomplished by a Purchaser as part of a timber sale; or by requiring timber sale contract Purchasers to pay into a tribal fund a percentage of stumpage or a set dollar amount per thousand board feet harvested.

**H. IFLAA.** The Indian Forest Land Assistance Account funds are to be used to augment the tribe's Indian forest land management activities. All FD activities may be performed with IFLAA funds. These funds are interest bearing and held in a trust fund account by OST. An IFLAA Expenditure Plan or Approved Project Agreement, similar to those used to expend Forestry Projects funds, must be executed in order to draw these funds down for expenditure. More detailed information on the use of the IFLAA can be found in the *Indian Forest Management Handbook – Volume 1*.<sup>13/</sup>

**3.6 Equipment Purchases.** Equipment is defined in this *Handbook Volume* as an individual item costing more than \$5,000 with a life expectancy that is greater than one year. Equipment purchases made with: Non-Recurring FD funds must be used in direct support of the FD program; TPA funds are restricted only by the federal acquisition process; FMD and IFLAA funds must be used in direct support of the Forestry program and listed in the approved expenditure plan; FHP funds must be used in direct support of the forest health suppression project; HFR funds must be used in direct support of hazardous fuels reduction; FP funds must be supported in the Forestry Projects Expenditure Plan or the Approved Project Agreement; Tribal Funds are only restricted by the equipment acquisition protocol of the tribe.

## CHAPTER 4. SITE PREPARATION

**4.1 General.** Site preparation is a necessary step in active forest management, and is critical in the establishment of both artificial and natural regeneration. It is used to create conditions favorable for tree seedling establishment and growth. By altering slash accumulations or vegetative cover through the use of mechanical methods, prescribed fire or chemical applications, an environment conducive to seedling establishment is created. A conscientious and thorough job of site preparation on the front end of a project leads to much less investment later; investment necessary to insure project success. In other words, good site preparation generally pays big dividends in the future.

There can be many different types of objectives that site preparation is designed to accomplish. Several of the more common are as follows:

- improve access for tree planters and increase the number of plantable spots by removal or rearrangement of slash and/or vegetative competition;
- reduce competition caused by shrubs and grasses or less desirable residual small trees;
- prepare a suitable seedbed for either natural regeneration or for the manual broadcast of tree seeds;
- manually alleviate compacted soils;
- treat existing disease problems on the site prior to seedling establishment;
- preserve long-term soil productivity and favorable microsite environments that enhance seedling establishment and growth; and
- reduce fuel hazards appropriate to the risk rating and fire return interval of the site.

**4.2 Planning for Site Preparation.** There are many factors that determine the type and intensity level of site preparation. Some of these are: slope; aspect; soil type and productivity; plant association or habitat type; species competition and density of the existing vegetative cover; natural or artificial regeneration; desired species to regenerate; the presence of pathogens that may affect desired species; resource objectives; and costs (economics) of the various alternatives.

Slope, aspect, soil type, soil productivity are major factors in determining the type of site preparation method. Mechanical piling operations are generally limited to milder slopes unless steep slope piling equipment is utilized. Slopes exceeding this constraint are considered for prescribed fire. South aspects require that the micro-site potential be maximized and shade be retained to shelter the seedlings from solar radiation. Likewise, in frost prone areas retention of dead woody debris can provide help to mitigate the microclimate. Prescribed fire on sites with low inherent productivity can lead to a considerable loss in site productivity and will need careful evaluation.

The species composition and density of competing vegetation will affect the choice of site preparation method. A knowledge or understanding of the likely successional occurrences following the treatment is essential for success. Experience based on treatments in the differing plant associations is an invaluable tool. Likewise, the presence of disease pathogens is also a factor in determining methodology. For instance, preparation methods may be drastically different when dealing with root rots versus true or dwarf mistletoes.

Cost has become an increasingly important factor due to stagnant or even decreasing budgets relative to inflation. In order for local programs to perform site preparation methods on all stands in need of treatment, resource objectives must be balanced and prioritized with cost effectiveness.

After evaluating the above-mentioned site factors, the FD forester will determine the best method of site preparation, as well as securing the resources for the site preparation work and developing a schedule of activities. Site preparation activities must be integrated into the larger reforestation strategy.

**4.3 Methods of Site Preparation.** For the purposes of this handbook, site preparation methods will be grouped into three principle categories: mechanical, prescribed fire, and chemical.

**A. Mechanical Methods.** Mechanical site preparation is generally thought of as being accomplished with mechanized equipment of some sort. But site preparation achieved by human labor with hand tools is also a method of mechanical site preparation. It is critical when planning and executing mechanical site preparation projects, that the



requirements of the National Historic Preservation Act (NHPA), as well as all other pertinent federal, state, and tribal regulations regarding the protection of archeological sites and areas are strictly followed.

(1) **Mechanized Site Preparation.** Machine site preparation is the most versatile and one of the more cost effective means of site preparation. Site preparation techniques must be sufficient to reduce competing vegetation, which often is the limiting factor. Excessive site preparation, however, may cause soil compaction problems and damage to animal habitat. It is important to select the proper equipment and provide good project administration to ensure the prescribed level of disturbance is achieved.

Grapple piling using an excavator with a bucket and thumb or other attachment for piling slash and removing competing vegetation is one of the primary means of machine piling. Excavators are generally less damaging to soils and may be recommended over bulldozers on some sites. The excavator has the capability of reaching out 30 feet from centerline to pile slash. Ideally the machine is rolling over the slash and piling behind itself. This helps cushion the machine and reduces the soil compaction associated with the operation.

Dozers with soil penetrating winged rippers can be used to alleviate soil compaction in areas where high use or repeated passes over the same ground have occurred from the logging operations. This is a valuable method on skid trails and landings where soil compaction can be at its highest. In addition to ripping operations, dozers may also accomplish piling where slash loads are light enough to warrant some minimum treatment only. Also, dozers are commonly used in the preparation of seedbeds for natural regeneration. This seedbed scarification is timed to coincide with natural seed fall.

When using machines for site preparation, it is generally advisable to avoid excessive soil disturbance by timing the activity so as to avoid soil compaction and other problems. Also, it is usually good practice to retain some coarse woody debris scattered on the site for seedling protection. It is important to note that in some cases disturbance during site preparation activities can actually encourage establishment of weed species, requiring costly control later. It has become critical to clean mechanical equipment thoroughly between sites to avoid the spread of noxious weeds.

(2) **Hand Site Preparation.** Hand site preparation is usually described as either “hand clearing” or “hand scalping”. Hand clearing is the removal of duff, litter, ash, dry surface soil and debris to facilitate the opening of a hole. Although clearing depth will vary depending on the amount of duff and debris on the site, a clearing diameter of 6 to 8 inches is usually adequate on most sites.

Hand scalping is the removal of competing vegetation prior to hole opening, making more water and nutrients available to the tree seedling. Hand scalping is usually used to take the place of other site preparation methods in the following instances: areas where interplanting is needed; small areas not economical for other site preparation methods; steeper slopes not suited for prescribed fire; areas that have other resource constraints prohibiting other methods; areas where mechanical equipment could harm the residual desirable vegetation.

The process of hand scalping planting spots is usually done as part of the tree planting operation, and can be done prior to, concurrent with, or after the planting. Scalps are usually 1 to 2 inches in depth, and performed to remove only the vegetation tops and the root crown. One should be careful not to create pits during scalping, as trees planted in deep depressions can suffer from cold and over-heating problems and may collect excess water. The width of scalps depends on individual site factors and the objectives for the scalp. Scalps of 18 to 24 inches in diameter are common on sites with heavy competing vegetation. Scalps 12 inches in diameter may be suitable on other sites. Where vegetation is extremely dense or a solid grass mat is in place, scalps larger than 24 inches are likely needed. Since scalps larger than 24 inches in diameter are difficult to achieve and are expensive to accomplish routinely, it may be prudent to utilize other treatments, such as mechanized, chemical, or prescribed fire.

**B. Prescribed Fire.** Fire is one of the best tools for regenerating many species in different parts of the country. It is a natural part of many of the ecosystems on tribal lands. In addition to preparing the seed bed, fire releases nutrients and reduces wildfire hazards. Prescribed fire attempts to mimic the effects of a low intensity natural burn to accomplish resource objectives. When used appropriately, fire is an excellent tool for fuel abatement and site preparation.

Fire treatments should be timed, if possible, to coincide with natural seed fall or with planting schedules. Burn prescriptions should be prepared recognizing that timing of the burn can affect vegetative response, cone production, and insect resistance. Trees have varying resistance to fire, and this resistance will differ by time of year and physiological processes occurring with the trees. For example, when sap is flowing in spring, some species are at greater risk of being damaged. Site preparation using prescribed fire often yields results that are more variable than with other treatments. High

treatment costs (in some situations), risk aversion, and smoke management problems can limit the use of fire.

The expansion of the Hazardous Fuels Reduction program (HFR) that resulted from the implementation of the National Fire Plan has created tremendous opportunity to accomplish more FD work by combining the project objectives and funding sources of the two programs. In many situations, a good HFR project can create the site preparation targets to stimulate the desired regeneration response. As with any fuels projects using fire, a prescribed burn for an FD project requires an approved burn plan and line officer approval. For guidance on setting up combined FD and HFR projects, consult the *Bureau of Indian Affairs Fuels Management Handbook* for general guidance and the *Fuels Program Business Management Handbook* for specific guidance complete with an *Activity Fuels Funding Key*.<sup>14/</sup>

**C. Chemical Site Preparation.** The establishment of tree seedlings often requires control of the existing vegetation. This can be accomplished in some cases by the application of chemical herbicides. The FD forester should always consider the social and political impacts of chemical use because their use can frequently be the cause of contention on tribal lands. Herbicide use has the potential to reduce vegetation without disturbing the soil surface. The two most common site preparation methods are: broad-spectrum applications that top kill vegetation prior to planting; and pre-burn application of a desiccant to dry vegetation and enhance burning. The desiccant application is used when there is an abundance of green brush and the fuel load is too light to carry a fire.

Herbicide applications are usually timed to correspond with the period of maximum susceptibility of the targeted species while minimizing risk to the crop trees. Generally, susceptibility is lowest during the dormancy period, increasing with bud break, and highest during actively growing periods.

There are three primary chemical site preparation application techniques: backpack, ground equipment and aerial. Spot application with backpack sprayers provides the most controlled method of applying herbicides while using less chemical than other application methods. With this method, however, there is an increased risk of workers coming into contact with the chemical. Ground equipment, such as spray trucks or booms mounted on a variety of transport vehicles, offer a feasible and cost effective application alternative on gentle ground where the slash load does not interfere with the operation. A dye is often used in the backpack and ground application methods to help identify the areas treated. Aerial methods are fast and cost effective on large areas. Drift and spread beyond the target area can sometimes be problematic, but can usually be controlled by the use of specialized booms, nozzles, and carriers, and by adjusting the droplet size.

In accordance with DOI policy (517 DM 1.2C & 1.2D)<sup>14/</sup>, any herbicide used must be registered with the EPA. In addition, herbicides must be applied under the supervision of a licensed applicator and must comply with all federal and tribal pesticide regulations. Finally, the user should follow the directions on the labels, as they are considered the tested and approved guidance on the chemical use.

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<sup>14/</sup> Refer to *Illustration 7* to review 517 DM 1 – Pesticide Use Policy, effective 7-14-81.

## CHAPTER 5. REFORESTATION

**5.1 General.** The Code of Federal Regulations, CFR § 163.12 (a) states, “*Harvesting timber on commercial forest land will not be permitted unless provisions for natural and/or artificial reforestation of acceptable tree species is included in harvest plans.*” This chapter analyzes the methodology and the pros and cons of both natural and artificial reforestation systems on Indian forest lands. A general rule for the practitioner to follow when deciding on the proper silvicultural system is to select systems that favor natural regeneration if proper seed source is available after considering species, genetic quality, and ecological succession patterns. In other words, plan on artificial regeneration only after fully considering natural regeneration opportunities. Regional and local guides should be adhered to for reforestation specifics, as common practices vary across the country. It should be noted that it is the responsibility of each agency/tribe to maintain an inventory of acres in need of reforestation.

As stated in earlier chapters, planting projects resulting from a timber sale regeneration harvest may not be performed using Non-Recurring FD funds. However, completed reforestation projects of these types that fall below minimum acceptable standards over time may be replanted using Non-Recurring FD funds, as long as the project is supported by a benefit/cost analysis. Regional Offices or the local agency/tribe will determine the standards by which a completed reforestation project on a harvest unit is deemed a failure.

Reforestation projects should have a silvicultural prescription, benefit/cost analysis (see *Chapter 8.3* of this *Handbook Volume*), environmental/cultural clearance, and tribal/individual Indian owner approval. These support documents may be developed on a project basis or they may be part of the larger programmatic plans, e.g. the FD plan, FMP, or IRMP; either way is acceptable. Reforestation projects will usually require periodic stocking surveys in order to determine reforestation success or need for follow-up treatment. Reforestation project certification standards that establish the threshold criteria for successful plantations and natural regeneration areas should be developed at the regional or agency/tribal levels, and be included in the FD plan, FMP and/or IRMP.

Reforestation projects that result from a timber harvest should be a part of the timber sale package. In this way, stand exams, environmental/cultural clearances, tribal approval, etc. will be implicit with the approval of the timber sale package. This results in greater efficiency and integration with timber sale activities.

**5.2 Reforestation Prescription.** A silvicultural prescription should be prepared for all reforestation treatments. It can be prepared on a project by project basis, or programmatically for a series of projects over a period of time. The prescription should be prepared by a silviculturist or by the FD forester with review by a silviculturist. Prescriptions should identify reforestation objectives and vegetation treatments as a part of the landscape analysis and environmental assessment for the area in question. Prescriptions must also meet the multiple objectives contained in the FD Plan and associated NEPA document. The identification and integration of limiting factors and their impacts on tree seedling establishment and growth throughout the rotation is a key to developing a biologically feasible prescription.

The following elements should be addressed within silvicultural prescriptions for reforestation:

- Reforestation goal with clearly defined indicators that are measurable;
- Species preference based on ecological succession, tolerances and management considerations;
- If reliance on natural regeneration for desired stocking, include species and parameters;
- Type of planting stock, method of planting to be used, and numbers of trees to plant;
- Site preparation requirements including fuels treatment;
- Initial stocking requirements that consider early mortality expectations;
- Seedling protection requirements with regard to both animals and physical environment;
- Seedling growing space requirements considering both understory and overstory vegetation layers;
- Potential fire, insect, disease, and weather related hazards;
- Performance measurement;

- Responsibilities;
- Schedule of and requirements for follow-up activities.
- Contingency plan if reforestation is not a success.

**5.3 Natural Regeneration.** Natural regeneration has many advantages over planted regeneration. Some of these advantages are: the newly established stands are of progeny that are adapted to the site; natural seedlings frequently develop superior initial root systems; and natural seedlings tend to be more disease resistant (there are exceptions; notably, in root rot pockets where susceptible species are naturally regenerating). Natural regeneration is also the most economical reforestation method. But obtaining adequate natural regeneration relative to desired species and densities can be elusive within the preferred time constraints. Natural regeneration success requires prescriptions and treatments that ensure that tree seedling needs are met in harvest and site preparation treatments on the specific sites being treated. Also, knowledge of the morphology and physiology of the species being regenerated is critical to successful natural regeneration. For example, the shade tolerance and cold tolerance of the desired regenerated species must be known, as well as the residual tree tolerance to wounding if a partial harvest system is to generate the next forest. Furthermore, a good cone crop, while a key component to success, does not guarantee natural regeneration. Following are some key considerations that must be accounted for to increase the chances for success if a partial harvesting system is used to recruit a new understory.

**A. The size and degree of disturbance.** The size, shape and intensity of the forest disturbance are very important predictors to the resulting vegetation that will occupy the site. Shade tolerant species have competitive advantages over shade intolerant species within relatively small sized disturbances. The amount of sunlight that touches the forest floor, the movement of cold air pockets, the response of competing vegetation, the species composition of the overstory and/or adjacent stands, and the insect and animal response to the disturbance can greatly influence the outcome of the resulting regeneration.

A brief description of applied regeneration methods and anticipated regeneration responses follows.

**(1) Single-tree selection.** Under this method of uneven-aged management, only individual undesirable, or excess trees, are selected and felled. Their removal releases established understory trees from suppression and helps establish new regeneration through exposure of mineral soil and increased penetration of light and rain to the forest floor. Since the single-tree removal opens the canopy only slightly, the method favors establishment of shade-tolerant tree species.

**(2) Group selection.** The group selection method is also a form of uneven-aged management and is a modification of the single tree selection method. The group selection method aims to harvest groups of trees so as to enable establishment and growth of shade intolerant tree species. To these effects, the diameter of ensuing openings should be sufficiently large to allow substantial sunlight to the forest floor, while remaining small enough to retain microsite protection by the surrounding trees. This enables establishment and growth of shade-intolerant species.

**(3) Free thin.** The free thin, also known as the free selection method, is a form of uneven-aged management that recognizes the forest and each stand as a mosaic of conditions and tree groupings, and applies the desired forest treatment objectives appropriately to each encountered condition and grouping. For example, over-mature groups of trees may be removed as a group or thinned to a seed-tree configuration in order to promote shade-intolerant regeneration. Adjacent to one or more of these groups there may be maturing groups of trees in need of commercial thinning in order to redistribute growth to the residual trees. And adjacent to the maturing groups there may be juvenile components of trees that are in need of both overstory release and precommercial thinning. The free thin method takes full advantage of the variability of the forest, but requires a very well trained forester to apply the treatment on the ground. This method is applicable in all situations where uneven-aged management is intended and irregularly structured stands are desired.

**(4) Clearcut.** Clearcutting, a form of even-aged management, is generally described as a reproduction method in which all trees are removed before regeneration occurs. There are modifications to clearcutting where varying levels of vegetation are retained, but in its purest form, clearcutting results in a forest floor environment where the open situation dominates and edge effects of adjacent stands are minimal. Regeneration occurs without dependence on the protection of border trees. Clearcut areas are usually regenerated artificially through planting but may also be regenerated through coppicing, aerial spot seeding, pre-existing seeds on the forest floor, seeds blown in from adjacent stands, or from seeds of the cone-bearing slash.

(5) **Seed tree.** The seed tree method of even-aged management is similar to the clearcut method, except that enough good seed-producing trees of desired species, generally shade-intolerant, are left scattered over the area to ensure establishment of adequate regeneration over a period of time. The clearcut and seed tree methods potentially expose the site to the harshest forest floor environment and the largest temperature extremes. It should be noted that seed tree cuts may also be planted as a supplement to the intended natural reproduction.

(6) **Shelterwood.** The shelterwood method is designed to enable regeneration establishment under the shade of crop trees. In contrast to the harsher conditions for seedling establishment created by the clearcut and seed-tree methods, the shelterwood method, through various degrees of canopy shading, provides the environment necessary for the establishment and growth of a variety of species, regardless of shade tolerance. The shelterwood method requires at least two entries conducted near the end of rotation. In the first entry, the seed cut, the stand is opened by harvesting trees to the degree needed for successful regeneration of desired species. The second entry, the removal cut, releases the successfully established regeneration from overstory suppression. The removal cut often has to be done in two stages to reduce damage to the reproduction. In some situations, it is advisable to remove the overstory through several removal cut entries primarily to permit adjustment of understory trees to increased light and temperature regimes. Despite the multiple entries, shelterwood systems are considered even-aged.

(7) **Strip cutting.** The strip cutting method is a variation of the clearcut method and functionally similar to the shelterwood method. With strip cutting, all trees within a relatively narrow strip are harvested to provide room for establishment of regeneration under microsite conditions protected by the adjacent stand. In general, to retain this protective influence the width of the strip should not exceed twice the average height of the surrounding stand. The narrow width facilitates a better distribution of seeds from the adjacent stand. Orienting the strips perpendicular to prevailing winds increases the likelihood of quick and uniform establishment of seedlings throughout the cutting block. The strip cutting method does have a tendency to favor the establishment of shade-intolerant species, but this result is variable depending upon the layout of the strip relative to the angle of the sun.

**B. The type of forest ecosystem disturbed.** Each type of forest ecosystem can respond uniquely to varying levels of disturbance. It is wise for the practitioner to develop a thorough understanding of the habitat type or plant association that the disturbance is planned for, so as to increase the predictive probability of the vegetative response.

**C. Desired species to be regenerated.** It is critical to have an understanding of the morphology, physiology, and silvicultural requirements of the species to be regenerated. This understanding will assist in predictive matters, such as when to expect adequate seed crops for regeneration, and what is the expected response to the planned disturbance. It will also assist in decision making, such as how much sunlight exposure to create on the forest floor, and the type and degree of seedbed preparation necessary.

**D. Seedbed conditions for seed germination and establishment.** Seedbed preparation can be accomplished with minimal effort and expenditure, or with maximum available resources, depending upon the existing conditions and the requirements of the germinating species. Minimally, seedbed preparation may be accomplished during the course of the harvest and slash treatment on those forest ecosystem types with minimal vegetative ground occupancy. In other situations, prescribed fire may be used to reduce woody debris and expose some bare mineral soil. Mechanized site preparation is also a commonly used alternative to dispose of slash and vegetative competition while exposing mineral soil. In some cases it may be necessary to utilize a multi-step approach to seedbed preparation in order to produce a receptive seedbed that will promote seed germination and support juvenile seedlings. For example, prescribed fire can consume heavy woody fuel loadings prior to employing mechanized equipment to disturb soil surfaces.

**E. Conditions for sprouting if coppicing is desired.** Coppicing is the induction of stem growth reproductive response, or sprouting, from the living root system of the harvested tree. As stated earlier regarding the desired species to be regenerated, the morphology, physiology, and silvicultural requirements of the species selected for coppice reproduction should be studied so that the conditions necessary for successful coppicing can be initiated. Sprouting potential for species intended should be understood so that adequate numbers of sprouts can be planned for.

**F. Seed availability.** The main obstacle in natural regeneration is lack of available seed of the desired species. Seed crops occur dependably in some areas, while in other areas they do not. This is a site and species-specific phenomenon that must be considered when writing a natural regeneration prescription. Periodicity of the cone crop will affect availability of seeds. Factors that affect cone crop production unique to the area of concern should be evaluated. Cone

crop histories, if developed properly, can aid in deciding whether natural regeneration is an option, and if it is practical to time the harvest operations to coincide with cone crops.

To obtain natural regeneration, a seed source needs to be available either as a seed wall or as residual trees within the unit. Trees that are considered as a seed source should be evaluated for their phenotypic acceptability and genetic quality. Wind patterns should also be studied, as they will affect seed dispersal. Seed from the site or from nearby sites is usually adapted to the site, but the species must match the successional stage of the site. For example, early seral species require an open-grown, early successional condition and may not establish and grow in later successional stages.

In the event that natural seed sources are or become inadequate, the option of direct seeding by artificial means should be considered. Refer to *Chapters 5.4A and 5.4B* of this *Handbook Volume* for guidance on seed collection and direct seeding.

**G. Competing vegetation.** Vegetation can prevent seeds from reaching the seedbed required for germination. Also, the competition for moisture and light can increase the mortality of seeds that do germinate. In addition, competing vegetation can be detrimental to the development of the established seedling. Trees grown on sites where competing vegetation has been controlled have routinely shown greater needle complement, long needles, larger woody stems and longer leaders. In areas where artificial regeneration is to be used it is highly recommended to have planting operations completed within one or two years following the completion of harvest operations. This can give seedlings a head start over competing brush and grass and help minimize the detrimental effects of vegetative competition during the first critical years of plantation establishment.

Conversely, vegetation can be beneficial where lethal ground temperatures are a cause of mortality, and where a shade tolerant species is being regenerated on an open site. In addition, vegetation possessing known symbiotic relationships with tree seedlings, e.g. nitrogen-fixing species, may provide a beneficial microsite to an otherwise harsh environment.

Therefore, prior to routinely controlling competing vegetation to seedling establishment and growth, it would be wise to develop an understanding of the competing vegetation in order to ascertain the presence of beneficial relationships. Once relationships are understood, harmful competing vegetation should be targeted for control through mechanical means or through the application of prescribed herbicides, if allowed under the forest management plan.

It should be noted that in some instances it is possible to control competing vegetation by leaving residual stands at higher stocking levels thus preventing conditions that favor quick or dense growth of unwanted grasses and brush.

**H. Population of seed predators.** Natural regeneration, to be successful, requires seed production sufficient to supply insects and animals with food, with enough seed left over to grow into trees. Some common seed predators are squirrels, chipmunks, mice, birds, cutworms, and wireworms, to name a few. It is best for the practitioner to become familiar with the more voracious seed predators in the region of operation.

Indirect methods of controlling seed predators include: enhancing raptor habitat in order to increase their population and the resulting predation on seed predators; decreasing rodent cover; and covering seed immediately after seedfall.

Physically trapping rodents may be successful in some areas of the country, but where rodent populations are heavy, annual follow-up treatments are necessary to keep populations under control until seedlings become well established. The only practical direct method of eliminating seed predators is with the use of chemicals (insecticides and rodenticides). Their use, however, may be limited by environmental, political, or financial concerns.<sup>14/</sup>

**I. Use of Advanced Regeneration.** Advanced regeneration present before the time of disturbance may be suitable for restocking the site. In fact, on many eastern hardwood types the presence of adequate advance regeneration prior to final overstory removal is considered to be the most important factor for obtaining a successful regeneration treatment. In these stands, species composition of the advance regeneration largely determines the species composition of the next stand. To successfully use advanced regeneration as the next stand, understory trees must not be destroyed or damaged during harvest and site preparation activities.

While all forest types have some potential to utilize advanced regeneration, the health and potential for these young trees to develop as desired must be carefully evaluated prior to depending on them as selected trees for the new forest. Terminal leader growth is often the best indicator of potential development. However, some tolerant species have the ability

to generate new crowns after release from overtopping and may eventually resume good leader growth. Prescriptions should describe the species and condition of the trees to be favored for regeneration.

**5.4 Artificial Regeneration.** There are a variety of situations where artificial regeneration should be the selected method of reforestation. Some examples of these situations are: 1) lack of preferred species or poor genetic quality in the seed sources of the adjoining stands or residual overstory; 2) low probability of seed production in the quantities necessary to regenerate the site within required time frames; 3) logistical problems in cutting or site preparation practices that will not allow for proper natural regeneration seedbed preparation; 4) disease pockets that make regeneration with an alternative species desirable; and 5) management objectives that call for a conversion from a natural stand to a plantation.

This section will discuss the various methodologies commonly employed on Indian forest lands that contribute to successful plantations.

**A. Seed Collection.** A critical responsibility of the FD forester is the development and adherence to a sound program for seed source identification, collection and storage. A locally maintained historical record of seed crops by species will provide the best information on seed crop frequency on which to base seed inventory management needs. As a general rule, seeds should be collected during good to heavy seed years for the species selected, since collections during poorer seed years can result in lower quality seed with a much higher risk of infestation. Also, costs for collection are lower during heavier seed years.

Planning and conducting seed collections in conjunction with timber harvesting operations can significantly increase seed yields and decrease project costs. However, precautions must be taken to avoid collecting seed from poor quality seed trees felled during joint harvest/seed collection operations.

Regional, state and local seed rules and maps can usually be obtained from local Forest Service, State Forestry offices, and in some cases, BIA Regional/Agency offices, and tribal offices. While not true in all cases, best results for successful plantations usually occur when seeds are used within one degree of latitude and one-thousand feet change in elevation of where they were collected. In addition, local topographic distinctions and natural vegetation groups should be observed.

The methodology for evaluating seed crop potential and viability varies widely between coniferous and hardwood species. For example, in coniferous species, seeds are present in varying numbers within the cones. Cone crops are tracked first by the presence of seed cone and pollen cone flower buds, then by the presence of successfully fertilized immature cones. As the cones mature, the quality of the seed cone crop can then be measured in terms of the sound extractable seed per cone that can be expected upon maturity. Expectations can suddenly change, as unfavorable weather or insect attack may damage or destroy a developing crop.

In hardwood species, the wide variety of seed types and dispersal mechanisms render a national seed collection guide impractical. As in conifers, reproductive buds can be tracked for a potential bumper seed year, but there are still many factors that could change the outcome of the seed crop. It is best for the FD practitioner to utilize specific seed collection and storage guides developed for the local area of operation.<sup>15/</sup>

**B. Direct Seeding Operations.** Artificial direct seeding should be thought of as a method to achieve results similar to natural regeneration techniques, without the need for an overhead or nearby natural seed source. This similarity also expands to some of the variables mentioned previously in *Chapter 5.2* that the FD practitioner needs to consider; namely: seedbed conditions for successful germination and establishment; competing vegetation; population of seed predators; and the tolerance levels of the seeded species to shade, cold, drought, and flooding, as dictated by the peculiarities of the site.

Direct seeding can be performed by the following techniques: (1) broadcasting, either aurally, from the ground with a cyclone seeder, or by hand; (2) spotting, or the placement of seed(s) into a prepared spot by hand; and (3) drilling, or the placement of seed with garden drills in plowed furrows. Regardless of the method selected for direct seeding, follow-up activity should be the same as for naturally regenerated stands, and include periodic stocking surveys.

**C. Seedling Production and Care.** The methods of producing and caring for seedlings are described below.

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<sup>15/</sup> An excellent and comprehensive resource regarding tree seed data is, "*Seeds of Woody Plants in North America*" by Young and Young, Dioscorides Press, 1992.

(1) **Planting Stock.** The seedlings grown in the nursery from collected seed are known as planting stock. Planting stock can be grown as “bareroot” seedlings or as “container” seedlings. Stock of both types can differ in size (stem caliper and height), root length and mass, and other physiological characteristics. The stock size and type can have an effect on regeneration success. In general, stem caliper and root to shoot ratios are the more critical measurement for regeneration success than tree height, assuming the stock is in good physiological condition. This is because stem caliper is related to the amount of bark insulating cambial tissue, water conducting tissue, and reserve carbohydrate in nursery grown seedlings; and higher root to shoot ratios allow the seedlings to meet their water and nutrient needs as the growing season progresses and soil moisture decreases.

Another important planting stock factor is age. Older stock has more secondary tissue, allowing the seedlings to withstand harsher climatic conditions. Matching the appropriate planting stock to the specific site requirements is another of the critical tasks required of the FD forester.

Recent technological advances have also allowed the forester and greenhouse specialist to better monitor and care for artificially produced seedlings. An innovative new development is a piece of equipment known as a “plant pressure chamber”. This instrument measures plant moisture stress in tree seedlings and allows the grower to cheaply and simply measure seedling stress throughout the early stages of its development. Measurements can be taken from tree seedlings at an early age through final seedling production, acclimatization, transport, caching, planting, and during initial survival surveys.

The following serves as a guide for the most common uses of the stock types.

a. **Bareroot Stock.** Bareroot stock is usually identified as 1-0 Bareroot, 2-0 Bareroot, and 3-0 Bareroot. All Bareroot trees should be planted in the spring.

i. **1-0 Bareroot.** Stock that is 1-0 Bareroot is a year old seedling grown for one season in the seedbed prior to shipping. It is bigger than container stock and has more woody structure, but it is still a 1-year-old seedling physiologically. This stock may not survive challenging factors, such as animal damage, drought, frost and heat damage at the ground line.

ii. **2-0 Bareroot.** The 2-0 Bareroot is grown for two growing seasons in a seedbed. In general, 2-0 Bareroot will perform adequately on almost all planting sites, assuming tree handling and planting quality standards are met. This stock has the sturdiness to withstand the potential damage factors that would affect the 1-0 as well as containerized stock.

iii. **3-0 Bareroot.** The 3-0 Bareroot is grown for 3 years in a seedbed and is needed when large enough stock cannot be grown in 2 years.

b. **Container Stock.** Containerized trees are grown under varying combinations of enclosed greenhouses, shelter houses, and open outside conditions. The longer trees are grown out of the greenhouse, the less tender, in general, the seedlings are. These out-grown seedlings respond to environmental extremes after planting much better than greenhouse seedlings. Because growing the seedlings in larger containers does not increase the secondary tissue, all container stock is much like 1-0 stock.

There are several advantages that container stock has over bareroot. First, container trees have an advantage in that their roots are damaged only slightly, if at all, when extracted from the plug. Second, container stock expands planting windows beyond the traditional spring window, as they can be summer, fall, and winter planted, depending upon the region of the country. Third, container stock is useful in rocky soils where it is difficult to open holes large enough for bareroot seedlings. Fourth, they can be planted in harsh, droughty, and animal damage prone sites if carefully placed in good microsites. And fifth, due to their shorter growing time and versatility in planting seasons, they can be used to take advantage of recent site preparation.

c. **Transplant Stock.** Transplant stock is bareroot stock that was grown in the seedbed and then moved to transplant beds for an additional growing year prior to shipment. It can also be containerized stock grown in the greenhouse, extracted from the container, and then grown in outside transplant beds for an additional growing year. Transplant stock is recommended for good sites where intense vegetative competition is expected. Roots will be more massive with a proliferation of fibrous roots, and the trees will be larger with a good initial growth response. Shovel planting is often recommended, and the soils must be deep with little rock. Transplants are not recommended for drought-prone or rocky sites.



Transplant stock can be very expensive in relation to other stock types. They also have some problems unique to them, such as root sweep and root rot. Following are some of the more common transplant stocks.

**i. 1-1 Stock.** Bareroot stock that was grown 1 year in the seedbed and one year in the transplant bed is 1-1 stock. The general result is sturdier stock with more fibrous roots and better initial growth than a 2-0 or standard container grown tree.

**ii. 2-1 Stock.** Bareroot stock that was grown 2 years in the seedbed and one year in the transplant bed is 2-1 stock. The result is stock even sturdier and larger than 1-1 stock and better suited for fierce vegetative competition.

**iii. Plug+1 Stock.** These are the container seedlings extracted from the container and grown in outside transplant beds for an additional growing year. The plug+1 generally develop into a larger seedling with more root development than it would as either a container or a 2-0 bareroot seedling.

**iiii. Plug+0 Stock.** These are relatively new containerized transplant stock that are sewn in mid-winter and transplanted outside in the spring for the rest of the growing season. They are not extracted from their containers when transplanted. Plug+0 stock tends to be hardier than basic containerized stock, and more adaptable to rapid planting needs than Plug+1 stock.

(2) **Seedling Handling.** A successful tree planting operation requires a multitude of sequential steps to be done correctly. The foundation of success in these operations is both quality seed and quality seedlings. Proper tree care from the time seed is sown until the time it is planted is essential to success. Plantation failures can result from a single major tree care error, or it may result from an accumulation of small insults to trees as they pass through the sequence of steps. The stresses that seedlings undergo are cumulative and could add up to cause death. Some basic principles of tree care and storage are as follows.

**a. Shipping Care.** Proper tree care during shipping is critical for tree survival. A refrigerated truck or trailer should be used for the shipment of seedlings from the nursery to the refrigerated seedling cooler. The individual receiving the shipment should check the proper temperature of the delivered stock, which varies with stock type and season of delivery. Trees that are shipped frozen should arrive frozen. Trees that are shipped thawed should not be more than a few degrees above freezing during shipment. Any amount of warmth can initiate respiration of the trees inside the boxes, stimulating the trees and any microbe activity as well.

Tree containers, whether bags or boxes should be removed from the truck/trailer with much care, as rough handling could result in a reduction of tree survival. This is especially important when handling frozen stock since the ice crystals on frozen trees are very brittle.

**b. Checking Bareroot Stock Quality.**

**i. Root Length.** Root length should be consistent with specified standards in the nursery agreement.

**ii. Live Roots.** Strip outer layers of bark with a pocketknife or fingernail to expose cambial tissue. Healthy roots have white cambial tissue, while dead roots have yellow-tan to brown cambial tissue.

**iii. Root Dormancy.** Elongating white growing tips on the roots indicate that dormancy was broken. Trees with appreciable new root growth prior to planting have a risk of reduced survival, except on moist sites.

**iv. Top Caliper and Height.** Should meet the agreed upon standards.

**v. Color.** Healthy foliage is in various shades of green. If a yellowish or grayish off-color is accompanied by other bad signs, such as dryness or discoloration of the cambial tissue, there is a problem.

**c. Checking Container Stock Quality.**

**i. Adequate Root Mass.** Root mass should be developed to the point where the plug can be extracted from the container and still retain its original form. Pot bound roots are not acceptable, however, and can be checked by shaking the plug until medium pulls away from the roots. Most of the roots should be pointing downward with the exception of smaller lateral horizontal roots. Pot bound trees have large horizontal roots spiraling, and may not

develop into a normal tree.

**ii. Root Media Moisture.** Roots and plugs should generally be moist, except that spring-delivered dormant stock may be frozen or relatively dry.

**iii. Live Roots.** Check roots for live tissue using the same technique as described for bareroot stock.

**iv. Top Caliper and Height.** Should meet the agreed upon standards.

**v. Sturdy, Standing and Erect.** Individual trees must be capable of standing erect without support.

**vi. Color.** Color standards described for bareroot stock are applicable to container also.

**(3) Seedling Storage.** Keeping trees healthy in storage is another critical step leading toward a successful plantation. Refrigeration units at the agency/tribal location are necessary for their storage. Proper storage will keep the trees' physiological activity to a minimum. Bareroot and spring-delivered container stock should be kept as dormant as possible with low temperatures and good air movement. Air spaces should be maintained between the tree boxes in order to prevent them from rising above the ambient air temperature. Frozen trees that are fully dormant should be stored in below freezing temperatures. Partially dormant thawed trees should be stored in temperatures just above freezing. A general rule for seedling storage is that if they need to be stored for more than two months, then they should be frozen at temperatures between 29 and 32 degrees Fahrenheit.

**(4) Seedling Handling from Storage to Planting Site.** The two most important factors in keeping trees alive between storage and the planting site are keeping seedlings cool and keeping roots relatively moist. High temperatures can also result in accumulation of gases in the tree boxes that can damage trees severely. Root hairs can be damaged in minutes by exposure to dry wind and low humidity. The moisture stress level in tree seedlings can be measured by a number of instruments currently on the market. These instruments can be a valuable tool in decreasing seedling damage related to handling.

**a. Thawing Frozen Stock.** Boxes or bags of frozen trees must be handled very carefully, as the trees are brittle and can damage easily. The trees themselves should not be handled until they are properly thawed. The thawing process must allow adequate lead time prior to the start of planting. In some cases, container seedlings may take 10-14 days to properly thaw. Stock monitoring is required as thawing rates may vary by species and location within the cooler. Thawing should take place in relatively cool temperatures in an area protected from wind and direct sunlight. Once frozen stock is thawed, it may be handled the same as non-frozen stock.

**b. Preparing Trees for Planting.** Two processes are used to prepare seedlings for planting: one process for early spring planting when freezing temperatures pose a problem; and another process for late spring planting when warming temperatures may pose a problem.

**i. Early Spring (No Acclimatization).** During this time of year, day temperatures are commonly cool, soil temperatures do not warm, and seedlings will likely be exposed to freezing nighttime temperatures. If trees need to be wrapped prior to transporting them to the planting site (see the next section on "wrapping"), completely thawed trees should be taken from bags or boxes and prepared for wrapping. Trees should be dipped briefly in water or misted and then wrapped in burlap. Wrapped trees should be kept cool and planted within 48 hours of wrapping, or placed back in cold storage. An alternate method is to remove trees from storage containers at the planting site, dip in water and place immediately in insulated planting bags ready for planting. Careful monitoring of this method must occur to insure trees do not dry out.

**ii. Late Spring (Acclimatization).** As the planting season progresses and the days become warmer, it is wise to acclimatize trees coming out of cold storage before planting. If seedlings need to be wrapped prior to transport to the planting sites, wrapping should be performed a day prior to planting and kept in a shaded area upright with tops exposed to the ambient air temperature for one day prior to planting. The wrapped bundles must be kept moist. Trees planted on warm days without acclimatization are at high risk of suffering shock from rapid water loss at a time when they are not yet fully physiologically active. Trees should not be acclimatized, however, if sub-freezing weather is in the forecast. Trees full of moisture can be severely damaged if temperatures drop below the mid-twenties.

iii. **Tree Wrapping.** The wet wrap method, also known as “jelly rolling”, is a recommended tree preparation technique for handling bare root stock because it offers some insurance against root drying, and may be the most efficient method of protecting the seedlings during sunny weather. Wrapping can be eliminated if other precautions, such as placing individually wetted trees in insulated planting bags, are taken to ensure root systems are not exposed to drying. Tree wrapping should be conducted under full shade and be protected from the wind. Trees should be removed from boxes in groups of 20 to 50, and dipped in water or misted prior to wrapping. Wrapping material can be burlap or a towel-like fabric. Seedlings should be separated gently and placed in one layer on the wrap with the roots not tangled. The wrap should extend about 6 inches below root ends. The bottom 5 inches of wrap is then folded over the roots (moist moss may also be inserted), ensuring that the roots are not folded. The bundle is then fastened with a nail or plastic wrap. The planter must loosen the roll slightly prior to planting to prevent root stripping when extracting seedlings.<sup>16/</sup>

D. **Tree Planting Methods.** This section will examine the different aspects of placing the planting stock in the ground; from planting spot selection, through the various planting tools in use, to some planting techniques.

(1) **Planting Spot Selection.** Planting spots should be selected in order to maximize the most favorable microsites available on the site. Favorable microsites protect seedlings from potentially harmful conditions, e.g. high animal use, insolation rates, and extreme winds, and improves the probability of survival. Sometimes spacing requirements may need to be flexible in order to take advantage of the given microsites. In addition, planting spots usually need to be prepared beyond what may have been accomplished with the initial site preparation.

a. **Spot Preparation.** Planting spots can be prepared with hand tools or mechanically with a number of scarification machines on the market. Scarification machines are usually used on relatively flat sites and create planting spots that are uniform in size and spacing. In any case, spots should be prepared for planting so that surface debris such as litter and duff do not fall into the planting hole when it is opened. In addition, competing vegetation needs to be cleared away from the spot. In general, competing vegetation should be cleared to a minimum of 1½ inches below the root crown. The size of the spot cleared will vary, depending upon the vegetation, but sod-forming grasses usually require a scalp that is 18 to 24 inches wide in order to prevent reinvasion before the seedling is well established.

On planting sites where moisture stress could present a problem, mulch should be added while planting. Very simple mulches can be added quickly and efficiently, e.g. using the same litter and debris cleared away from the planting hole, newspapers, cardboard, and plastics.

b. **Seedling Protection from Direct Sun.** High rates of direct insolation on newly planted seedlings can result in heat and moisture stress, resulting in mortality on a variety of sites. Such damage is typically most common on south and west facing slopes where heating at the soil surface can cause lethal temperatures to the seedling stem at the ground line. Early season high rates of insolation can cause seedlings to break dormancy too soon and become subject to freeze damage. On all sites where it is perceived that insolation will be a problem, shade should be utilized in the planting. Stationary shade such as stumps, standing trees, rocks and larger logs provide the best site protection. Adjusting the location of the planting spot may be all that is needed if stationary shade is available. Transportable natural shade, such as pieces of wood or branches larger than 3 inches, movable rocks, and other local debris, should also be used wherever necessary. If no natural shade is available, then staked shade cards, while costly, may need to be used. Although it is beneficial to shade the entire crown of the seedling, the most critical area needing shade is the stem tissue at the ground line.

c. **Seedling Protection from Animals.** Another cause of high mortality in plantations is cattle and big game damage. Cattle generally trample seedlings, while big game tend to feed on the plants. By planting seedlings in protected areas near logs, stumps, or rocks, cattle trampling and some big game feeding is inhibited. This may be all that is necessary to ensure survival. In areas of high cattle use, it may be necessary to utilize fencing and herding resources in order to keep the cattle away from plantations. Areas that have very high big game populations present a problem that normal fencing does not mitigate. In order to combat heavy feeding damage to seedlings in these areas, one must either invest heavily in specialized big game fencing, an expensive proposition, or use protective tubing or netting, such as Vexar, on each seedling. While both of these methods are costly, they may be the only way on these types of sites to obtain plantation success; and are usually shown to be cost effective when the loss of the initial reforestation investment and the cost of replanting is considered. Be advised, however, that if Vexar tubing or netting is used that the correct amount of photo-inhibitor must be incorporated into the product to ensure that it deteriorates on schedule. Otherwise, seedlings may not be able to outgrow the Vexar and can become damaged or deformed.

<sup>16/</sup> Refer to *Illustration 17* for a diagram demonstrating correct tree wrapping.

It is possible that an effective animal repellent has been developed for the particular culprit(s) attracted to your plantation. Product effectiveness, development and availability would have to be researched on a case-by-case basis.

(2) **Planting Hole Specifications.** There may be more specific regional or local guidelines that address these specifications. As a general rule, however, the standard minimum-sized planting hole for bareroot stock is: two inches deeper than the root length of the tree being planted; and at least 3½ inches diameter for the full length of the hole (4 inches for auger planting). The standard minimum-sized hole for container stock is: one inch deeper than the plug length; and at least 3 inches in diameter at the top of the hole and 1 inch at the bottom. In all cases, the seedling should be positioned in the center of the hole with the loose soil progressively filled and firmed from the bottom of the hole to the top.

(3) **Planting Hand Tools.**

a. **Planting Hoes.** Planting hoes are often referred to as mattocks, hoedads, and Corson tools, among other names. All hoes have a planting blade and many have a scalping blade on the backside. Planting hoes are used to plant all types of planting stock, but are limited by stock size. Bareroot stock with roots longer than 12 inches should be planted with augers or shovels, not with hoes. The advantages of hoe planting are that it: is very cost efficient for a wide range of conditions and soils; can be used as both a scalping and planting tool, allowing the planter to create the best planting spot from what is available. The disadvantages of hoe planting are that it: requires skill by the individual planter in opening the hole properly, and good follow-up contract administration; is not suitable for rocky and heavy clay soil types where the hole cannot be opened properly; and should not be used with root lengths greater than 12 inches on the stock.<sup>17/</sup>

b. **Planting Bars.** The planting bar is a metal bar with a foot step that is used by thrusting into the ground and rocked back and forth in a certain way to create a planting hole. Usually a scalper needs to precede the planter so that the planting spot is prepared adequately. The advantage of the planting bar is that it is very useful in rocky soils, with an ability to create a planting hole where other tools fail. The disadvantages are: seedlings have a tendency to not be positioned in the middle of the hole, creating an imbalance in root development; extra effort is required to achieve good root positioning; and pushing back and forth too much with the bar creates X-shaped or K-shaped holes that cannot be planted or closed properly.<sup>18/</sup>

c. **Shovels and Spades.** Shovel planting is a preferred method for planting stock with long or large root masses, such as transplant or 3-0 bareroot stock. The soil from the hole can be pushed, as with a hoe, or completely removed and replaced. Care must be taken to ensure that the roots are properly aligned as the hole is closed.

d. **Augers.** Tree planting augers are hole boring bits usually powered by chainsaw engines. Auger planting consists of three operations usually performed by three different people in sequence: planting hole preparation (clearing and scalping); hole augering; and tree planting. It is preferable that these crews are balanced and sequentially timed because loose soil deposited on the surface by the auger dries out quickly. Dry replacement soil in the planting hole creates an unnecessary risk factor to seedling survival. Some of the advantages of auger planting are: more consistent opening of clean holes in a wide range of soils; fewer contract administration problems related to hole opening; easier planting of large trees with roots up to 12 inches long; more suitable for certain types of rocky and heavy clay soils. Some disadvantages of auger planting are: the auger operator getting too far ahead of the tree planter, allowing desiccation of the soil; scalpers working ahead of the auger may unknowingly prepare unplantable spots, resulting in fewer trees planted per acre.

e. **Dibbles.** A dibble is a metal tool shaped in the form of a container that is pushed into the soil, leaving a hole in the shape of the container plug to be planted. Dibbles are suitable in light, fine texture soils. In clay soils, however, dibbles have the effect of glazing or compacting the sides of the hole, creating problems of root penetration and frost heaving. It is for this reason that dibbles are generally not recommended.

(4) **Planting Machines.** Tractor-drawn planting machines open a narrow trench to a specified depth, plant the tree in the created spot, then fill in and compact the soil on each side of the tree; all in one pass. The machine requires a two-person crew, one to operate the machine, and one to feed the seedlings into the planting mechanism at the right time. The advantages of machine planting are: the ability to plant large areas and numerous trees in a short period of time; very limited man-power is needed in the operation; improved survival rates with properly adjusted machines due to a reduction in root competition from the furrowing and consistent soil packing. Some of the disadvantages are: does not

<sup>17/</sup> Refer to *Illustration 18* for a diagram depicting hoedad planting.

<sup>18/</sup> Refer to *Illustration 19* for a diagram depicting bar planting.

perform well on sloping terrain, rocky or clay soils, or with heavy debris on site; requires constant inspection and calibration to prevent a lot of poorly planted or improperly spaced trees; cannot select best microsites or utilize stationary shade; requires skilled operators.

### (5) **Planting Techniques.**

**a. Bareroot Planting.** In bareroot planting, it is critical for the hole to be properly opened for correct tree placement. The seedling must be inserted at the proper depth with proper root and stem alignment. After the tree is properly aligned, moist mineral soil should be firmed around the roots.<sup>19/</sup>

**i. Planting Depth.** Seedlings should be planted at approximately the same ground line as it was in the nursery. The root collar or cotyledon scar is an indicator of the original ground line. No portion of the roots should be exposed, nor any needles or branches covered with soil. Correct depth placement is especially critical on high insolation sites. The stem tissue at the base of the tree at the ground line is insulated (thickest bark) better than stem tissue above or root tissue below for protection from temperature extremes. High soil temperatures at ground line can be lethal to tender stem or root tissue.

**ii. Root Arrangement and Alterations.** The seedling should be planted so the root system is in its natural configuration and free to grow, as proper arrangement is critical for maximum water uptake. The roots should radiate downward in a conical arrangement. Inspectors should be properly trained to recognize improper root arrangement. Roots should not be twisted, compacted along one plane, or planted in a J, U or L shape. An occasional lateral root may be J, U, or L-shaped, however, taproots must be in a natural position and never bent.

Planters should not be allowed to cut, strip, or otherwise alter roots prior to planting. Root stripping is done when planters have trouble fitting roots properly into the hole. To help avoid root stripping, the appropriate kind of stock should be ordered for the site. Tree root systems should normally have a bell shape with many of the laterals hanging down to a length equal with or sometimes longer than the tap root. The root system should not look like a “skinny carrot” with no laterals, nor should the laterals all be appreciably shorter than the tap root. The nursery should be properly pruning the bareroot stock prior to shipment.

**iii. Stem Orientation.** The proper orientation of the tree stem is at an angle between 90 degrees with the horizontal plane and 90 degrees with the slope face. This will be achieved if the hole is opened properly.

**iv. Firmness.** Roots not in close contact with mineral soil will dry, resulting in tree mortality. The best way to fill in around the planted tree roots is to firmly tamp the soil around the planted tree filling and firming the hole progressively from the bottom toward the top.

**b. Container Planting.** Six (6) to nine (9) inch container plugs are generally easier to plant than longer rooted bareroot seedlings. Containers are especially recommended for rocky sites where holes cannot be opened properly for bareroot stock. Containers can be planted with almost any planting tool available. Hoes, bars, and augers have all been used successfully, but dibbles are generally not recommended.

**i. Planting Depth.** Plugs should be planted deep enough so that about 1 inch of soil can be placed on top of plug, level with surrounding soil surface in order to seal the plug in the ground. This is especially necessary in areas prone to frost heaving. In all cases, the entire plug and root media must be below the ground surface.

**ii. Plug Root Arrangement.** While container trees are somewhat easier to plant than bareroot trees, the same care should be given to ensure container seedlings are properly planted. Root system damage can be avoided by taking care to not break, bend, flatten or distort the plug in any manner.

**iii. Protection.** Containerized seedlings are similar morphologically to 1-0 bareroot seedlings in that they have very little heat protection (bark) on the stem. The high soil temperatures at ground level can easily kill the tree if not properly shaded.

## 5.5 **Regeneration Protection.**

<sup>19/</sup> Refer to *Illustration 20* for more a diagram depicting correct bareroot planting technique.

**A. Root-Feeding Rodent Damage.** After a harvest operation or catastrophic event such as a wildfire the site is soon invaded by grass and forbs. These plant species are the preferred diet of pocket gophers, moles and other root feeding rodents that are endemic to most forest lands. In some reforested areas, endemic populations multiply substantially as a result of the increased grass and forb food supply. Reforestation of these areas is often very difficult to establish when these rodent populations increase, primarily because they will feed on the roots of planted seedlings soon after exhausting the availability of their preferred grasses and forbs.

Rodent populations must be held in check until the seedlings become established and free to grow. In most cases this is the first ten years of establishment. The invasion of brush species will hold many rodent populations in check, as the brush will eventually shade out the grass and forb species and overtake the site. The reduction of the preferred food source usually forces the rodents to move or result in reduced populations.

If an active program of rodent population reduction is necessary, the historic methods have been through either trapping or poisoning. Rodent trapping has become the method of choice over poisoning recently because of the larger environmental consequences associated with poison continuing through the food chain and harming predators. Whatever rodent reduction program is selected, all activities should be coordinated with tribal laws and ordinances so that the practices used are congruent with the tribe's philosophy. In areas where especially high rodent populations exist, re-treatment is usually necessary to keep populations in check.

**B. Herbicide Application.** Herbicides can be valuable tools used to control unwanted vegetation competing with tree seedlings. Herbicides can be used prior to reforestation as a site preparation method or they can also be used in established plantations to control competing or unwanted vegetation. This competing vegetation can include grasses, forbs, sedges, vines, many woody shrub (brush) species, and undesirable tree species. Since brush and grass are major competitors for moisture and nutrients in plantations, efforts to remove or control them may be required.

Noxious weed (also known as invasive species) populations can also be detrimental to reforestation projects. If noxious weeds are allowed to grow unchecked, they can become extremely difficult to control.

The methods used to apply herbicides include spot, broadcast, and aerial applications. Generally, spot applications are used in established plantations, while broadcast and aerial applications are used in site preparation.

Herbicide use on tribal lands must adhere to tribal goals and objectives for their forest lands, as well as tribal laws and ordinances. Herbicides will only be applied in accordance with Environmental Protection Agency standards, and herbicide applicators are to follow manufacturer instructions during application. In addition, all applicable labels and material safety data sheets must be on hand when applying herbicides.

**C. Fertilization.** While there is no systematic or organized tree fertilization requirements on Indian forest lands, on certain sites it may be determined that a fertilization regime is warranted. The specific applications in these cases would be determined by the local or regional silviculturist or FD forester, be covered within the programmatic NEPA document, and be within the local tribal guidelines.

Some very general guidelines for fertilization are: 1) newly planted materials require a high phosphorous fertilizer for root and stem growth, while established plant materials require a high nitrogen fertilizer for foliage growth; and 2) apply fertilizer immediately after a heavy frost or prior to early spring growth, as middle to late summer applications can promote a late flush of growth which may not harden before hard freezes.

**5.6 Regeneration Evaluation and Monitoring.** Regeneration is evaluated and monitored over time through the use of regeneration surveys (also known as stocking surveys). Stocking surveys are performed to assess the quality and quantity of regeneration, either to determine treatment needs in unknown conditions, or to assess the success of previously performed treatments. Reforestation surveys are critical records and are to be fully documented and made part of the project folder. If prescribed fire was used as a site preparation method, then it is possible that the Fire Effects Monitoring and Inventory System (FIREMON) may be used to collect, process, report and store project monitoring data.<sup>20/</sup>

**A. Types of Reforestation Surveys.**

**(1) Pre-treatment Surveys.** Pretreatment surveys are generally necessary after fires, blowdown, harvest, or insect and disease mortality and other similar events. Information obtained from these surveys is used to diagnose

<sup>20/</sup> For more information on FIREMON, refer to the *BIA Fuels Management Handbook*.

and prescribe stand treatment needs on lands suspected to be in need of reforestation. With coniferous regeneration, the best time to survey stands with questionable stocking may be after a few frosts when ground vegetation has died back and turned brown. This allows for better distinction of green seedlings against tan deciduous vegetation.

(2) **Pre-Planting Surveys.** The primary purpose for pre-planting surveys is to prepare a planting contract or to prepare force account planting projects. These surveys are conducted to estimate the amount of planting stock needed, percent of plantable ground available for planting; scalping needs, shade or microsite availability, and other contract specifications.

(3) **Post-treatment Stocking Surveys.** Post-treatment stocking surveys are utilized to monitor regeneration and determine status (certified, progressing, or failing) after seeding, planting, or natural regeneration to determine estimated density and distribution of seedlings. Surveys usually start at the end of the first full growing season following planting, seeding, site preparation for natural regeneration, or coppice harvest. After the initial survey, two or three additional stocking surveys are usually recommended within the first six years following planting. Regional and/or local guidance, along with the silvicultural prescription, will further specify the number and frequency of post-treatment surveys, as well as regeneration certification standards.

**B. Methods of Reforestation Surveys.** Variations of walk-through and quick plots are used for pre-treatment, pre-plant and post-treatment surveys. A walk-through survey is typically adequate for pre-treatment and pre-plant exams. Post-treatment exams may consist of a walk-through survey in early years and a quick plot exam prior to certification. A quick plot exam is not required and may not be necessary in well-stocked units. The FD forester should determine the type of exam based on expected stocking levels and goals of the exam.

(1) **Walk-through Surveys.** Walk-through surveys do not require taking plots. These are conducted by walking through the treatment area, and recording ocular observations. The examiner should have reforestation experience to ensure that accurate observations are made. Walk-throughs are meant to survey the entire area of concern. Occasional plots may be taken to record specific data but results will not have a statistical basis. During the exam, the surveyor observes regeneration under varying conditions such as topography, aspect, and differences in site preparation method. One should expect differences in regeneration establishment in machine piled areas versus prescribed burn areas and in drainage bottoms or depressions where frost may be a problem.

(2) **Quick Plot Surveys.** Quick plot surveys are systematic plot surveys taken on a grid with at least enough plots to produce a 1 percent minimum sample. The plot size selected should be large enough to pick up at least three trees per plot, if possible. In most plantations and natural stands, 1/100<sup>th</sup>-acre plots should result in the desired number of sample trees. In well-stocked stands with more than 400 well-distributed trees per acre, on steep slopes or in thick vegetation, a smaller plot size of 1/300<sup>th</sup>-acre may be suitable.

**CHAPTER 6. COMMERCIAL FOREST STAND IMPROVEMENT**

**6.1 General.** Commercial forest stand improvement (CFSI) includes silvicultural practices that enhance growth and yield of existing commercial forest stands. CFSI is known in some other circles and ownerships as timber stand improvement (TSI), and may include any intermediate treatment, commercial or precommercial, after establishment and before the final harvest to improve composition, structure, condition, value, and increment of the stand. But on Indian forest lands, CFSI shall not include commercial thins and intermediate improvement harvests. These types of treatments are dealt with within the timber sale program under the silvicultural prescription for the harvest treatment.

An important part of managing timber stands, CFSI helps to achieve management goals and objectives for forest vegetation. Knowledge in the following areas is important to implementing CFSI activities: timber stand composition and structure; ecological and historical character of individual trees and timber stands, including genetic factors; methods of treatment and potential results; possible destructive agents.

Each CFSI project should have a stand examination, a silvicultural prescription, benefit/cost analysis, and environmental/cultural clearance. These support documents may be developed on a project basis or they may be part of the larger programmatic plans, e.g. the FD plan, FMP, or IRMP; either way is acceptable. Areas previously treated for CFSI may be re-entered when supported by a benefit/cost analysis and CFSI standards. Desired CFSI standards and guidelines will be developed and identified in the forest management plan and the forest development plan.

Many CFSI projects can (and perhaps should) be a part of the timber sale package. In this way, stand exams, environmental/cultural clearances, tribal approval, etc. will be implicit with the approval of the timber sale package. This results in greater efficiency and integration with timber sale activities.

**6.2 Silvicultural Evaluation.** Basic information about a stand is needed before a silvicultural prescription can be made. Stand examinations and/or walk through surveys should be conducted in potential CFSI stands as an aid in prescribing the methods, technique, and timing of initial and subsequent treatments to meet FD Plan and FMP objectives. The prescription may also address the consequences of feasible alternatives to the proposed CFSI project, such as chemical treatments. Each agency/tribe is to maintain an inventory of areas requiring CFSI activities.

The following elements should be addressed within silvicultural prescriptions for CFSI activities:

- Overall management objectives that include the stand improvement goal with clearly defined indicators that are measurable;
- Existing stand conditions;
- Featured species and species preference hierarchy;
- Desired density with specifications in terms of spacing between residuals, basal area, and trees per acre;
- Predicted growth response to the residual stand;
- Forest health concerns and stand resilience to insects, disease, fire and other weather related hazards;
- Animal damage concerns and preventative measures;
- Performance measurement;
- Responsibilities;
- Schedule of and requirements for follow-up activities.

**6.3 Stand Selection.** The selection of a stand in which to conduct a CFSI project is dependent upon the silvicultural characteristics and priorities identified in the FD Plan, FMP and/or IRMP. The following items should be considered.

**A. Age.** Age refers to both the chronological age and the length of time in a competitive status. Ideally, stands should be thinned at a relatively young age, when they can still respond favorably to an increase in growing space.



The range in age is principally dependent on the species, site capability, and other factors which contribute to the trees' ability to compete for the most limiting environmental factors. Thinning should generally be delayed until trees are expressing their mature growth and quality characteristics and are capable of deterring brush and other site competition by adequate occupancy of the site. However, the longer thinning is delayed after competition among trees begins, the greater is the unrealized usable diameter growth response. Tree growth begins to be reduced by competition well before the competition becomes readily apparent. It is also important to understand the maximum age that a particular species will favorably respond to release from competition.

**B. Crown Ratio or Crown Percent.** The crown area development is often an expression of the competitive stature of a tree within a stand. Shade tolerant species are more capable of maintaining large crowns even in low-light levels if no other factors are limiting. Shade intolerant species lose their needles or leaves more rapidly under low light conditions, as long as no other factors are limiting. However, trees do naturally tend to lose crown area with increasing age. The most tolerant species utilize photosynthates at lower light levels and higher levels of root competition than more intolerant species. Most species become less tolerant with age.

Each tree species has an inherent capability for the production of photosynthetic surface area. In a normal healthy growing stand, this surface area remains relatively constant, ultimately resulting in diminished individual crown lengths as stands become denser. The FD practitioner should have an understanding of the minimum crown ratio necessary for a species to respond to a thinning.

**C. Stand Density.** The benefits of thinning increase as initial density or number of stems per acre increase. Overstocking results in stands either not reaching merchantable sizes or reaching them very slowly, especially on lower productivity lands. High productivity lands will nearly always produce merchantable volume as individual trees with competitive advantages break free from the others and express their dominance.

A priority for precommercial thinning should be given to young stands on lower productive sites that are overstocked. These stands are those which would seldom produce merchantable volume without thinning. The reason for this priority is that without thinning, there is little to no future value from these stands. When these stands are thinned, nearly all the volume and economic value gained is attributable to the precommercial thinning. If stand density is so high that conventional thinning methods are economically unfeasible, consideration should be given to stand replacement.

A primary gain from precommercial thinning is a shortening of the time a stand must be carried before it is commercially thinned. This is accomplished by placing all of the growth that the site is capable of sustaining on the trees which will reach commercial size, eventually becoming the final crop trees.

**D. Height – Diameter.** Both height and diameter provide a relative expression of the chronological age of a stand. Many species have varying height growth patterns that can be determined in yield tables, site index, height growth curves, and forest vegetative models and simulators. In many cases, these curves will allow the prediction of the potential height and diameter within a specific time frame. Generally, gains from thinning decline very rapidly after the point of culmination of annual height growth. Also, the percentage gain in mean annual increment of usable volume due to precommercial thinning increases markedly as site quality decreases.

Excessively dominant large diameter trees (wolf trees) should not be left as part of the residual stand, unless required due to other management considerations. Generally, wolf trees utilize the site poorly, often having extremely long limbs of large size which occupy two to three times the crown area of normal dominant or co-dominant trees.

Diameter of material being thinned is a very important consideration in determining the volume and type of fuel hazard created. Stands with an average diameter that is greater than 5 inches should be a low priority due to the excessive amounts of slash created and the relatively short period of time until the stand reaches commercial size.

**E. Site Quality.** Site quality is the sum of all the environmental factors that determine the productivity of a forest land area. Indirect methods of measuring these environmental factors are site index and vegetation classification systems. The most typical vegetation classification systems are "habitat types" and "plant associations".

Site index, when properly obtained from dominant trees, is an expression of site productivity especially the height attainable. Over-dense stands, especially intolerant species, will not grow to their full height. Therefore, the site's true potential would not be indicated. When over-dense stands or young stands exist on the site, the vegetational classification system used in the local area will provide a rapid approximation of the site's productive capability.

While the common approach has been to invest production dollars on the highest quality sites, percentage gains from precommercial thinnings increase markedly with decreasing site quality. This results because the gain in usable mean annual increment directly attributable to the thinning increases with decreasing site quality. However, poorer quality sites can have a number of limiting silvicultural or environmental factors. If these factors are not addressed with the density reduction, the resultant stand may not produce commercial products except over very long periods of time. On the other hand, high site quality stands nearly always produce commercial products, even with high densities. Therefore, when considering stocking levels on regenerated stands, the greatest gains may be on the poorer sites, but the safest thinning investment may be on the best sites.

**F. Vigor.** This factor is a relative expression normally associated with trees in the main or dominant story of the stand. The rate of leader growth or the distance between internodes provides an excellent measure to the release potential of the site. Elongation of the crown area provides the greatest carbohydrate production potential for height and diameter growth.

The position of a tree's crown in relation to trees adjacent to it provides the best overall assessment of a tree's capability to respond to reductions in density. The most common crown classification systems portray the crown of a tree in relation to the exposure to sunlight and relative height within the stand. The classifications are:

- **Dominant Trees** – trees that are somewhat above the general level of the canopy and are exposed to full sunlight from above and to a certain extent laterally.
- **Co-Dominant Trees** - trees that are not as tall as dominants, with crowns receiving overhead light. They may be confined laterally by dominants and other co-dominants and usually make up the main canopy with these cohorts.
- **Intermediate Trees** - trees that are definitely subordinate in position receiving direct sunlight only through holes in the canopy. All trees of this class are subject to strong lateral competition.
- **Suppressed Trees** - trees that are definitely overtopped with no free overhead light. Commonly weak and slow growing.
- **Dead Trees.**

Stand leave trees should normally be selected from dominant and co-dominant crown classes especially in precommercial stand sizes. When necessary, intermediate crown classes may be left to maintain crown coverage and site occupancy if no others are available or if a specific species is desired to meet other resource concerns. Suppressed trees will seldom respond to thinning and should not be selected as leave trees.

Shade tolerant species, when overtopped or overdense, may have thin bark and a well developed "shade leaf" crown. Sudden exposure of trees in these stands to light through removal of an overstory and thinning can result in "sunburning" or "sunscauld" of the bole and loss of needles. "Sunburning" is necrosis caused by excessive heating of the cambial tissue under the thin bark, which often results in flattened sides, bark sluffing, and poor wood quality. This normally causes diminished growth and delayed site occupancy or death. Occasionally, mortality may be high in these stands if other stressful environmental conditions, such as aspect, coincide with the induced stress of treatment.

**G. Stand Damage.** This single element often holds the key to the final selection of a stand for thinning. All potential insect and disease hazards in the stand proposed for thinning must be evaluated or rated.

Thinning is often an effective method of reducing current losses from insects and disease in young stands. It is also an effective method of controlling insects in the future. The general vigor of the stand will be improved by thinning, and the ability to overcome insects can be increased. One exception to this assertion is that it has been found in eastern hardwoods that the mortality of defoliated trees increases when stands are logged, thinned, or otherwise disturbed immediately prior to, during, or within three years following a major defoliation. Disturbance in this case includes any activity that damages tree boles and/or roots. But in general, changes of environment within the stand, especially the increase in temperatures within the stand, appears to be detrimental to a number of insects and therefore beneficial to their hosts.

Thinning under an overstory infected with dwarf or true mistletoes should not be done. Early removal of the affected overstory, preferably by commercial sales, will benefit the stand. When thinning in stands infected with mistletoe, it

will be necessary to preprogram several follow-up inspections and possibly some additional treatments to deal with latent infections that become visible 3 to 5 years after the initial treatment.

Rust and gall infected stands can be substantially improved by careful selection of leave trees. Commonly, some trees within the stand have a genetic resistance to these pathogens. The apparent rate of resistance and lack of galls should be considered in prioritizing these stands for treatment.

The species susceptibility to current insect or disease problems should be evaluated. Many mixed stands contain nonhost species which could be encouraged by management to help eliminate or control the pathogen or insect.

The development of infection entry points must be considered when prioritizing stands for treatment. Commercial thinnings or removal of salvage materials must consider the scarring, limb breakage, season of the year, and other circumstances creating rust or fungal entry points. Treatment types which increase this susceptibility must be given a low priority.

Timing of thinning operations is essential in many stands, as some insect populations can build up rapidly in slash. Some of the “engraver” bark beetles are notorious for propagating in and following slash accumulations. Their populations can become dangerously high within slash, lethally exploding into the residual forest when the continuous chain of green slash becomes broken. Strategies for dealing with specific insects or diseases should be discussed with a local or regional silviculturist, along with the Forest Service Zone Entomologist or Pathologist for that area.

**H. Management Objectives.** The stand selection variables talked about so far are the principal silvicultural factors that should be considered when selecting stands for thinning. Silviculture properly applied requires that the stand capabilities be utilized to meet management objectives, which are identified in FD Plans, FMPs and/or IRMPs. Management objectives may set constraints and priorities for when and where treatments are to occur.

A management objective may identify a desired species composition necessary to maintain vigor over time and reduce susceptibility to damaging agents. The species selected may have considerable influence on insect and disease susceptibility, potential production, economic demand, and legal or administrative constraints. Biologically, many species may be produced on one habitat type or plant association, but a seral species may be more productive than the climax species.

**I. Disturbance Regimes (Fire).** In addition to stand level silvicultural characteristics and identified land management objectives, stand selection criteria should consider concepts of disturbance ecology from a stand and landscape perspective. Understanding of past, current, and potential future fire regimes for example, can give us clues to sustainable desired conditions in terms of composition and structure of stands and landscapes, and the possible wildlife habitat that was maintained over time. This knowledge can then be used to help define desired stand and landscape conditions, and assist in setting priorities for treatments.

**J. Economics.** Similar stands are often in need of thinning. An analysis should be conducted to rank stands so that the greatest return is realized for each dollar invested. Analysis of these treatments should be included in the FD Plan, associated NEPA documents and silvicultural prescriptions. The benefit/cost ratio method discussed in *Chapter 8.3* of this *Handbook Volume* should be used.

After analysis is completed, implementors of these stand treatment activities will need to evaluate and select the most cost efficient means for completing the activities. Consideration will include: available funding; contract versus force account; administration costs; move in and out costs; season of work; coordination with resource values and uses; coordination with other projects so that available cost-share opportunities are utilized; and methods to be used.

**6.4 Project Development.** The first step in project development is to ensure that the FD Plan, FMP or IRMP, and programmatic NEPA documents are being followed. It is also important to coordinate the timing of the project with other resource and timber projects. Following this initial phase, project development then consists of laying out the area or boundary, measuring the area, and the silvicultural evaluation that was discussed in 6.2 of this chapter.

Area layout and measurement consists of three basic steps: 1) locating and marking boundaries of the specific treatment units; 2) developing a project map to scale; and 3) determining the acreage of each unit.

When laying out an area on the ground, relevant maps and aerial photos should be heavily utilized while flagging unit boundaries. Layout personnel should be aware that roads, trails, transmission lines and other map features can

sometimes change between the time the maps were made and the present. It is usually best to use topographical or other easily identifiable landmarks as boundaries as this will help in determination of unit acreage. With the advent of global positioning system (GPS) technology, this may no longer be a concern. Once layout is finished and checked, boundaries should be marked plainly with paint or signs to ensure that they are easy to identify during the life of the project.

The next step is to develop a project map, which should contain as a minimum the following: 1) unit name; 2) unit boundary; 3) scale; 4) delineation of slash treatments by area; 5) special restrictions; 6) date of map; 7) north arrow.

Finally, the area of the units needs to be measured. Area determination can be done by several methods, all of which are appropriate for use in certain areas at certain times. Listed below are four methods that can be used.

- **Traverse** - This is a traditional method of determining the acreage of a unit. Commonly used equipment are a compass with a hip chain, steel tape, or pacing as a distance measuring device. There are several programmable calculator programs available which will determine the error of closure ratio and acreage of the unit.
- **Dot grid or compensating polar planimeter** – These also are traditional methods to calculate area. The dot grid is dropped randomly on the map and dots are counted and converted to acreage. The planimeter traces the perimeter of the unit and converts to acreage. Both methods require an accurate map of the unit, and as such should only be used where boundaries are easily located on both aerial photos and maps, and unit map accuracy can be vouched for. At least three accurate measurements should be made and averaged to determine the final acreage.
- **Global Positioning System (GPS)** – Many field locations have purchased GPS units and use them regularly for locating field points and for mapping unit boundaries. GPS units can very accurately calculate unit acreages. The downside is that they may not work under heavy canopies due to satellite line-of-site hindrances.
- **Laser Equipment** - Laser equipment is a newer technology that can be used effectively for measuring area.

## 6.5 Types of Projects.

**A. Precommercial Thinning (PCT).** PCT is the reduction of stand density (thinning) to prescribed specifications in the precommercial size class. Thinning in the commercial size class is normally accomplished in the timber sale process. The tools of PCT are essentially divided into hand, mechanical, chemical, and fire. The PCT work is usually accomplished with a force account crew (BIA hired), a tribal crew, or by contractors. In some cases, PCT work can be accomplished by the Purchaser of a timber sale as part of a contractual requirement on that timber sale. The following section examines the more common tools used in accomplishing PCT.

(1) **Hand Tools.** Several tools are available for accomplishing this job, but most are very slow, expensive, and hazardous to use. This method is usually confined to very small-sized, sapling-size trees and other vegetation. A partial list of common tools that are generally available is shown below along with specific comments concerning their use:

- a. **Axe.** Requires high operator skill and training. Dangerous in most areas, especially where footing is difficult or in dense stands.
- b. **Pruning Shear.** Requires minimal skill; easy and safe to operate; fast hand tool. Limited to maximum cutting diameters of one and one half inches.
- c. **Machete.** Requires very skilled operators. Dangerous in dense stands; requires good footing; moderately fast.
- d. **Brush Tool.** Usually a "D" shaped bladeholder with a 4- to 6-inch replaceable blade and handle. Requires minimal training; moderately safe even in dense stands.
- e. **Handsaws.** Require low skill; slow to operate, especially in dense stands.

(2) **Powered Hand Tools.** These tools are the most commonly used equipment. They are often not as safe to operate as non-power hand tools. They usually require some instructions and training to operate safely and efficiently.

a. **Light Chain Saw.** This is one of the most satisfactory thinning tools in current use. It can be equipped with either a straight or bow bar for cutting. Training and safety equipment are required.

b. **Brush Cutters.** This circular saw-cutting tool is useful for small dense stands less than 1-1/2 inches in diameter. Training is required, especially in rocky terrain, as this machine is difficult to use and must be kept sharp. Brush cutters are most appropriate in very dense stands.

(3) **Mechanical.** Machines used in this category are either self-propelled or require a primary moving vehicle for their operation. These machines flail or "chew-up" unwanted trees. Tree selection is poor because swaths of trees are removed. This method is most appropriate in over-dense, large seedling, or sapling-size stands that will stagnate without any expression of dominance. This equipment is normally limited to slopes less than 35 percent.

Thinning is accomplished leaving narrow strips of trees for release and with later hand treatment to select the best residual trees. Many fire-created, overdense stands are cheaply and efficiently treated using this method.

(4) **Girdling.** This method of killing trees is listed separately because trees are not severed from the stem. The girdlers normally cut through the phloem into the xylem stopping the flow of nutrients, thus killing the tree. Be aware it may take more than one year for a girdled tree to die depending on the tree species and quality of the girdling.

There are both powered and hand models of girdlers. The hand models take little skill to use, but are often limited to materials smaller than 4 inches (one model takes to 14 inches). The powered models will handle larger trees. The major problem with girdling is that the operator must get close to the tree and go around it. Chain saws are sometimes effective girdling tools, but they require more skill and involve higher operator risk.

(5) **Chemicals.** This method uses herbicides which are placed directly into, on, or around the bole of a tree. The liquid herbicides are translocated and through various actions, depending on the chemicals, cause the tree to die.

Chemical injection, like girdling, kills the standing tree thereby delaying the effect on ground slash creation, but potentially resulting in aerial or other fuel problems. The advantage of chemicals is primarily in thinning older, larger, precommercial stands where felling is difficult or not feasible.

The tools used are principally of two types: 1) the injectors which are long tubes with a cutting bit and hollow injection point on one end; and 2) the "Hack and squirt" hatchet-type which "frills" the tree bole at a convenient height and squirts herbicide into the "frill." Spraying the base of the tree or the root crown is also possible in limited situations, and is referred to as "Basal Spraying." Equipment such as the "Spot-Gun" are useful for this operation.

The herbicides used in chemical treatment vary with the target species, objective, method of application, time of year, off-target effects, and associated other resources. Chemical effectiveness varies with species. In some cases, the limb structure of the trees to be treated influences the tool to be used. Chemicals must be applied in accordance with label directions. Some chemicals may have problems with "flash-back" or killing of untreated trees due to root contacts. Another problem may be that cattle cannot graze for 90 days following treatment. In each project proposal, the chemical thinning alternative should be analyzed for effectiveness.

Chemicals applied for thinning should be applied under the direct supervision of an appropriately licensed applicator, and protective measures should be in place commensurate with specific application requirements. Further, the use of chemicals must be in accordance with tribal laws and ordinances governing this matter.

(6) **Prescribed Fire.** The use of propane torches to weed and clean may be a suitable alternative for thinning in the early years of sapling development, up to year 15. Broadcast burning may be appropriate in some situations, but it would be wise to incorporate this with the fuels management program. Refer to the next section on prescribed fire.

**B. Prescribed Burning.** Prescribed burning is a powerful tool that can be used for the protection and improvement of precommercial and commercial stands of timber. Prescribed burns can be used to thin, weed, prune, and to some degree, sanitize stands of timber. All of these effects can improve a stand's condition. Prescribed burning can also

protect a stand both before and after a stand has been thinned. Highly experienced and knowledgeable personnel must be used and the operation closely supervised by the appropriate burn boss qualified personnel.

Currently in most stands suitable for timber management, prescribed burning would not be the most desirable method of thinning because of the lack of control of spacing and leave tree selections. It can, in some cases, also be more expensive than other methods as well. In spite of some possible shortcomings, several other benefits may be obtained through burning. These benefits include the removal of undesirable brush, ground fuels, lower limbs of remaining trees and release of nutrients tied up in dead organic material. Fire also tends to discriminate against dwarf mistletoe infected trees.

The use of prescribed fire for thinning should be coordinated with the fuels management section of the program, and opportunities examined for potential cost-sharing of the project with the fuels management budget. For guidance on setting up combined FD and HFR projects, consult the *Bureau of Indian Affairs Fuels Management Handbook* for general guidance and the *Fuels Program Business Management Handbook* for specific guidance complete with the *Activity Fuels Funding Key*.<sup>11/</sup>

**C. Pruning.** Pruning is an early to mid-rotation investment that may or may not yield a return on the investment. Pruning is not one of the more common FD practices on Indian lands because of its cost and questionable return.

Trees can be pruned for a variety of reasons, the most common being: 1) to minimize knot size in the bottom log(s); 2) to reduce disease intensity; 3) to direct the growth of young trees; 4) to control overall tree size; 5) to influence flowering and fruiting; and 6) to maintain vigor, appearance, and safety. The first reason cited above is the primary reason for pruning on Indian forest lands, and gives the best opportunity for a positive return on investment. This is because branches, live or dead, as they are incorporated into the stem of the tree, form knots. Knots are one of the main lumber grade defects which reduce the value of the finished product. Branches are removed by pruning, which in turn, over many years produces higher grade knot-free wood.

When electing to prune, where and how the cut is made are the critical factors to a tree's response in growth and wound closure. Pruning should be applied with good judgement in order to maintain, as much as possible, the natural form of the tree. Pruning cuts should be made just outside the branch collar, with each cut leaving a smooth surface with no jagged edges or torn bark.

There are two general types of pruning: 1) natural pruning; and 2) artificial pruning.

**(1) Natural Pruning.** Natural pruning usually takes place as a three step process: the first step involves the death of a branch; the second step is the shedding of the dead branch; and the last step is the healing over of the stub which is left after the branch is shed.

Natural pruning is a slow process. Some species of trees lose dead branches more slowly than others. Once the branch is shed, ten years or longer is often required before the effects of the branch have stopped affecting the new wood. Natural pruning occurs much more readily in dense stands of timber because the amount of light which falls on branches below the main crown of the tree is greatly reduced in dense stands. This causes the branch to die. In species that have evolved with frequent fire cycles, fire can play an important role in natural pruning when lower branches of the trees are killed.

When dead branches are incorporated into the wood of the stem, the quality of the wood is lower than that of the wood formed around live branches. The reason for this is that a dead branch does not have any continuous fibers which connect it to the stem. This means the knot will generally be loose. The wood of a live branch is connected by continuous fibers and this generally makes a much firmer knot.

As a general rule, intensively managed fast growing stands and trees grown in plantations most often have much less natural pruning than natural unmanaged stands.

**(2) Artificial Pruning.** Artificial pruning involves the removal of branches before they are naturally shed by the tree. Artificial pruning can be done to remove just dead branches or it can be done to remove both dead and live branches. When pruning is done properly, the scars left by the removal of green branches tend to heal more quickly and produce better quality "firm knots" than the scars left by the removal of dead branches.

Selection of trees to be pruned in a stand is very important. Because of the time it takes to produce enough knot free wood to make pruning profitable, only the best trees which are well spaced and will be carried to the end of the rotation should be pruned.

The maximum benefits of pruning are achieved when the whole first log has been pruned in several steps because the branches can be removed when they are small and the scars heal quickly. If pruning is delayed until the first log can be pruned in one operation, many of the lower branches may get larger than is desirable for the fastest healing of the scar.

The numbers of trees pruned should be based upon the number of trees per acre expected to be retained until the final harvest. These trees should be marked for future reference, well documented in a silvicultural prescription, and recorded in an ongoing record keeping data base. This is critical for tracking the value added in these trees. Height-wise, trees should be pruned in increments of one-half the log-length plus one foot per  $\frac{1}{2}$  log. For example, if the common log length for the species and location you are in is 16 feet, then pruning should occur up to either 9, 18, 27 or 36 feet on the bole of the tree.

A list of preferred species and their priority should be developed for pruning tree selection.

**D. Release Cuttings.** Release cuttings are similar to PCT, but differ in that they are specifically targeted at releasing designated crop trees from competitive pressure. Release cuttings fall into three different categories: 1) cleaning; 2) weeding; and 3) liberation cuttings. All release cuttings are designed to free desirable crop trees that are not larger than saplings from competing trees, brush, or grasses.

(1) **Cleaning.** A cleaning is a treatment in a stand which is designed to release crop trees from trees of the same age, but generally less desirable species that are directly competing with or overtopping the crop trees. This can be done by cutting, girdling, and spraying. Cleanings do not generally remove all trees other than the crop trees but only the trees that are in direct competition with the crop trees.

(2) **Weeding.** Weeding is more of a general term than cleaning, and it denotes the removal of all vegetation that is competing with crop trees. This includes brush, grass, and trees of undesirable characteristics both younger and older than the desired crop trees. An example of weeding is the removal of heavy bunch grasses in an established plantation where the grass is strongly competing with the seedlings and is likely to for some time in the future.

(3) **Liberation Cutting.** This term denotes the treatment of older, overtopping, undesirable trees that are directly competing with the crop trees not past the sapling size. This treatment is similar to a removal cutting in the shelterwood harvesting method, except that the trees which are removed in liberation cutting are of less desirable species and were not left as a seed source. An example of a liberation cutting would be the removal of overtopping pinyon pine and juniper trees from a ponderosa pine understory in the ponderosa pine-pinyon/juniper transition zone.

**E. Fertilization.** While there is no systematic or organized tree fertilization requirements on Indian forest lands, on certain sites it may be determined that a fertilization regime is warranted. The specific applications in these cases would be determined by the local or regional silviculturist or FD forester, be covered within the programmatic NEPA document, and be within the local tribal guidelines.

**6.6 Coordination.** All CFSI projects should be coordinated with other related facets of the forestry, fire, and natural resource programs in order to maximize the available operating budgets. Some descriptions of coordinated activities follow.

**A. Other Resource Coordination.** Resource coordination through the NEPA process well in advance of the project should prevent conflicts, making the project beneficial to all resources involved. The advanced coordination should include interdisciplinary input from specialists in various affected resources. Benefits to other resources, in addition to increased production of usable wood fiber, include: 1) increased forage/browse production; 2) enhanced aesthetic values; 3) increased production of usable water supply; 4) reduced fire spread potential; 5) healthy ecosystems; 6) reduced probability of insect outbreaks; and 7) reduction of tree diseases.

**B. Timber Sale Coordination.** Any kind of FD work that can be accomplished during the course of a timber sale can help reduce the strain on the FD budget. Some programs place FD work such as thinning, slashing of sub-merchantable material, woody brush control, and/or planting requirements within the timber sale contract as a requirement of the Purchaser. Other programs have the Purchaser pay into a fund that is then used for FD follow-up activity on the sale area. Even just coordinating with the timber sales staff so that roads are left open for immediate FD follow-up, rather than closed and reopened a year or two later, can help defray unnecessary program costs.

**C. Fuels Program Coordination.** Thinning normally produces heavy fuel loads and must be coordinated with the fuels program at the regional or tribe/agency level. It is possible, with some advance planning, to cost-share thinning projects and their resulting slash/fuel treatment with the hazardous fuels reduction programs, both wildland urban interface (WUI) and Non-WUI, that are managed by the BIA National Interagency Fire Center (NIFC). It should be noted that these programs cannot be used exclusively for the treatment of activity fuels. Activity fuels, in general, are fuels that result from silvicultural or other cultural treatments implemented to improve site productivity and result in the extraction of commercial forest products, woodland products, or other products and biomass. However, the use of hazardous fuel reduction program funding does not prevent the combining of natural fuels project treatments with treatments for activity fuels when this is a cost efficient and/or biologically sound way of doing business. Separate cost accounting must be maintained to ensure funds are expended appropriately.

The criteria for combining WUI or Non-WUI fuels treatment funding with regular FD funding sources is as follows.

- Hazardous fuels reduction programs (WUI and Non-WUI) are authorized for treatment of fuels in Fire Regime Condition Class (FRCC) 2 and 3 and maintenance treatments and fuel breaks in FRCC1. For FRCC definitions, refer to *Chapter 1.6* of this *Handbook Volume*.
- A basic premise for combining funds is that the hazardous fuels reduction program shall not be used only as an opportunity to pass off activity slash mitigation and treatment expenses to other funding strictly for the cost savings.
- An *Activity Fuels Funding Key* has been developed (*Illustration 21*) that contains an Activity Table, a set of five Funding Use Tables, and a Funding Table. The first two tables are dichotomous keys. They guide you step by step (with the use of hyperlinks) to the Funding Table, which provides the percentage of hazardous fuels funding eligible for Planning, Treatments, and Monitoring. Each step addresses project related information, which is used as criteria to advance to the next step. Criteria include Fire Regime, FRCC, biomass utilization, stumpage or economic return, fuel breaks, and treatment types. Therefore, these concepts and information must be understood and available to use the tables.

Again, one should refer to the definitions of Fire Regime and Condition Class contained in *Chapter 1.6* of this *Handbook Volume*.



**CHAPTER 7. OTHER PROGRAM ACTIVITIES**

**7.1 Tree Improvement.** Some Indian forestry programs have elected or may elect to develop a tree improvement program on the reservation. This is an ambitious undertaking that requires a staff with knowledge of forest genetics and tree improvement practices and many years of commitment before the fruits of the program's labor are realized. The advantage of conducting an in-house tree improvement program is that the program can select for the traits that it wants to emphasize and improve; and, over time, locally produce substantial quantities of improved tree seeds. The disadvantage is that it is a costly, long-term program that requires a substantial commitment.

There are generally three main areas of involvement within the tree improvement program: 1) identifying and maintaining the select trees that exhibit the desired qualities; 2) developing evaluation plantations that test the traits of progeny of select tree combinations; and 3) growing quantities of improved seed in seed orchards.

**A. Select Tree Identification.** Tree selection is one of the most important steps in the tree improvement program, serving as the base from which genetic gain will be achieved. Some of the more common traits that trees are selected for are: height growth; diameter growth; form; evidence of seed production; and resistance to certain diseases. Usually trees are selected as a result of comparing them against each other in search of the ideal candidate. This "comparison method" is employed utilizing either actual measurements of growth or achievement, or by visual comparisons. Once select trees are identified, they are tagged and mapped. Seeds can be collected from all of the select trees or from just the best tree within each select tree group. The selected seeds are then grown in evaluation plantations for observation.

Once select trees are identified, both on the ground and on maps, it is imperative that they be protected from other management actions, such as timber sale and prescribed fire activity. Good communications within the program as to the whereabouts of select trees is imperative.

Since the select trees are a cornerstone to the tree improvement program, it is a common practice to perform cultural treatments around them in order to allow more growing space. Preventative maintenance goes a long way in a successful program.

**B. Evaluation Plantations.** Evaluation plantations are used as long term (15 to 50 years) test sites to evaluate true genetic worth of select tree progeny as they perform under diverse environmental conditions. Performance of a family will determine its usefulness in the breeding program. Poor performing families should be removed from the program.

Many silviculturally useful results, involving both genetic and non-genetic factors, can be expected from evaluation plantations. Some of these are: 1) population response to varying environments; 2) ability to survive in varying environments due to drought, frost, heat, etc.; 3) juvenile height growth; 4) resistance to insects and disease; 5) volume and other growth characteristics; 6) wood quality characteristics; and 7) breeding value.

Evaluation plantations should be well maintained and they should provide protection to seedlings from both animal damage and vegetative competition. Level of maintenance is dependent upon site-specific needs.

**C. Seed Orchards.** A seed orchard is a plantation of either genetically or phenotypically selected trees. Seed orchards can be developed clonally, with traditional seedlings, or through a combination of clones and seedlings; with the goal of producing genetically improved seed for reforestation use.

Seed orchards are managed to: promote out-crossings (minimize self-pollination), reduce pollen contaminants from outside sources, and produce frequent large seed crops. Advantages of a seed orchard over scattered selected trees are: 1) higher potential genetic gain; 2) better controlled crosses; 3) easier protection from fire, insect and other damaging agents; 4) easier and more cost efficient to manage for seed production; 5) activities are concentrated, which lowers harvesting costs and collection time; and 6) can serve as a gene pool.

Guidelines to consider in the establishment of seed orchards are as follows.

**(1) Site Selection.** Site selection is a critical step in establishment of a seed orchard. The four main factors in selecting a seed orchard site are biological, soil, climate, and management. The most critical factor under biological consideration is the site's proven ability to produce abundant and frequent cone crops with relatively low insect infestations for the desired species. Soils should be conducive to farming practices and be deep and well drained. Climatic factors, such as susceptibility to frequent late frosts, can be a deciding factor in the orchards success. Ease of management

should be considered in the selection process. Accessibility, labor, protection, water supply and development must also be considered.

(2) **Seed Orchard Size.** Seed orchard size is dependent upon the following factors: spacing of orchard positions; number of families and/or clones to be in the orchard; number of replications of families and/or clones in the orchard; and pollination considerations.

(3) **Seed Orchard Design.** A number of seed orchard designs have been developed for use in specific situations. Much thought should be put into the orchard design to favor random mating, avoid self-pollinating and allow for flexibility. A poorly designed orchard could lead to reduced genetic gain as a result of inbreeding.

(4) **Seed Orchard Maintenance.** It may be wise to fertilize the seed orchard based upon collected soil and foliar samples. Based on the findings, nutrient levels should be brought into balance and maintained to optimize cone production. In addition, weeding of grass and brush should be a regular maintenance feature of the orchard. Insect populations of cone and seed insects are usually weather dependent and could be a serious problem in years when the surrounding seed crops are poor. Insecticides may be necessary in problem years. Root rots could threaten seed orchards after establishment. If root rot evidence is found, infected trees including roots should be removed. If animals become a problem, the seed orchard may need to be fenced.

(5) **Pollen Management.** Pollen management is essential if maximum genetic gains are to be obtained from a seed orchard. Arrangement of families within orchards is an important control over pollen distribution since the majority of pollen comes from immediate neighbors. To retard introduction of undesirable pollen into orchards, a pollen management zone will be established outside of orchard boundaries.

**7.2 Greenhouse Operations.** Some tribes have elected to grow their own tree seedlings within tribal greenhouse operations. Building, managing and maintaining a greenhouse, along with learning the nuances necessary for successful woody plant propagation, are the subjects of many books and publications. The rewards of utilizing home-grown seedlings can be very high for a tribe that does a substantial amount of reforestation. In addition, extra seedlings can be sold to other entities within the appropriate species zones.

The U.S. Forest Service (FS), through its intra-agency Reforestation, Nurseries, and Genetics Resources (RNGR) team, has developed two effective initiatives: 1) the American Indian Initiative; and 2) the Native Plants Initiative. As a result of these two initiatives, the RNGR team supported tribal greenhouse operations with the following accomplishments:

- Published the *Native Plants Journal* since 2000 in partnership with Indiana University;
- Developed an on-line database of more than 2,300 native plant propagation protocols;
- Surveyed 70 tribes about their native plant propagation practices and needs and published those findings in the *Tribal Nursery Needs Assessment (Illustration 22)*;
- Initiated the creation of the Intertribal Nursery Council that has met annually and held annual native plant propagation workshops since 2000;
- Started writing a two-volume *Tribal Nursery Manual*, with *Volume 1* stressing native plant nursery management, and *Volume 2* providing detailed native plant propagation protocols requested by tribes;
- Hired a qualified tribal member to serve as Nursery Tribal Coordinator;
- Established a Cultural Plant Propagation Center at Moenkopi School for the Hopi Tribe to facilitate native plant propagation for cultural, spiritual, and medicinal needs, and to foster interaction between elders and youth;
- Interacted with 95 tribes and 200 individual American Indians with interest in native plants.

More information on this program can be obtained from:

Jeremy Pinto, Nursery Tribal Coordinator  
USDA Forest Service  
(208) 883-2352  
[jpinto@fs.fed.us](mailto:jpinto@fs.fed.us)

**7.3 Woody Biomass Utilization.** Thinning, pruning and some release cuttings all generate a substantial amount of slash that can become a fire hazard as it dries. Traditional methods of treating this slash are: 1) lop and scatter it so that it does not create ladder fuels into the residual tree canopy; 2) mechanically pile and burn, if it can be performed without damaging the residual stand; 3) hand pile and burn; and 4) broadcast burn, if it can be performed without damaging the residual stand.

The amount of slash generated by the combination of FD activities, commercial timber sales, and hazardous fuels reduction projects affiliated with the National Fire Plan (NFP) has been increasing dramatically since the NFP was passed in 2000. This slash, now called woody biomass, is recognized as an untapped energy resource. Some of the energy products that woody biomass can be utilized to create are: 1) heat energy for immediate consumption through direct burning; 2) steam production for heat and for powering other equipment; 3) electrical power generation; 4) biodiesel fuel for furnaces and diesel engines; and 5) methanol for gasoline and alcohol-driven engines.

The utilization of any natural resource product, including woody biomass, is driven by economics. Simply put, if the value of the product equals or exceeds the total cost of its extraction and delivery, then utilization can occur without a subsidy of some sort. If the value of the product is less than extraction and delivery costs, then a subsidy is needed for the product to be utilized.

Market values of various wood products are usually in a dynamic state. In addition, the technology for the extraction, delivery, and processing of wood products into the myriad of bio-based energy products is steadily improving. These two reasons combined create a situation where the demand for woody biomass can rapidly change with the evolving market and technology forces. For this reason, it would be prudent to have policies in place that allow for the utilization of woody biomass in favorable markets.

**A. Final Rule.** On May 20, 2005, the Secretary of Interior published the *Final Rule for Woody Biomass Utilization* in the Federal Register (FR) (*Illustration 10*). Essentially, the rule:

*“...establishes consistent and efficient procedures to allow contractors the option to remove woody biomass by-products from Department of the Interior land management activities where ecologically appropriate. If the woody biomass has fair market value and payment is required...a separate timber/vegetative sales contract must be executed.”*

The rule directs that on federal “service contracts”, i.e., contracts that do not generate revenue and perform a service (FD contracts, hazardous fuels reduction contracts, etc.), the contracting officer must insert a clause reading substantially the same as FR § 1452.237-71 in each solicitation and contract that is expected to generate woody biomass that meets the criteria in the rule. The clause contained in FR § 1452.237-71 is as follows:

- 1. The contractor may remove and utilize woody biomass, if: (a) Project work is progressing as scheduled; and (b) Removal is completed before contract expiration.*
- 2. To execute this option, the contractor must submit a written request to the Government.*
- 3. Following receipt of the written request, and if appropriate, the Government and the contractor will negotiate and execute a separate timber/vegetative sales contract. Payment under the timber/vegetative sales contract must be at a price equal to or greater than the appraised value of the woody biomass. The contractor must make any appropriate payment specified in the related timber/vegetative sales contract before removal may be authorized.*
- 4. If required by law, regulation or Bureau policy, the Government will prepare a timber/vegetative sales notice and/or prospectus, including volume estimates, appraised value and any appropriate special provisions.*
- 5. The contractor must treat any woody biomass not removed in accordance with the specifications in the service contract.*
- 6. The sales contract and service contract are severable; default or termination under either contract does not remove the obligations under the contract.*

**B. New Policy.** As a result of this direction from the Secretary, all federal FD contracts that may result in the

creation of woody biomass must contain a clause (similar to above) that allows the contractor to utilize the woody biomass generated under the contract, providing that the removal is ecologically appropriate. If the woody biomass has minimal product value, then Programs are encouraged to utilize a goods-for-services exchange for the product value that the biomass may generate. For example, the contractor may perform additional work or accomplish more acres in the exchange. If the woody biomass develops into a high product value, then Programs are encouraged to coordinate with their timber sale or permit staff in order to execute a timber sale or permit for the product.

Tribal programs that utilize tribal contracts are encouraged to incorporate similar language into their contracts so that woody biomass utilization is supported.

**7.4 Carbon Sequestration.** Several tribes have explored an innovative method of securing funding for forestation projects, i.e. putting in plantations on Indian lands that otherwise would not have been planted. This method involves the formation of an agreement or partnership with companies that are involved in trading guarantees of sequestered carbon on the global trading market. In some countries, companies that release carbon gases into the atmosphere are penalized unless they can demonstrate that they've secured the rights to sequestered carbon elsewhere. In the case of the involved tribes, the sequestered carbon is that which is absorbed from the atmosphere by young plantations that are grown to a specified age. In exchange, the tribes were able to secure immediate funding for the future sequestered carbon. That immediate funding was actually used to pay for the costs involved with installing the plantation; a definite winning combination.

The BIA policy on tribal carbon sequestration is currently in its formulation stage. Once this policy is officially released, this section of the *Handbook Volume* will be updated.

**CHAPTER 8. PROGRAM SUPPORT**

**8.1 General.** The program support component of FD is made up of the following activities: development of a FD Plan; related environmental compliance work; planning of annual projects and activities; benefit/cost analyses; project ranking and funding priorities; record keeping; monitoring and evaluation; reporting; and technical training.

Key to program support is the development and maintenance of an accurate inventory of both FD needs and accomplishments. This FD inventory, at a minimum, should list the acres on each reservation that have a need for FD work that qualifies for Non-Recurring FD funding. The acres on this inventory are updated annually and submitted with the annual reporting requirements.

**8.2 Forest Development Plans and Records.****A. Plans.**

**(1) FD Plan.** A Forest Development Plan will be prepared in conjunction with the reservation FMP. The FMP Environmental Assessment should cover all planned FD activities. At a minimum, the following elements shall be included in the FD Plan, although some of these are contained in the FMP and can be cited as such:

- a. Tribal approval.
- b. Goals and objectives for the FD program.
- c. Program organizational structure expected to be in place to accomplish goals and objectives; include both federal and tribal.
- d. Areas in need of treatment which will include documentation of the FD inventory and a detailed map prioritizing these areas. The plan should also reference the aerial photograph set(s) used to establish the FD inventory and treatment priorities. GIS map coverage files, GPS programs and files, and databases associated with the FD treatment inventory should be specifically identified for easy access and use.
- e. A statement of long-term goals for each management area which details species, density, distribution, size, and age class targets.
- f. A schedule which will show areas to be treated on an annual basis. This will be the basis from which the Forest Development Program Planned Projects will be planned. Except for failed prescriptions and stand-alone reforestation projects, this schedule would be based on harvest schedules contained in FMP.
- g. Silvicultural guidelines for each vegetation type or management area.
- h. Reforestation guidelines. These guidelines should address: regeneration methods and minimal acceptable stocking levels by species and management areas; planting spacing requirements by species for each management areas; long-term goals for density, distribution, size/age class distribution, basal area, growth, etc.; all reforestation project certification standards and remedial activities for failed projects; subsequent silvicultural treatments needed through rotation to reach long-term goals; plantation protection measures (i.e. fire, grazing and/or rodent control); stocking survey procedures and frequency; site preparation methods (including use of herbicide and fire where appropriate); and mapping requirements.
- i. Seed procurement, seed testing, seed storage, and where appropriate tree improvement practices and procedures may be implemented, by species.
- j. CFSI guidelines. These guidelines should address how each management area will be prioritized for treatment; desired species, density, distribution, and size/age class targets for each vegetation type or management area; subsequent silvicultural treatment needed through rotation to reach long-term goals; insect and disease treatment, stand exam procedures; and mapping requirements.
- k. Special management constraints and direction.
- l. Monitoring and evaluation procedures, and a schedule of when these events will occur.

If these elements are contained in an approved FMP, the FD plan should reference those sections of the FMP.

(2) **Planned Projects/Activities Report (Form 5344).** Annual planned FD projects or activities should contain the following:

- a. A brief narrative describing each planned project/activity. The narrative should describe how the FMP and FD plan goals and objectives will be achieved and any unusual circumstances.
- b. An expenditures report showing how Non-Recurring FD funds are to be utilized for the various forest development projects and activities.
- c. An itemized list of equipment purchases costing more than \$2500 per unit.<sup>21/</sup>
- d. An inventory of forest development acres.
- e. A map of each project and a small scale map of the reservation showing location of all the projects.

The Superintendent or designated line official will review each project for compliance with established regulations and directives. The Superintendent will also summarize all planned projects/activities and accomplishments and submit the information to the Regional Office.

The Regional Director will compile these report summaries for the entire Region and submit a Regional Report to Central Office.

**B. Records.** Each forest development field project will have in its permanent files a Project Planned and Accomplishment Report, a silvicultural stand examination, a silvicultural prescription, benefit/cost analysis, environmental/cultural clearance, appropriate maps, and tribal or individual Indian owner approval. If available, all treated acres will be digitized into a GIS.

**8.3 Benefit/Cost Analyses.** A benefit/cost (B/C) analysis must be prepared for individual FD projects and activities or for groups of similar projects; and shall be used as one of the determinants in setting the project funding priorities at the local level. The B/C analysis compares net benefits of a proposed management activity against the net costs of the activity; using discounted or present values (use a 4% discount rate in B/C calculations). Benefits and costs each fall into two categories as follows:

- **Direct Benefits.** These include benefits resulting directly from the project activity, and generally have an established market price. Examples include timber produced, revenue received, etc.
- **Secondary Benefits.** These are additional benefits accruing to society because of the project, and are generally not valued in the market. Examples include aesthetic values, cultural values, income generated by secondary manufacturing, employment generated, etc.
- **Project Costs.** The value of all goods and services used for establishing, maintaining, and operating the project. Examples include labor costs, equipment costs, transportation costs, etc.
- **Associated Costs.** These costs are incurred indirectly as a result of the project. Examples include the costs of planning the project, the costs of resulting soil erosion, temporary negative aesthetic values, etc.

The B/C analysis consists of two measures: 1) economic efficiency, expressed as the B/C Ratio, is a numeric measure that compares the **direct benefits** against the **project costs**; and 2) economic equity, expressed descriptively, compares **secondary benefits** and **associated costs**, and refers to the economic impacts of the project that have a direct bearing on community stability; e.g., employment, income distribution, and the intangible benefits that contribute to community stability and welfare.

Procedures for FD program B/C analyses should be developed locally. The following diagram is provided as a guide and describes the calculation of the B/C Ratio. For further support and assistance, refer to *Illustration 23*,

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<sup>21/</sup> Note: This does not approve purchases; just the use of funds for equipment acquisition. Equipment purchase approval must still follow Agency/Regional protocol.

*Economic Guides for Managing Forest Resources – 1991 Update.*<sup>22/</sup>

<b>B/C Ratio</b>	=	$\frac{\text{PV of Direct Benefits}}{\text{PV of Project Costs}}$	=	$\frac{\text{B}}{\text{C}}$
<b>PV</b>	=	$\frac{\text{FV}}{(1.0 + \text{discount rate})^N}$		
<p><b>Where:</b> PV equals the present value of a future benefit or cost;                  FV equals the future value of the benefit or cost;                  Discount rate equals 4% or .04;                  N equals the number of years between the present and future.</p>				

**8.4 Environmental / Cultural Clearance.** For many FD projects, a categorical exclusion (CatEx) may be all that is required under the National Environmental Policy Act (NEPA). CatEx guidelines defined in the Departmental Manual are attached to this *Handbook Volume* as *Illustration 6*. If the FD project also qualifies as a hazardous fuel reduction project under the National Fire Plan (NFP), then CatEx guidelines specific to NFP projects may also be followed if advantageous (refer to *Illustration 8*).<sup>23/</sup> Projects that fall outside of CatEx guidelines must have an environmental assessment (EA) or an environmental impact statement (EIS) prepared, as per NEPA guidelines. An EIS is required for major federal actions that significantly affect the quality of the human environment. If an EA determines that the human environment is not significantly affected, then an EIS is not required and a Finding of No Significance (FONSI) is issued. Some locations may choose to develop a programmatic EA that includes all of the activities of the FD program for a specified period of time. This method can result in significant savings of funding and staff time.

Compliance with the National Historic Preservation Act (NHPA) and the Endangered Species Act (ESA) is also required due to the nexus of federal dollar involvement in these projects. These Acts apply to the CatEx projects as well as the EA and EIS projects. In addition, all tribal laws and ordinances are to be adhered to.

**8.5 Project Ranking and Funding Priorities.** Tribes or agencies should rank their individual projects or activities based on a benefit/cost analysis and tribal consultation. Funding priorities shall be based on these rankings and on past performance.

**8.6 Monitoring and Evaluation.** Regional Offices and Agencies/Tribes should develop methods and procedures to supervise, monitor, and provide program oversight to assure that the forest development programs are cost-effective, maintain funding accountability, and that Indian commercial forest stands are managed in a perpetually productive state, thereby fulfilling Federal trust responsibility for sustained yield forest management.

**8.7 Technical Training.** Technical training and assistance will be provided to forest development staff as necessary.

<sup>22/</sup> Scott Meneely, Eastern Regional Forester, pointed out that the 1991 Update of the *Economic Guides for Managing Forest Resources* is in need of another update. The method used to calculate the Gross Domestic Product (GDP) Implicit Price Deflator Index (IPDI), Table 3-2 of Economic Guide No. 3, needs revision because beginning in 1991, the annual Economic Report of the President replaced the Gross National Product (GNP) IPDI with the GDP IPDI. This is important because the GNP IPDI was used in the Stumpage Trend Analysis Procedure. Table 3-1, the Bureau Wide Average Stumpage Values, also need to be updated to the present. The *Economic Guides for Managing Forest Resources* will be updated as a future project.

<sup>23/</sup> *Illustration 9* contains a comparison between the BIA CatEx guidelines contained in *Illustration 6* and the DOI fuels CatEx guidelines contained in *Illustration 8*.

The amount and level of training provided will depend on the background training and experience of staff responsible for implementing field projects and the desired level of experience and training required for staff to successfully carry out their project responsibilities. Training may also be provided to qualify an individual as a Silviculturist or to maintain their qualification.

**8.8 Reporting.** There are two primary FD program reports that must be filled out annually and submitted first to the Agency or Regional Office for local and regional consolidation, and then ultimately forwarded on to the Central Office: the *Forest Development Program Planned Projects/Activities Request*<sup>24/</sup> for the coming fiscal year; and the *Forest Development Program Accomplished Project/Activities Report*<sup>25/</sup> for the fiscal year just completed.

**A. Planned Projects/Activities Request.**<sup>24/</sup> Each year, tribes and agencies will submit to the Regional Director a *Forest Development Program Planned Projects/Activities Request* (Request) listing the type of forest development projects planned for completion during the coming fiscal year, the projected accomplishment, and the amount of the FD funding request. It is not required that funds from other than Non-Recurring (aka Forestry Projects funds) be shown on the Request form. But showing intended accomplishments with hazardous fuels funds, forest pest funds, and timber sale proceeds, to name a few, helps to demonstrate the complete picture of the intended accomplishment in FD project work for the coming year. Project documents, e.g. stand exam data, silvicultural prescriptions, benefit/cost analyses, and environmental/cultural clearances should be available for review if required by the Regional Office. The Regional Office will consolidate and summarize all Request forms and submit to the National Office for review and funding allocation.

**B. Accomplished Projects/Activities Report.**<sup>25/</sup> Each year, tribes and agencies must submit to the Regional Director an individual FD Program *Forest Development Program Accomplished Project/Activities Report* (Report). This Report specifies acres treated and dollars spent by project/activity type, and includes an updated FD inventory of acres for reforestation and CFSI. The Regional Director consolidates and summarizes all Reports and submits them to the National Office. The Report is actually broken into two separate and distinct forms: the **accomplishments** and the **inventory**.

**(1) Accomplishments.** The accomplishments reported are acres planted, precommercial thinned, “other” project accomplishments, along with the amount spent on these projects.

Planting accomplishments include all acres planted during the fiscal year, including those on timber sales that occurred during the year. For the purposes of reporting the planting accomplishment, we will not delay reporting the accomplishment until the plantation is certified. Also included in this report are acres of natural regeneration that met the standards of the silvicultural prescription during the fiscal year.

Precommercial thinning accomplishments include all thinning acres that achieved the desired density reduction targets identified in the silvicultural prescription, regardless of the funding source. When performing thinning work that crosses openings in the forest, the opening acreage may be reported with the accomplishment as long as it was included in the beginning inventory acreage; or, it can be added as an accrual in the same year that it is reported as an accomplishment. The next section discusses this more thoroughly.

All FD project accomplishments other than what is accounted for under planting and thinning should also be listed as accomplishments. The “other” project accomplishments would include: site preparation; seed collection; stocking and survival surveys; pruning; tree improvement; greenhouse or nursery work; fertilization; pesticide application; project layout not already counted under thinning or planting; construction, operation and maintenance of facilities tied directly to the FD operation; training of the project crew in FD project activities; vehicle procurement and maintenance for FD vehicles only; and FD equipment procurement and maintenance. Any other not listed FD accomplishment should be listed and explained in a footnote on the form.

Different types of accomplishments that occur over the same acres, but at different entries, may be counted separately for each type of accomplishment. This may appear to be a double or triple counting of the same acres, but it is merely a measurement of varying work accomplished at differing times. This method of double or triple counting accomplishments will not be used in determining the inventory of need (backlog) for thinning and planting acres that is discussed below.

Administrative costs are those that cannot be assigned to specific forest development projects. Some examples

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<sup>24/</sup> Illustration 1 contains the *Forest Development Program Planned Projects/Activities Request*, complete with detailed instructions.

<sup>25/</sup> Illustration 2 contains the *Forest Development Program Accomplished Projects/Activities Report*, complete with detailed instructions.



include: long-range planning; training not tied to project work, e.g. wildland fire training, ethics training, human resources and clerical training, etc.; clerical work and other tasks not tied to project work. Since Forestry Project Funds (Non-Recurring) are appropriated to accomplish projects, no more than 15% of their total should go toward administrative costs.

(2) **Inventory (Backlog).** The current FD inventory of acres in need of thinning and acres in need of planting was historically referred to as the "backlog"; but in reality is the inventory of FD need (Inventory). The Inventory is adjusted every year based upon this report. To determine the Inventory, the previous fiscal year's Inventory becomes the beginning of the year base figure from which accomplishments and administrative reductions are subtracted, and accruals are added. The following describes the terms involved.

a. **Accomplishments** described above in 8.8B(1) also pertain to this part of the report form. These accomplishments should count the acres removed from the beginning inventory once, even if multiple types of treatments occurred on the same acreage. Any reforestation acres counted as an accomplishment that were not part of the inventory backlog (e.g. harvest unit plantations), should also be counted as an "accrual" during the same fiscal year. If CFSI acres are counted as an accomplishment, then they should either have been part of the inventory backlog, or they should be counted as an "accrual" during the same fiscal year. In other words, do not deduct accomplished CFSI acres from the beginning inventory if those acres are/were not part of that inventory. This rule applies to all CFSI work regardless of funding source, and includes density reduction to prescribed levels resulting from timber sale activity. When performing CFSI work that crosses openings in the forest, the opening acreage may be reported with the accomplishment if it was included in the beginning inventory acreage; or, it can be added as an accrual in the same year that it is reported as an accomplishment.

b. **Administrative reductions** occur when acres are removed from the inventory backlog for reasons other than the work being accomplished. Some of the more common reasons are: change in tribal objectives and/or land use classification; land exchanges; and adjustments based on new or revised data.

c. **Accruals** happen when acres are added to the beginning inventory. Reforestation accruals occur as a result of: planned regeneration harvest; insect/disease outbreak; wildland fire or other natural catastrophic event; forest trespass; change in objectives and/or land use classification; land purchase or exchange; and correction for previous inventory error. CFSI accruals occur as a result of: forest in-growth; forest health concerns due to overstocking, parasitic infections (dwarf mistletoe), etc; change in objectives and/or land use classification; land purchase or exchange; and correction for previous inventory error.

# Illustrations

1. **Illustration 1. Forest Development Program Planned Projects/Activities Request (with instructions)**
2. **Illustration 2. Forest Development Program Accomplished Projects/Activities Report (with instructions)**
3. **Illustration 3. CFR § 163.32 Forest Development, from Federal Register Final Rule**
4. **Illustration 4. 53 IAM Forestry Manual Chapter 5 – Forest Development – Released 9-1-06**
5. **Illustration 5. 53 BIAM Supplement 5 – from 3-14-91 (superceded)**
6. **Illustration 6. 516 DM 6 – Categorical Exclusions for BIA, effective 9-14-98**
7. **Illustration 7. 517 DM 1 – Pesticide Use Policy, effective 7-14-81**
8. **Illustration 8. Categorical Exclusions for DOI Fuels Projects – Final Rule – Federal Register 6-05-03**
9. **Illustration 9. BIA and DOI Fuels Categorical Exclusion Comparison**
10. **Illustration 10. Woody Biomass Utilization in Service Contracts – Final Rule - Federal Register 5-20-05**
11. **Illustration 11. Sample Letter on Beneficial Owner Notification for FD Projects**
12. **Illustration 12. Sample FD Project Announcement and Bid Form**
13. **Illustration 13. Sample Tribal Contract between Tribe and FD Contractor**
14. **Illustration 14. Sample Tribal Thinning Contract**
15. **Illustration 15. Sample Tribal Planting Contract**
16. **Illustration 16. Sample BIA FD Federal Service Contract**
17. **Illustration 17. Tree Wrapping Diagram**
18. **Illustration 18. Hoedad Planting Diagram**
19. **Illustration 19. Planting Bar Diagram**
20. **Illustration 20. Bare Root Planting Diagram**
21. **Illustration 21. Activity Fuels Funding Key**
22. **Illustration 22. Tribal Nursery Survey Summary**
23. **Illustration 23. Economic Guide for Managing Forest Resources – 1991 Update**
24. **Illustration 24. Sample Federal Purchase Order for FD Contract Work**

Illustration 1 - Planned Projects

53 IAM-5H

Revised Oct. 2006

Replaces 53 BIAM Supp. 5 Release 2, Illustration 2, Form 5344

## FOREST DEVELOPMENT PROGRAM PLANNED PROJECTS/ACTIVITIES REQUEST

Fiscal Year \_\_\_\_\_

Sheet \_\_\_ of \_\_\_

Reporting Office<sup>①</sup>:

Report all dollars in thousands.

Forestry Project Funds (Non-Recurring) Only										
Location <sup>②</sup> or Project Name	Funding Source	Total Amount of Request	Planned Expenditures				Estimated Accomplishments			
	Code <sup>③</sup>	\$M <sup>④</sup>	Planting	Pre-Commercial Thinning	Other <sup>⑤</sup> Projects	Admin. Costs <sup>⑥</sup>	Planting	Pre-Commercial Thinning	Other Projects	
			\$M	\$M	\$M	\$M	Acres	Type <sup>⑤</sup>	Accomp. <sup>⑦</sup>	
SubTotal										
All Other Funding Sources										
Location <sup>②</sup> or Project Name	Funding Source	Total Amount of Request	Planned Expenditures				Estimated Accomplishments			
	Code <sup>③</sup>	\$M <sup>④</sup>	Planting	Pre-Commercial Thinning	Other <sup>⑤</sup> Projects	Admin. Costs <sup>⑥</sup>	Planting	Pre-Commercial Thinning	Other Projects	
			\$M	\$M	\$M	\$M	Acres	Type <sup>⑤</sup>	Accomp. <sup>⑦</sup>	
SubTotal										
Total										

See Instructions for explanation of numbered terms.

Footnotes:

## INSTRUCTIONS - Illustration 1

53 IAM-5H

- ①. **Reporting Office** is the reporting location as follows: Reservation/Tribe; Agency; Region; National.
- ②. "**Location or Project Name**" is the individual locations within your Report Base as follows: **Reservation/Tribe** (individual FD projects/activities on each line); **Agency** (individual reservations within Agency reporting area are summarized on each line); **Region** (individual Agency Offices and Compacted Tribes on each line); **National** (individual Regions on each line).
- ③. List the **funding source** by the following codes: **NR** (Forestry Project Funds, aka Non-Recurring funds); **TPA** (Forestry Program Funds aka Tribal Priority Allocation funds); **FMD** (forest management deductions); **FHP** (forest health protection funds from the Forest Service, aka forest pest management (FPM)); **HFR** (hazardous fuels reduction); **FP** (forestry project funds specifically held by the Office of the Special Trustee {OST}); **TR** (general tribal funds); **IFLAA** (Indian Forest Land Assistance Account); **OT** (other funds - footnote and specify).
- ④. The total amount of the request for **NR** funds should be: 1) **Reservation/Tribe** - based upon the intended FD projects to be performed for the year, minus work that will be done by other funds, e.g. HFR fuels work, timber sale associated accomplishments, work to be done with forest pest funds, etc; 2) **Agency** - individual reservations within Agency reporting their summarized funding request on each line; 3) **Region** - individual Agency Offices and Compacted Tribes summarized requests on each line; 4) **National** - individual Regions funding requests summarized on each line. **Requests for funds other than NR (bottom half of form) are not required, but may be shown to demonstrate the complete picture of the intended accomplishment in forest development project work for the coming year.**
- ⑤. Forest Development **proposed projects other** than what is accounted for under planting and PCT are accounted for here. These proposed charges are project costs and will **not** be counted as administrative costs. Examples of the types of projects are: **SP** (site preparation); **SC** (seed collection); **SRV** (surveys - stocking, survival, etc); **PR** (pruning); **TI** (tree improvement); **GR** (greenhouse or nursery work); **FR** (fertilization); **PA** (pesticide application); **LAY** (project layout, if not counted under CFSI); **FAC** (FD facilities construction, operation and maintenance); **RD** (road rehab, repair, and maintenance for FD access); **TR** (training for project crew); **VEH** (vehicle procurement and maintenance); **EQ** (equipment procurement and maintenance); **OT** (other - footnote and specify).
- ⑥. **Administrative costs** are those that cannot be assigned to specific forest development projects: long-range planning; training not tied to project work, e.g. wildland fire training, ethics training, human resources and clerical training, etc.; clerical work and other tasks not tied to project work. Since Forestry Project Funds (Non-Recurring) are appropriated to accomplish projects, no more than 15% of their total should go toward administrative costs.
- ⑦. For the **estimated accomplishment**, enter any of the following: the number of **AC** (acres); number of **LB** (pounds); number of **BU** (bushels); number of **SL** (seedlings); number of **MH** (man-hours); etc.

Illustration 2a - Accomplishments

53 IAM-5H

Revised Oct. 2006

Replaces 53 BIAM Supp. 5 Release 2, Illustration 2, Form 5345

**FOREST DEVELOPMENT PROGRAM ACCOMPLISHED PROJECTS/ACTIVITIES REPORT**

Fiscal Year \_\_\_\_\_

Sheet \_\_\_ of \_\_\_

Reporting Office<sup>①</sup>:

Report all dollars in thousands.

Forestry Project Funds (Non-Recurring) Only												
Location <sup>②</sup> or Project Name	Funding Source	Amount of Funding Allocation	Planting		Precommercial Thinning		Other Projects <sup>④</sup>				Admin. Costs <sup>⑤</sup>	Carry Over <sup>⑥</sup>
	Code <sup>③</sup>	\$M	Acres	\$M	Acres	\$M	Type	Accomp.	Metric	\$M	\$M	\$M
<b>SubTotal</b>												
All Other Funding Sources												
Location <sup>②</sup> or Project Name	Funding Source	Amount of Funding Allocation	Planting		Precommercial Thinning		Other Projects <sup>④</sup>				Admin. Costs <sup>⑤</sup>	Carry Over <sup>⑥</sup>
	Code <sup>③</sup>	\$M	Acres	\$M	Acres	\$M	Type	Accomp.	Metric	\$M	\$M	\$M
<b>SubTotal</b>												
<b>Total</b>												

See Instructions for explanation of numbered terms.

Footnotes:

Illustration 2b - Inventory

53 IAM-5H

Revised Oct. 2006

Replaces 53 BIAM Supp. 5 Release 2, Illustration 2, Form 5345

# FOREST DEVELOPMENT PROGRAM ACCOMPLISHED PROJECTS/ACTIVITIES REPORT

(INVENTORY CALCULATION OF REFORESTATION AND CFSI NEEDS)

Sheet \_\_\_ of \_\_\_

Reporting Office<sup>①</sup>:

Fiscal Year

Inventory Expressed in Acres

Location <sup>②</sup>	Inventory Beginning		Accomplishments <sup>③</sup>		Administrative Reductions <sup>④</sup>		Accruals <sup>⑤</sup>		Inventory Ending	
	(beginning of fiscal year acres)		(minus acres)		(minus acres)		(plus acres)		(equals) (end of fiscal year)	
	Reforestation	CFSI	Reforestation	CFSI	Reforestation	CFSI	Reforestation	CFSI	Reforestation	CFSI

See Instructions for explanation of numbered terms.

Footnotes:

## **INSTRUCTIONS - Illustration 2a - Accomplishments**

53 IAM-5H

- ①. **Reporting Office** is the reporting location as follows: Reservation/Tribe; Agency; Region; National.
- ②. "**Location or Project Name**" is the individual locations within your Report Base as follows: **Reservation/Tribe** (individual FD projects/activities on each line); **Agency** (individual reservations within Agency reporting area are summarized on each line; **Region** (individual Agency Offices and Compacted Tribes on each line); **National** (individual Regions on each line).
- ③. List the **type of funding** by the following codes: **NR** (Forestry Project Funds, aka Non-Recurring); **TPA** (Forestry Program Funds aka Tribal Priority Allocation funds); **FMD** (forest management deductions); **FHP** (forest health protection funds from the Forest Service, aka forest pest management (FPM)); **HFR** (hazardous fuels reduction); **FP** (forestry project funds specifically held by the Office of the Special Trustee (OST)); **TR** (general tribal funds); **IFLAA** (Indian Forest Land Assistance Account); **OT** (other funds - footnote and specify).
- ④. Forest Development **project accomplishments other** than what is accounted for under planting and precommercial thinning should be listed here. These charges are project costs and will **not** be counted as administrative costs. Examples of the types of projects are: **SP** (site preparation); **SC** (seed collection); **SRV** (surveys - stocking, survival, etc); **PR** (pruning); **TI** (tree improvement); **GR** (greenhouse or nursery work); **FR** (fertilization); **PA** (pesticide application); **LAY** (project layout, if not counted under CFSI); **FAC** (FD facilities construction, operation and maintenance); **RD** (road rehab, repair, and maintenance for FD access); **TR** (training for project crew); **VEH** (vehicle procurement and maintenance; **EQ** (equipment procurement and maintenance); **OT** (other - footnote and specify). Examples of the metric being reported are: **AC** (acres); **LB** (pounds); **BU** (bushels); **SL** (seedlings); **MH** (man-hours). For the accomplishment, enter the amount of the metric accomplished. If multiple projects occur on the same acres, then count those same acres for each accomplishment as necessary.
- ⑤. **Administrative costs** are those that cannot be assigned to specific forest development projects: long-range planning; training not tied to project work, e.g. wildland fire training, ethics training, human resources and clerical training, etc.; clerical work and other tasks not tied to project work. Since Forestry Project Funds (Non-Recurring) are appropriated to accomplish projects, no more than 15% of their total should go toward administrative costs.
- ⑥. **Carry over** equals funding allocation minus all expenditures.

## **INSTRUCTIONS - Illustration 2b - Inventory**

53 IAM-5H

- ①. **Reporting Office** is the reporting location as follows: Reservation/Tribe; Agency; Region; National.
- ②. **Location** is the individual locations within your Report Base as follows: **Reservation/Tribe**; **Agency** (individual reservations within Agency reporting area are summarized on each line; **Region** (individual Agency Offices and Compacted Tribes on each line); **National** (individual Regions on each line).
- ③. **Reforestation accomplishments** include all planting acres, including those on timber sales, that occurred during the fiscal year. Also include acres of natural regeneration that met the standards of the silvicultural prescription during the fiscal year. Any reforestation acres counted as an accomplishment that were not part of the inventory backlog (e.g. harvest unit plantations), should also be counted as an "Accrual" during the same fiscal year. **CFSI accomplishments** should include all thinning acres that achieved the desired density reduction targets identified in the silvicultural prescription, regardless of the funding source. If CFSI acres are counted as an accomplishment, then they should either have been part of the inventory backlog, or they should be counted as an "Accrual" during the same fiscal year. Acres should only be counted once as accomplished, even if multiple project types occurred over the same acres.
- ④. **Administrative reductions** occur when acres are removed from the inventory backlog for reasons other than the work being accomplished. Some of the more common reasons are: change in tribal objectives and/or land use classification; land exchanges; and adjustments based on new or revised data.
- ⑤. **Accruals** are when acres are to be added to the beginning inventory of need for the fiscal year. **Reforestation accruals** occur as a result of: planned regeneration harvest; insect/disease outbreak; wildland fire or other natural catastrophic event; forest trespass; change in objectives and/or land use classification; land purchase or exchange; and adjustments based on new or revised data. **CFSI accruals** occur as a result of: forest in-growth; forest health concerns due to overstocking, parasitic infections (dwarf mistletoe), etc; change in objectives and/or land use classification; land purchase or exchange; and adjustments due to new or revised data.

individuals under its criminal or civil trespass laws where it has jurisdiction over those individuals.

**§ 163.30 Revocable road use and construction permits for removal of commercial forest products.**

(a) In accordance with 25 U.S.C. 415 as amended, the Secretary may request tribes and/or other beneficial owners to sign revocable permits designating the Secretary as agent for the landowner and empowering him or her to issue revocable road use and construction permits to users for the purpose of removing forest products.

(b) When a majority of trust interest in a tract has consented, the Secretary may issue revocable road use and construction permits for removal of forest products over and across such land. In addition, the Secretary may act for individual owners when:

(1) One or more of the individual owner(s) of the land or of an interest therein is a minor or a person non compos mentis, and the Secretary finds that such grant, in total or for an interest therein, will cause no substantial injury to the land or the owner, which cannot be adequately compensated for by monetary damages;

(2) The whereabouts of the owner(s) of the land or those with an interest therein are unknown so long as the majority of owner(s) of interests whose whereabouts are known, consent to the grant;

(3) The heirs or devisees of a deceased owner of the land or interest have not been determined, and the Secretary finds the grant will cause no substantial injury to the land or any land owner; or

(4) The owners of interests in the land are so numerous that the Secretary finds it would be impractical to obtain the consent of the majority and finds that such grant in total or an interest therein will cause no substantial injury to the land or the owner(s), that cannot be adequately compensated for by monetary damages.

(c) Nothing in this section shall preclude acquisition of rights-of-way over Indian lands, under 25 CFR part 169, or conflict with provisions of that part.

**§ 163.31 Insect and disease control.**

(a) The Secretary is authorized to protect and preserve Indian forest land from disease or insects (Sept. 20, 1922, Ch. 349, 42 Stat. 857). The Secretary shall consult with the authorized tribal representatives and beneficial owners of Indian forest land concerning control actions.

(b) The Secretary is responsible for controlling and mitigating harmful

effects of insects and diseases on Indian forest land and will coordinate control actions with the Secretary of Agriculture in accordance with 92 Stat. 365, 16 U.S.C. 2101.

**§ 163.32 Forest development.**

Forest development pertains to forest land management activities undertaken to improve the sustainable productivity of commercial Indian forest land. The program shall consist of reforestation, timber stand improvement projects, and related investments to enhance productivity of commercial forest land with emphasis on accomplishing on-the-ground projects. Forest development funds will be used to re-establish, maintain, and/or improve growth of commercial timber species and control stocking levels on commercial forest land. Forest development activities will be planned and executed using benefit-cost analyses as one of the determinants in establishing priorities for project funding.

**§ 163.33 Administrative appeals.**

Any challenge to action under 25 CFR part 163 taken by an approving officer or subordinate official exercising delegated authority from the Secretary shall be exclusively through administrative appeal or as provided in the Indian Self-Determination and Education Assistance Act (Pub. L. 93-638, as amended). Such appeal(s) shall be filed in accordance with the provisions of 25 CFR part 2, Appeals from administrative actions, except that an appeal of any action under part 163 of this title shall:

(a) Not stay any action unless otherwise directed by the Secretary; and

(b) Define "interested party" for purposes of bringing such an appeal or participating in such an appeal as any person whose own direct economic interest is adversely affected by an action or decision.

**§ 163.34 Environmental compliance.**

Actions taken by the Secretary under the regulations in this part must comply with the National Environmental Policy Act of 1969, applicable Council on Environmental Quality Regulations, and tribal laws and regulations.

**§ 163.35 Indian forest land assistance account.**

(a) At the request of a tribe's authorized representatives, the Secretary may establish tribal-specific forest land assistance accounts within the trust fund system.

(b) Deposits shall be credited either to forest transportation or to general forest land management accounts.

(c) Deposits into the accounts may include:

(1) Funds from non-federal sources related to activities on or for the Indian forest land of such tribe's reservation;

(2) Donations or contributions;

(3) Unobligated forestry appropriations for the tribe;

(4) User fees; and

(5) Funds transferred under Federal interagency agreements if otherwise authorized by law.

(d) For purposes of § 163.35(c)(3) of this part; unobligated forestry appropriations shall consist of balances that remain unobligated at the end of the fiscal year(s) for which funds are appropriated for the benefit of an Indian tribe.

(e) Funds in the Indian forest land assistance account plus any interest or other income earned shall remain available until expended and shall not be available to otherwise offset Federal appropriations for the management of Indian forest land.

(f) Funds in the forest land assistance account shall be used only for forest land management activities on the reservation for which the account is established.

(g) Funds in a tribe's forest land assistance account shall be expended in accordance with a plan approved by the tribe and the Secretary.

(h) The Secretary may, where circumstances warrant, at the request of the tribe, or upon the Secretary's own volition, conduct audits of the forest land assistance accounts and shall provide the audit results of to the tribe(s).

**§ 163.36 Tribal forestry program financial support.**

(a) The Secretary shall maintain a program to provide financial support to qualifying tribal forestry programs. A qualifying tribal forestry program is an organization or entity established by a tribe for purposes of carrying out forest land management activities. Such financial support shall be made available through the Indian Self-Determination and Education Assistance Act (Pub. L. 93-638, as amended).

(b) The authorized tribal representatives of any category 1, 2, or 3 reservation (as defined under § 163.36(b)(1)-(3)) with an established tribal forestry program or with an intent to establish such a program for the purpose of carrying out forest land management activities may apply and qualify for tribal forestry program financial support. Reservation categories, as determined by the Secretary, are defined as:



**INDIAN AFFAIRS MANUAL**

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Part 53  
Chapter 5

Forestry  
Forest Development

Page 1

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**5.1 Purpose.** This chapter provides the policies, standards, and responsibilities for conducting and implementing Forest Development activities on Indian lands.

**5.2 Guidance.** Handbooks, directives and other guides may be issued and revised as necessary (see 53 IAM 1.3; also see the *Indian Forest Management Handbook, Volume 5*, titled, *Forest Development*, for detailed process and procedural guidance).

**5.3 Scope.** Forest Development is that segment of the Forestry program that addresses the improvement of the commercial forest resources. Forest Development encompasses reforestation and commercial forest stand improvement (CFSI) projects and activities, and shall consist of all investments applied to establish, promote, enhance, and maintain optimum growth on selected trees to produce sustained yields of desired forest products under the principle of sustained yield forest management. Forest Development activities shall be planned and executed with emphasis on accomplishing on-the-ground projects using benefit-cost analyses as one of the determinants in establishing priorities for project funding. The directives contained in this chapter apply to all Federal agencies and programs participating in the management, accountability, or protection of Indian forest lands. Regardless of the means of program execution, the appropriate Federal official shall assure that the standards prescribed herein are met.

**5.4 Policy.** Forest Development projects and activities on Indian lands shall have tribal input and tribal approval. The overall direction for the Forest Development program shall be incorporated into the approved Forest Management Plan. All projects and activities must be planned and implemented from guidelines established in a Forest Development Plan. Non-recurring Forest Development funds will only be used for the improvement or enhancement of identified forest development needs utilizing appropriate silvicultural treatments. Reforestation immediately after a timber sale is not an approved use of these non-recurring funds.

**5.5 Responsibilities.**

**A. Director, Bureau of Indian Affairs.**

(1) Develop and provide national forest development program direction, policies, and oversight.

(2) Establish reporting standards and requirements.

(3) Maintain program budget and funding justification and procedures for efficient and effective program administration.

**B. Regional Director.**

(1) Provide Agency Superintendents with national and regional forest development policies, guidelines, and directives.

(2) Provide technical assistance to field offices including tribal programs; monitor and evaluate field activities and expenditures; make recommendations; and conduct program oversight.

(3) Allocate available funds to field programs for approved forest development activities. Reallocate funds when necessary.

(4) Receive, review, compile and approve forest development plans and annual project planning/activities reports.

**INDIAN AFFAIRS MANUAL**

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Part 53  
Chapter 5

Forestry  
Forest Development

Page 2

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**(5)** Receive, review, and compile forest development accomplishments and expenditures reports from field offices and tribes.

**C. Agency Superintendent.**

**(1)** In consultation with tribe(s), prepare and implement forest development plans and projects consistent with an approved forest management plan and an approved silvicultural prescription.

**(2)** Prepares, develops, and submits to the Regional Director the following reports on dates specified by the Director, Bureau of Indian Affairs:

**(a)** Forest Development Program Planned/Activities.

**(b)** Forest Development Projects/Activities Accomplishment Reports.

**(3)** Maintain program funding accountability, project accomplishments and expenditures, and maps.

**(4)** Assist tribe(s) with submission of reports and accomplishments.

FORESTRY  
Forest Development

5.1 Policy and Scope. Forest development is that segment of forestry which addresses the improvement of forest resources. Because certain forest development objectives may not be attainable through timber sales contract specifications or timber harvesting operations, achievement of these objectives may require additional silvicultural treatments and techniques. Therefore, forest development silvicultural practices and techniques shall be used whenever feasible to improve, extend, or modify forest production within the commercial forest base.

5.2 Authority. The Act of June 18, 1934, (See 53 BIAM 1.2A.), Public Law 101-630, and 25 CFR 163.25 provide basic forest management authority for forest development practices. Refer also to Act of March 29, 1944, Cooperative Sustained Yield Units.

5.3 Responsibility.

A. Assistant Secretary - Indian Affairs. The Assistant Secretary shall formulate, develop, revise, issue, and maintain Bureau forest development program policies, standards, guidelines, directives, and procedures through the BIA manual system and other channels; and, if appropriate, provide guidance and oversight to tribal programs.

B. Area Director. The Area Director -shall implement national policy prescribed by the Assistant Secretary, adapting and modifying objectives to conform to local conditions, when necessary. Provides guidance and oversight to Agency offices and tribal programs, if appropriate.

C. Superintendent. The Superintendent and other appropriate line officers shall conduct forest development program operations directly and monitor tribally contracted forest development programs or portions thereof, if appropriate.

5.4 Activities. Forest development is that segment of forestry which addresses the improvement of the forest resource. It involves forestation and commercial forest stand improvement (CFSI) activities, principally, and consists of all the silvicultural treatments applied to establish, promote, enhance, and maintain optimum growth of selected trees to produce desired forest products under principles of sustained yield forest management.

5.5 Practices. Forest development practices are silvicultural treatments or techniques that include, but are not limited to, forestation, stand improvement and administrative activities.

FOREST DEVELOPMENT  
General

1. GENERAL

1.1 Policy and Scope.

A. Definition. Forest Development is that segment of the Forestry Program that addresses the improvement of forest resources. It involves forestation and commercial forest stand improvement (CFSI) activities, principally, and consists of all silvicultural treatments applied to establish, promote, enhance, and maintain optimum growth on selected trees to produce perpetual yields of desired forest products under the principles of sustained yield forest management. Although present forest management policy requires that certain forest development objectives be attained through sale contract specifications or by harvesting operations, achievement of these objectives may require additional silvicultural treatments. Therefore, forest development silvicultural practices shall be used whenever feasible and cost-effective to improve, extend, or modify production within the commercial forest land base.

B. Indian Lands Affected. A primary criteria for making forest development investments is a high probability that long term land use will remain commercial forest production.

C. Range of Activities. The Forest Development Program consists of forestation, stand improvement, and related investments that enhance forest productivity. Forest development funds will be used to reestablish, maintain, and improve growth and stocking of desirable commercial species. A benefit/cost analysis will be prepared by the tribes and agencies to rank individual forest development projects and establish funding priorities.

1.2 Authority. See 53 BIAH 5.2.

1.3 Responsibility. See 53 BIAH 5.3.

A; Assistant Secretary - Indian Affairs. In addition to responsibilities specified in 53 BIAH 5.3, the Assistant Secretary shall:

(1) Maintain consolidated records for all forest development accomplishments by funding source.

(2) Prepare national standards, plans, program budget requests, and submit program accomplishment reports to Congress.

(3) Allocate appropriated forest development funds not in the Indian Priority System (IPS) to Area Offices.

(4) Monitor Area Office and field office forest development program activities for compliance with national policy and conduct oversight to ensure that forest development funds are spent as prescribed by Congress.

B. Area Director. In addition to responsibilities specified in 53 BIAH 5.3, the Area Director shall:

## FOREST DEVELOPMENT

General

(1) Provide Agency Superintendents and Tribal Leaders with national forest development policy, goals, guidelines, and directives in conjunction with local Area Office policy.

(2) By October 1 each year, prepare and submit to the Assistant Secretary for approval, an annual consolidated forest development projects planning report based on field project plans and submissions.

(3) Allocate available funds to field programs. Determine if project funds should be reallocated to ensure attainment of Area forest development goals.

(4) Provide technical guidance and assistance to field offices, monitor field activities, and conduct program oversight, if appropriate.

(5) Receive forest development accomplishment data from the field, and submit a consolidated Area Office Forest Development Program Accomplishment Report to the Central Office no later than November 30.

C. Superintendent. In addition to responsibilities specified in 53 BIAM 5.3, the Superintendent shall:

(1) Develop programs that conform to policy, goals, and guidelines. Submit annual project plans that identify and include all support needs to the Area Director no later than September 15.

(2) Conduct field operations and/or monitor contracted programs, if appropriate, to ensure accomplishment of program objectives.

(3) Maintain program/project records and submit annual forest development project accomplishment reports, including maps, to the Area Director no later than November 15.

(4) If appropriate, provide technical assistance to tribes on request.

D. Participating Indian Tribe. If the program is administered under Public Law 93-638, as amended by Public Law 101-472, the immediate Bureau official with line authority will be responsible for submission of reports, maintenance of records, and development and maintenance of plans.

FOREST DEVELOPMENT  
Activities

Illustration 5 - 53 IAM 5-H P. 4 of 13

## 2. ACTIVITIES

2.1 General. Forest development (*See* 53 BIAM 5.4) includes funds *and* efforts to conduct all activities of reforestation *and* CFSI necessary to properly manage the commercial Indian forest to produce sustained yields of desired forest products.

2.2 Forest Development.

A. Funding Sources. Potential funding sources are Tribe/Agency funds in the IPS, forest management deductions, Congressional add-on funds, tribal funds and other funds.

(1) Reforesting harvested sale areas is an essential silvicultural practice and a key component of a reservation forest management plan. Sale areas harvested after 1978 will be initially regenerated under terms of the sale contract.

(2) Congressional add-on funds are allocated to Areas based on needs identified in their Forest Development Planned Project/Activities reports. The forest development program add-on funds shall only be used to eliminate the inventory of forest development needs, which may be updated annually.

B. Conduct of Activities. Forest development program activities are conducted by tribal and BIA forestry personnel through force account, contract funds (PL 93-638, buy-Indian, open-market), grant, or other viable recognized mechanisms.

(1) Because of the specific purpose for Congressional add-on funds mandated by Congress, a maximum of 15 percent of each Area's allocation may be used for administrative costs associated with programmatic activities. Forest development administrative costs are those costs that can not be assigned to specific forest development project acres, e.g., long-range planning and training.

(2) Reforestation of timber sale areas will be funded with receipts from that sale activity. Acres included in this activity will not be recorded in the inventory of forest development needs until the silvicultural prescription has failed. Areas may establish criteria for evaluating reforestation efforts on timber sale areas.

(3) Forest development Congressional add-on funds cannot be used in other forestry program segments, or transferred to other Bureau programs.

FOREST DEVELOPMENT  
Practices

## 3. PRACTICES

3.1 General. Forest development program practices are: treatments, and (1) Silvicultural (2) administrative support activities.

3.2 Silvicultural. Silvicultural treatments are, principally, divided into two major activities: (1) Reforestation and (2) CFSI. These include:

A. Reforestation. Reforestation includes tree planting, replanting, and direct seeding. Specific requirements exclude the funding of afforestation with Congressional add-on funds. Accepted reforestation practices include:

(1) Stocking surveys and planning to determine the most feasible project sites, procedures, and methodology.

(2) Project field delineation.

(3) Site preparation.

(4) Tree seed production and acquisition.

(5) Planting stock production and acquisition.

(6) Tree planting and replanting and direct seeding operations.

(7) Protecting recently forested areas.

(8) Post planting stocking and contract compliance surveys.

(9) Limited access road repair.

B. CFSI. CFSI includes the silvicultural practices that enhance growth and yield of existing commercial forest stands. Accepted CFSI practices include:

(1) Commercial stocking inventories and stocking studies to determine the most feasible sites, procedures, and methodologies.

(2) Project field delineation.

(3) Precommercial thinning and release operations.

(4) Reduction of hazardous fuel generated by CFSI operations.

(5) Fertilizing commercial forest soils that support young, thrifty stands.

(6) Protecting recently treated timber stands.

(7) Limited access road repair.

FOREST DEVELOPMENT  
Practices

C. Other Practices. Other forest development activities may be approved by the Area Director if supported by silvicultural principles and benefit/cost analyses.

D. Equipment. Equipment may be procured and maintained with Congressional .add-on funds; however, Area Directors must approve equipment purchases costing more than \$2,500 per unit. This equipment must be" used in direct forest development program support.

3.3 Program Support Activities. Program support activities include:

A. Forest Development Plans and Records.

(1) Plans

(a) Long-term reservation forest development plans will be prepared that list the goals and objectives of the reservation forest development program, and conform to the long-range forest management objectives of the reservation forest management plan (See 53 BIAM Supplement 2).

(b) Annual forest development plans are action plans prepared at field locations that include a prioritized list of proposed projects and activities that should be accomplished during the specific year. Plans will be submitted to the Area Office by September 15 and to the Central Office by October 1 each year.

(c) An individual project plan will be developed for each proposed forest development project or activity, and will consist of the proposal narrative, benefit/cost analysis, and ranking status [See Supplement 5, 3.3 A.(2)].

(2) Records

(a) An individual forest development project record is the basic program document. Various forestry program reports derive from, or build on, each project record or combinations of records.

(b) Each Area Office shall develop a specific record format that addresses its requirements. A forest development project record should contain, as a minimum, the following elements:

(i) Proposal narrative/description;

(ii) Project statistics, including: Name, ID Number, Type, Category, Size, Source of seed/planting stock, Costs - planned/actual, Time Frames - planned/actual, Benefit/Cost Ratio, Ranking of;

(iii) Benefit/cost analysis recommendations;

(iv) Project ranking rationale;



FOREST DEVELOPMENT  
Practices

(v) Project progress reports and maps; and

(vi) Project final evaluation report.

(c) A system will be developed to ensure that project map data is transferred to a permanent base map.

B. Benefit/Cost Analyses. Benefit/cost analyses will be prepared for individual forest development projects and activities, or for groups of similar projects (See 25 CFR 163.25), and used as one of the determinants in setting local (not Area or national) project funding priorities. Analyses will include all costs that are associated with the individual project.

(1) Each analysis will include both a measure of economic efficiency and economic equity (impacts). Efficiency is measured by the benefit/cost ratio. All costs and benefits of the project that are measurable in dollars should be included in the calculation. Equity refers to the economic impacts of the project that have a direct bearing on community stability. These impacts include the non-market benefits and the social effects that are usually measured by changes in employment, income distribution, and the intangible benefits that contribute to community stability and welfare. Both economic efficiency and economic equity shall be used in developing forest development investment priorities.

(2) Procedures for forest development program benefit/cost analyses should be developed locally; however, all procedures, including computer operated programs, must be approved by the Area Director. Appropriate benefit/cost analyses procedures may be found in the booklet Economic Guides for Managing Forest Resources prepared by the Branch of Forest Resources Planning of the Division of Forestry. A four percent discount rate will be used in all benefit/cost analyses.

C. Project Ranking and Funding Priorities: The project ranking process is based on project prioritization highest benefit/cost ratio first to lowest benefit/cost ratio last). Environmental factors, equity impact and tribal considerations may dictate exceptions to the benefit/cost ratio ranking process.

(1) Forest development program projects funded under the IPS shall be ranked and prioritized based on benefit/cost analyses (See 25 CFR 163.25).

( 1 ) Indian tribes should develop their own funding priority systems for their IPS programs.

D. Monitoring and Evaluation. The Bureau will supervise, monitor, and provide program oversight, as appropriate, to assure forest development projects are cost-effective, and that Indian commercial forest lands are managed in a perpetually productive state, thereby fulfilling Federal trust responsibility for sustained yield forest management.

(1) Program activities will be evaluated to determine if correct and effective procedures were used. Recommendations will be provided to correct noted deficiencies.

(2) Oversight must ensure program integrity and accountability of funds. The program will be monitored to collect proper data needed to prepare the various forest development program reports required by Congress, Office of Management and Budget, other Federal Agencies, Department of the Interior and BIA. -/

E. Technical Training. Technical training and assistance may be provided to forest development workers.

F. Reports. Complete and accurate reports are essential to a successful forest development program. Annual appropriations are based on previous year's accomplishments, as reported by the BIA and reviewed by Congress. Forest development program reports required during each fiscal year are:

(1) Forest Development Program Planned Projects Annual Submission.

(a) Reservation plans are consolidated into Agency plans which are consolidated into Area Office annual Forest Development Program Planned Projects and Activities Reports (Illustration 1).

(b) By September 15 each year [See Supplement 5, 3.3A(1)(b)] the appropriate Bureau official will submit, to the Area Director, a prioritized list of proposed forest development program projects for funding in the new fiscal year. These reports will be submitted to the Central Office by October 1 each year.

(2) Forest StatuDevelo Accomplishment, Expeditures and Inventor  
ReportS:

(a) Forest Development Program accomplishments and inventory status are reported on Revised Form 5-5345 (Illustration 2). Reports will be submitted to the Area Office by November 15 and the Central Office by November 30 each year.

(b) Reforestation and CFSI accomplishments will continue to be reported in the Annual Forestry Report (See Annual Forestry Report, 53 BIAM Supplement 1)

FOREST DEVELOPMENT PROGRAM, PLANNED PROJECTS/ACTIVITIES

For Fiscal Year 19\_\_

Supervising Official \_\_\_\_\_ Station No. of \_\_\_\_\_

Location		Project/Activity	Period	Priority	Agency	Amount	Source	Notes

TOTAL

\* Total Funding Source is the Congressional "Account" to which the project is assigned and will be computed as Administrative Charge.

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Form 5-5344 Revised  
 Feb., 1991

FOREST DEVELOPMENT PROGRAM, PLANNED  
 PROJECTS/ACTIVITIES  
 Instructions

Column headings are self-explanatory. List planned projects/activities in order of funding priority, i.e., highest priority first to least priority last. Any funding source other than Congressional add-on funds should be identified with footnotes. Potential funding sources other than Congressional add-on funds are Tribe/agency funds in the Indian Priority System, timber sale deductions, other tribal funds, and funds from other agencies. For entries required under the heading titled "Planned Expenditures":

1. Reforestation - Enter the estimated direct, field costs, e.g. seedling procurement, site preparation, field planting, or direct seeding.
2. CFSI (Commercial Forest Stand Improvement) - Enter the of field estimated cost operations, including precommercial thinning, release, species weeding, thinning conversion, fertilizing, and treating slash. project
3. Administration - Forest development administrative costs are those costs that can not be assigned to specific forest development project acres, e.g., long-range planning and training.
4. All Other - Include forest development program facilities construction, operation, and maintenance costs; limited forest road rehabilitation, repairs, and maintenance to gain access to project sites; project crew training costs, vehicle and equipment procurement and maintenance. These charges are project costs and will not be computed as administrative charges.



Revised Feb., 1991

FOREST DEVELOPMENT PROGRAM PROJECTS/ACTIVITIES ACCOMPLISHMENT REPORT

Report Base: \_\_\_\_\_

Fiscal Year 19\_\_

Inventory Expressed In Acres

Location:	Inventory Beginning		(-) Accomplishments		(-) Administrative		(+ ) Accruals *		(-) Inventory	
	Fiscal Year 19__				Reductions				End of FY 19__	
	Reforest	CFSI	Reforest	CFSI	Reforest	CFSI	Reforest	CFSI	Reforest	CFSI
<b>TOTALS</b>										

\* Inventory may be updated annually. Areas may determine criteria for accruing timber sale reforestation attempts to inventory. This accrual can not occur until silvicultural prescriptions have failed.

53 BIAM Supplement 5  
 Illustration 2  
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Form 5-5345 Revised  
 Feb., 1991

FOREST DEVELOPMENT PROGRAM PROJECTS/ACTIVITIES  
 ACCOMPLISHMENT REPORT  
 Instructions

\* In conjunction with the mandate to eliminate the inventory of deficient commercial forest acres, Congress requires an annual report from BIA on progress in complying with the mandate. Form 5-5345 is designed to provide the information that Congress requires.

Form 5-5345 should show all forest development accomplishments. Note that forest development accomplishments (and expenditures) are separated by funding source. Congressional add-on funds must be accounted for separately. However, tribes can and do use other funds to conduct this program segment, the principal sources are timber sale administrative deductions, IPS funds, other tribal funds, and funds from other agencies.

Report Base is the reporting point level, for example: Indian Reservation, Agency, Area Office, or Nationwide (Central Office).

Location(s) vary depending on Report Base, for example:

Report Base	Location(s)
Nationwide	All Area Offices reporting accomplishments, one Area summary report per line.
Area Office	All Agency Offices within Area reporting accomplishments, one Agency summary report per line.
Agency	Reservation(s) within Agency reporting accomplishments, one Reservation summary report per line.
Reservation	Individual forest development projects/activities reporting accomplishments and expenditures, one per line.

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#### 4.1 NEPA Responsibility

A. Deputy Commissioner of Indian Affairs is responsible for NEPA compliance of Bureau of Indian Affairs (BIA) activities and programs.

B. Director, Office of Trust Responsibilities (OTR) is responsible for oversight of the BIA program for achieving compliance with NEPA, program direction, and leadership for BIA environmental policy, coordination and procedures.

C. Environmental Services Staff, reports to the Director (OTR). This office is the Bureau-wide focal point for overall NEPA policy and guidance and is responsible for advising and assisting Area Offices, Agency Superintendents, and other field support personnel in their environmental activities. The office also provides training and acts as the Central Office's liaison with Indian tribal governments on NEPA and other environmental compliance matters. Information about BIA NEPA documents or the NEPA process can be obtained by contacting the Environmental Services Staff.

D. Other Central Office Directors and Division Chiefs are responsible for ensuring that the programs and activities within their jurisdiction comply with NEPA.

E. Area Directors and Project Officers are responsible for assuring NEPA compliance with all activities under their jurisdiction and providing advice and assistance to Agency Superintendents and consulting with the Indian tribes on environmental matters related to NEPA. Area Directors and Project Officers are also responsible for assigning sufficient trained staff to ensure NEPA compliance is carried out. An Environmental Coordinator is located at each Area Office.

F. Agency Superintendents and Field Unit Supervisors are responsible for NEPA compliance and enforcement at the Agency or field unit level.

#### 4.2 Guidance to Applicants and Tribal Governments

##### A. Relationship with Applicants and Tribal Governments.

##### 1. Guidance to Applicants.

a. An "applicant" is an entity which proposes to undertake any activity which will at some point require BIA action. These may include tribal governments, private entities, state and local governments or other Federal agencies. BIA compliance with NEPA is Congressionally mandated. Compliance is initiated when a BIA action is necessary in order to implement a proposal.



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b. Applicants should contact the BIA official at the appropriate level for assistance. This will be the Agency Superintendent, Area Director or the Director, Office of Trust Responsibilities.

c. If the applicant's proposed action will affect or involve more than one tribal government, one government agency, one BIA Agency, or where the action may be of State-wide or regional significance, the applicant should contact the respective Area Director(s). The Area Director(s), using sole discretion, may assign the lead NEPA compliance responsibilities to one Area Office or, as appropriate, to one Agency Superintendent. From that point, the Applicant will deal with the designated lead office.

d. Since much of the applicant's planning may take place outside the BIA system, it is the applicant's responsibility to prepare a milestone chart for BIA use at the earliest possible stage in order to coordinate the efforts of both parties. Early communication with the responsible BIA office will expedite determination of the appropriate type of NEPA documentation required. Other matters such as the scope, depth and sources of data for an environmental document will also be expedited and will help lead to a more efficient and more timely NEPA compliance process.

2. Guidance to Tribal Governments.

a. Tribal governments may be applicants, and/or be affected by a proposed action of BIA or another Federal agency. Tribal governments affected by a proposed action shall be consulted during the preparation of environmental documents and, at their option, may cooperate in the review or preparation of such documents. Notwithstanding the above, the BIA retains sole responsibility and discretion in all NEPA compliance matters.

b. Any proposed tribal actions that do not require BIA or other Federal approval, funding or "actions" are not subject to the NEPA process.

B. Prepared Program Guidance.

BIA has implemented regulations for environmental guidance for surface mining in 25 CFR Part 216 (Surface Exploration, Mining and Reclamation of Lands.) Environmental guidance for Forestry activities is found in 25 CFR 163.27 and 53 BIAM Supplements 2 and 3.

C. Other Guidance.

Programs under 25 CFR for which BIA has not yet issued regulations or directives for environmental information for applicants are listed below. These programs may or may not require environmental documents and could involve submission of applicant information to

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determine NEPA applicability. Applicants for these types of programs should contact the appropriate BIA office for information and assistance:

1. Partial payment construction charges on Indian irrigation projects (25 CFR Part 134).
2. Construction assessments, Crow Indian irrigation project (25 CFR Part 135).
3. Fort Hall Indian irrigation project, Idaho (25 CFR Part 136).
4. Reimbursement of construction costs, San Carlos Indian irrigation project, Arizona (25 CFR Part 137).
5. Reimbursement of construction costs, Ahtanum Unit, Wapato Indian irrigation project, Washington CFR Part 138).
6. Reimbursement of construction costs, Wapato-Satus Unit, Wapato Indian Irrigation project, Washington (25 CFR Part 139).
7. Land acquisitions (25 CFR Part 151).
8. Leasing and permitting (Lands) (25 CFR Part 162).
9. Sale of lumber and other forest products produced by Indian enterprises from the forests on Indian reservation (25 CFR Part 164).
10. Sale of forest products, Red Lake Indian Reservation, Minn. (25 CFR Part 165).
11. General grazing regulations (25 CFR Part 166).
12. Navajo grazing regulations (25 CFR Part 167).
13. Grazing regulations for the Hopi partitioned lands (25 CFR Part 168).
14. Rights-of-way over Indian lands (25 CFR Part 169).
15. Roads of the Bureau of Indian Affairs (25 CFR Part 170).
16. Concessions, permits and leases on lands withdrawn or acquired in connection with Indian irrigation projects (25 CFR Part 173).

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17. Indian Electric Power Utilities (25 CFR Part 175).
18. Resale of lands within the badlands Air Force Gunnery Range (Pine Ridge Aerial Gunnery Range) (25 CFR Part 178).
19. Leasing of tribal lands for mining (25 CFR Part 211).
20. Leasing of allotted lands for mining (25 CFR Part 212).
21. Leasing of restricted lands of members of Five Civilized Tribes, Oklahoma, for mining (25 CFR Part 213).
22. Leasing of Osage Reservation lands, Oklahoma, for mining, except oil and gas (25 CFR Part 214).
23. Lead and zinc mining operations and leases, Quapaw Agency (25 CFR Part 215).
24. Leasing of Osage Reservation lands for oil and gas mining (25 CFR Part 226).
25. Leasing of certain lands in Wind River Indian Reservation, Wyoming, for oil and gas mining (25 CFR Part 227).
26. Indian fishing in Alaska (25 CFR Part 241).
27. Commercial fishing on Red Lake Indian Reservation (25 CFR 242).
28. Use of Columbia River in-lieu fishing sites (25 CFR Part 248).
29. Off-reservation treaty fishing (25 CFR Part 249).
30. Indian fishing - Hoopa Valley Indian Reservation (25 CFR Part 150).
31. Housing Improvement Program (25 CFR Part 256).
32. Contracts under Indian Self-Determination Act (25 CFR Part 271).
33. Grants under Indian Self-Determination Act (25 CFR Part 272).
34. School construction or services for tribally operated previously private schools (25 CFR Part 274).

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35. Uniform administration requirements for grants (25 CFR 276).

36. School construction contracts for public schools (25 CFR Part 277).

#### 4.3 Major Actions Normally Requiring an EIS

A. The following BIA actions normally require the preparation of an Environmental Impact Statement (EIS):

1. Proposed mining contracts (for other than oil and gas), or the combination of a number of smaller contracts comprising a mining unit for:

a. New mines of 640 acres or more, other than surface coal mines.

b. New surface coal mines of 1,280 acres or more, or having an annual full production level of 5 million tons or more.

2. Proposed water development projects which would, for example, inundate more than 1,000 acres, or store more than 30,000 acre-feet, or irrigate more than 5,000 acres of undeveloped land.

3. Construction of a treatment, storage or disposal facility for hazardous waste or toxic substances.

4. Construction of a solid waste facility for commercial purposes.

B. If, for any of these actions, it is proposed not to prepare an EIS, an Environmental Assessment (EA) will be developed in accordance with 40 CFR 1501.4(a)(2).

#### 4.4 Categorical Exclusions

In addition to the actions listed in the Department's categorical exclusions in Appendix 1 of 516 DM 2, many of which the BIA also performs, the following BIA actions are hereby designated as categorical exclusions unless the action qualifies as an exception under Appendix 2 of 516 DM 2. These activities are single, independent actions not associated with a larger, existing or proposed, complex or facility. If cases occur that involve larger complexes or facilities, an EA or supplement should be accomplished.

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**A. Operation, maintenance, and replacement of existing facilities.**

Examples are normal renovation of buildings, road maintenance and limited rehabilitation of irrigation structures.

**B. Transfer of Existing Federal Facilities to Other Entities.**

Transfer of existing operation and maintenance activities of Federal facilities to tribal groups, water user organizations, or other entities where the anticipated operation and maintenance activities are agreed to in a contract, follow BIA policy, and no change in operations or maintenance is anticipated.

**C. Human resources programs.**

Examples are social services, education services, employment assistance, tribal operations, law enforcement and credit and financing activities not related to development.

**D. Administrative actions and other activities relating to trust resources.**

Examples are: Management of trust funds (collection and distribution), budget, finance, estate planning, wills and appraisals.

**E. Self-Determination and Self-Governance.**

1. Self-Determination Act contracts and grants for BIA programs listed as categorical exclusions, or for programs in which environmental impacts are adequately addressed in earlier NEPA analysis.

2. Self-Governance compacts for BIA programs which are listed as categorical exclusions or for programs in which environmental impacts are adequately addressed in earlier NEPA analysis.

**F. Rights-of-Way.**

1. Rights-of-Way inside another right-of-way, or amendments to rights-of-way where no deviations from or additions to the original right-of-way are involved and where there is an existing NEPA analysis covering the same or similar impacts in the right-of-way area.

2. Service line agreements to an individual residence, building or well from an existing facility where installation will involve no clearance of vegetation from the right-of-way other than for placement of poles, signs (including highway signs), or buried power/cable lines.

9/14/98 #3220

Replaces 11/16/94 #3025

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3. Renewals, assignments and conversions of existing rights-of-way where there would be essentially no change in use and continuation would not lead to environmental degradation.

G. Minerals.

1. Approval of permits for geologic mapping, inventory, reconnaissance and surface sample collecting.

2. Approval of unitization agreements, pooling or communitization agreements.

3. Approval of mineral lease adjustments and transfers, including assignments and subleases.

4. Approval of royalty determinations such as royalty rate adjustments of an existing lease or contract agreement.

H. Forestry.

1. Approval of free-use cutting, without permit, to Indian owners for on-reservation personal use of forest products, not to exceed 2,500 feet board measure when cutting will not adversely affect associated resources such as riparian zones, areas of special significance, etc.

2. Approval and issuance of cutting permits for forest products not to exceed \$5,000 in value.

3. Approval and issuance of paid timber cutting permits or contracts for products valued at less than \$25,000 when in compliance with policies and guidelines established by a current management plan addressed in earlier NEPA analysis.

4. Approval of annual logging plans when in compliance with policies and guidelines established by a current management plan addressed in earlier NEPA analysis.

5. Approval of Fire Management Planning Analysis detailing emergency fire suppression activities.

6. Approval of emergency forest and range rehabilitation plans when limited to environmental stabilization on less than 10,000 acres and not including approval of salvage sales of damaged timber.

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7. Approval of forest stand improvement projects of less than 2000 acres when in compliance with policies and guidelines established by a current management plan addressed in earlier NEPA analysis.

8. Approval of timber management access skid trail and logging road construction when consistent with policies and guidelines established by a current management plan addressed in earlier NEPA analysis.

9. Approval of prescribed burning plans of less than 2000 acres when in compliance with policies and guidelines established by a current management plan addressed in earlier NEPA analysis.

10. Approval of forestation projects with native species and associated protection and site preparation activities on less than 2000 acres when consistent with policies and guidelines established by a current management plan addressed in earlier NEPA analysis.

I. Land Conveyance and Other Transfers.

Approvals or grants of conveyances and other transfers of interests in land where no change in land use is planned.

J. Reservation Proclamations.

Lands established as or added to a reservation pursuant to 25 U.S.C. 467, where no change in land use is planned.

K. Waste Management.

1. Closure operations for solid waste facilities when done in compliance with other federal laws and regulations and where cover material is taken from locations which have been approved for use by earlier NEPA analysis.

2. Activities involving remediation of hazardous waste sites if done in compliance with applicable federal laws such as the Resource Conservation and Recovery Act (P.L. 94-580), Comprehensive Environmental Response, Compensation, and Liability Act (P.L. 96-516) or Toxic Substances Control Act (P.L. 94-469).

L. Roads and Transportation.

1. Approval of utility installations along or across a transportation facility located in whole within the limits of the roadway right-of-way.

9/14/98 #3220

Replaces 11/16/94 #3025

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2. Construction of bicycle and pedestrian lanes and paths adjacent to existing highways and within the existing rights-of-way.
3. Activities included in a "highway safety plan" under 23 CFR 402.
4. Installation of fencing, signs, pavement markings, small passenger shelters, traffic signals, and railroad warning devices where no substantial land acquisition or traffic disruption will occur.
5. Emergency repairs under 23 U.S.C. 125.
6. Acquisition of scenic easements.
7. Alterations to facilities to make them accessible for the elderly or handicapped.
8. Resurfacing a highway without adding to the existing width.
9. Rehabilitation, reconstruction or replacement of an existing bridge structure on essentially the same alignment or location (e.g. widening, adding shoulders or safety lanes, walkways, bikeways or guardrails).
10. Approvals for changes in access control within existing right-of-ways.
11. Road construction within an existing right-of-way which has already been acquired for a HUD housing project and for which earlier NEPA analysis has already been prepared.

M. Other.

1. Data gathering activities such as inventories, soil and range surveys, timber cruising, geological, geophysical, archeological, paleontological and cadastral surveys.
2. Establishment of non-disturbance environmental quality monitoring programs and field monitoring stations including testing services.
3. Actions where BIA has concurrence or co-approval with another Bureau and the action is categorically excluded for that Bureau.
4. Approval of an Application for Permit to Drill for a new water source or observation well.



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5. Approval of conversion of an abandoned oil well to a water well if water facilities are established only near the well site.

6. Approval and issuance of permits under the Archaeological Resources Protection Act (16 U.S.C. 470aa-11) when the permitted activity is being done as a part of an action for which a NEPA analysis has been, or is being prepared.

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Environmental Quality	Part 517 Pesticides
Chapter 1 Pesticide Use Policy	517 DM 1.1

1.1 Purpose. This Chapter prescribes the Department's policies for the use of pesticides on the lands and waters under its jurisdiction and for compliance with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended.

1.2 Policy. It is the policy of the Department:

A. To use pesticides only after full consideration of alternatives - based on competent analyses of environmental effects, safety, specificity, effectiveness, and costs. The full range of alternatives including chemical, biological, and physical methods, and no action will be considered. When it is determined that a pesticide must be used in order to meet important management goals, the least hazardous material that will meet such goals will be chosen.

B. To utilize pest management research, control, education, and assistance programs to develop, support, and adopt integrated pest management (IPM) strategies wherever practicable.

C. To use only pesticides registered by the Environmental Protection Agency (EPA) in full accordance with FIFRA, as amended, and as provided in regulations, orders, or permits issued by EPA.

D. That the handling and use of restricted-use pesticides be conducted with caution and only by personnel who are either certified or under the direct supervision of a certified applicator.

E. To insure that all pesticides and pesticide containers are transported, stored, and disposed of in a manner that will safeguard human health, fish and wildlife, and prevent soil and water contamination.

F. To give full consideration at all times to safety to humans, fish and wildlife, and other non-target organisms.

G. To use pesticides in habitats involving endangered and threatened animal or plant species only after it is determined that such use will not adversely affect the species or its critical habitat. This determination will be made through the Endangered Species Act consultation process prescribed in 50 CFR 402.

H. To use pesticides in wilderness areas only where necessary to protect human health or to prevent loss of significant resource values on public or private lands within or bordering the wilderness area.

7/14/81 #2336  
Replaces 6/19/81 #2331

## Illustration 7 - 53 IAM 5-H P. 2 of 3

**DEPARTMENT OF THE INTERIOR  
DEPARTMENTAL MANUAL**Environmental QualityPart 517 PesticidesChapter 1 Pesticide Use Policy517 DM 1.2I

I. To conduct or require quality control monitoring before, during, and after any pesticide application in ecologically sensitive areas. Such monitoring will determine whether the application achieved the desired effects and whether there are any significant, unanticipated effects.

J. To apply pesticides by aerial methods only when the advantages over ground methods are distinct and then only with appropriate techniques to ensure positive placement and to minimize drift.

K. To adhere to Departmental public participation policies in carrying out pesticide use programs. (301 DM 2)

L. To ensure that areas treated with Restricted Use pesticides (40 CFR 162.31) are posted at usual points of entry so that occupants, land users, and visitors are informed sufficiently in advance to avoid possible exposure. Such posting will contain: (1) a statement that the area has been or will be treated with a named pesticide; (2) the date of the treatment; (3) appropriate precautions to be taken or the date when re-entry is judged to be safe; (4) a telephone number and address for further information. Local managers may make exceptions to the posting requirement where they judge no public exposure is likely.

M. To ensure that all non-Interior lessees, operators, or other users of Interior lands, waters, or facilities are aware of their obligation to comply with FIFRA as amended, Departmental policy, and all other applicable Federal and State laws and regulations governing the use of pesticides, and to require such compliance through periodic review of the pesticide-related plans and practices of the land users.

1.3 Prohibited and Restricted Uses of Pesticides. The pesticides listed by EPA as prohibited or restricted are prohibited or restricted, as indicated, for use on lands and waters administered by the Department.

1.4 Responsibilities.

A. Assistant Secretary - Policy, Budget, and Administration.

(1) Is responsible for overseeing the Department's compliance with FIFRA, as amended, and its implementation of all other policies prescribed in this Part.

(2) Is responsible for coordinating any program differences or conflicts between Assistant Secretaries.

7/14/81 #2336

Replaces 6/19/81 #2331

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**DEPARTMENTAL MANUAL**

Environmental Quality	Part 517 Pesticides
Chapter 1 Pesticide Use Policy	517 DM 1.4B

B. Program Assistant Secretaries. Are responsible for their subordinate bureaus and offices' compliance with the amended FIFRA, EPA's implementing regulations (Code of Federal Regulations, Title 40, Subchapter E - Pesticide Programs), and the policies prescribed in this Part.

C. Heads of Bureaus and Offices.

(1) Will ensure that their organizations comply with the amended FIFRA, EPA's implementing regulations (Code of Federal Regulations, Title 40, Subchapter E - Pesticide Programs), and the policies prescribed in this Part.

(2) Will ensure that their organizations' pesticide programs and uses are evaluated, controlled, and monitored for safety, protection of the environment, and compliance with the National Environmental Policy Act, as amended, and the Endangered Species Act, as amended.

(3) Will provide technical support for Departmental reviews of pesticide policies, programs, and uses when requested.

D. Office of Environmental Project Review.

(1) Will be the lead office for advising the Assistant Secretary - Policy, Budget, and Administration in regard to the policy aspects of Departmental pesticide programs and activities. This includes recommendations for revision of this Pesticide Use Policy when warranted by changes in the available technical information, pertinent Federal statutes or regulations, or other conditions.

(2) Will solicit and consider the views of all interested Departmental offices and bureaus when changes in this Pesticide Use Policy are contemplated. Recommendations for revision of this policy will be accompanied by appropriate supporting information and the comments of interested Departmental bureaus and offices.

(3) Will exercise oversight review of pesticide programs, projects, procedures, and performance for the Assistant Secretary - Policy, Budget, and Administration.

(4) Will be the lead office for establishing the requirements for Departmental-level reviews of pesticide uses proposed by Interior bureaus and offices, for performing such reviews, and will approve certain pesticide uses. The heads of the interested bureaus and offices will be invited to designate representatives to advise and assist in these reviews.

(5) Will alert bureaus when new information or other considerations require significant controls, advice, or warning concerning the use of pesticides that may pose an environmental threat.

7/14/81 #2336  
Replaces 6/19/81 #2331

**DEPARTMENT OF AGRICULTURE****Forest Service****DEPARTMENT OF THE INTERIOR**

RIN 0596-AB99

**National Environmental Policy Act Documentation Needed for Fire Management Activities; Categorical Exclusions**

**AGENCY:** Forest Service, USDA, and Department of the Interior.

**ACTION:** Notice of final National Environmental Policy Act implementing procedures.

**SUMMARY:** The Department of Agriculture, Forest Service and the Department of the Interior give notice of revised procedures for implementing the National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) regulations. These final implementing procedures are being issued in Forest Service Handbook 1909.15, Chapter 30, Section 31.2, and Department of the Interior Manual 516 DM, Chapter 2, Appendix 1, which describe categorical exclusions, *i.e.*, categories of actions, which do not individually or cumulatively have a significant effect on the human environment and therefore normally do not require further analysis in either an environmental assessment or an environmental impact statement. The revision adds two such categories of actions to the agencies' NEPA procedures: (1) Hazardous fuels reduction activities; and (2) rehabilitation activities for lands and infrastructure impacted by fires or fire suppression. The Departments reviewed the effects of over 2,500 hazardous fuel reduction and rehabilitation projects and concluded that these are categories of actions which do not individually or cumulatively have a significant effect on the human environment. The agencies have also conducted a review of peer-reviewed scientific literature identifying the effects of hazardous fuels reduction activities, which is available at <http://www.fs.fed.us/emc/hfi>. This combination of reviews give the agencies confidence that the categorical exclusions are appropriately defined. These two categorical exclusions will facilitate scientifically sound, efficient, and timely planning and decisionmaking for the treatment of hazardous fuels and rehabilitation of areas so as to reduce risks to communities and the environment caused by severe fires.

The hazardous fuels reduction category will apply only to activities

identified through a collaborative framework as described in "A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy Implementation Plan" (hereafter called 10-Year Comprehensive Strategy Implementation Plan). An example of the framework's structure is available at <http://www.fireplan.gov/reports/mou/fuelstreatment.pdf>. Moreover, these hazardous fuels reduction activities: (1) Will not be conducted in wilderness areas or where they would impair the suitability of wilderness study areas for preservation for wilderness; (2) will not include the use of herbicides or pesticides; (3) will not involve the construction of new permanent roads or other infrastructure; (4) will not include sales of vegetative material that do not have hazardous fuels reduction as their primary purpose; (5) will not exceed 1,000 acres for mechanical hazardous fuels reduction activities and will not exceed 4,500 acres for hazardous fuels reduction activities using fire; (6) will only be conducted in wildland-urban interface or in Condition Classes 2 or 3 in Fire Regime Groups I, II, or III, outside the wildland-urban interface.

Activities carried out under the rehabilitation category will take place only after a wildfire. These activities cannot use herbicides or pesticides, nor include the construction of new permanent roads or other infrastructure, and they must be completed within three years following a wildland fire. Activities carried out under the rehabilitation categorical exclusion will not exceed 4,200 acres.

Activities conducted under these categorical exclusions must be consistent with agency and Departmental procedures and with applicable land and resource management plans, and must comply with all applicable Federal, State, and Tribal laws for protection of the environment. These categorical exclusions will not apply where there are extraordinary circumstances, such as adverse effects on the following: threatened and endangered species or their designated critical habitat; wilderness areas; inventoried roadless areas; wetlands; impaired waters; and archaeological, cultural, or historic sites.

In response to comments on the proposed categorical exclusions, several revisions were made to the original proposal: (1) Grazing activities for the maintenance of fuel breaks were removed from the hazardous fuels reduction category; (2) the hazardous fuels reduction category was clarified to explicitly state that a proposed action

could only include the sale of vegetative material where the primary purpose of hazardous fuels reduction; (3) one of the requirements for hazardous fuels reduction activities was revised to state that such activities must be identified through a collaborative framework as described in the 10-Year Comprehensive Strategy Implementation Plan, rather than be consistent with the framework; (4) the hazardous fuels reduction category was modified to make the list of activities an exhaustive one instead of illustrative; (5) the hazardous fuels reduction category was modified to limit its use to wildland-urban interface or in Condition Classes 2 or 3 in Fire Regime Groups I, II, or III, outside the wildland-urban interface; (6) hazardous fuels reduction activities using fire are limited to 4,500 acres; (7) mechanical hazardous fuels reduction activities are limited to 1,000 acres; (8) fire rehabilitation activities are limited to 4,200 acres; and (9) the definition of rehabilitation was revised to be consistent with the National Wildland Fire Coordinating Group interagency definition.

**EFFECTIVE DATE:** The categorical exclusions are effective June 5, 2003.

**ADDRESSES:** The new Forest Service categorical exclusions are set out in Interim Directive No. 1909.15-2003-1, available electronically via the Internet at <http://www.fs.fed.us/im/directives>. The new Department of the Interior categorical exclusions are set out in 516 DM, Chapter 2, Appendix 1, available electronically via the Internet at <http://elips.doi.gov/table.cfm>. Single paper copies are available by contacting Dave Sire, Forest Service, USDA, Ecosystem Management Coordination Staff (Mail Stop 1104), 1400 Independence Avenue, SW., Washington, DC 20250-1104 or Willie Taylor, Department of the Interior, Office of Environmental Policy and Compliance (Mail Stop 2342), 1849 C Street, NW., Washington, DC 20240. Additional information and analysis can be found at <http://www.fs.fed.us/emc/hfi>.

**FOR FURTHER INFORMATION CONTACT:** Dave Sire, USDA Forest Service, Ecosystem Management Coordination Staff, (202) 205-2935, or Willie Taylor, Department of the Interior, Office of Environmental Policy and Compliance, (202) 208-3891. Individuals who use telecommunication devices for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 1-800-877-8339 between 8 a.m. and 4 p.m., Eastern Standard Time, Monday through Friday. **SUPPLEMENTARY INFORMATION:** On August 22, 2002, President Bush established the

Healthy Forest Initiative, directing the Department of Agriculture and the Interior and the Council on Environmental Quality to improve regulatory processes to ensure more timely decisions, greater efficiency, and better results in reducing the risk of catastrophic wildfires by restoring forest health.

In response to this direction, the Departments of Agriculture and the Interior proposed two new categorical exclusions on December 16, 2002 (67 FR 77038). The first, addressing hazardous fuels reduction activities, is intended to better protect lives, communities, and ecosystems from the risk of high-intensity wildland fire. The second, addressing rehabilitation activities, is intended to better restore natural resources and infrastructure after a fire. The supplementary information section of the notice published in December contains comprehensive background information on the need, development, and rationale for these categorical exclusions. The specific language for the proposed categories of actions are set out for comment in the notice as follows:

- Hazardous fuels reduction activities (prescribed fire, and mechanical or biological methods such as crushing, piling, thinning, pruning, cutting, chipping, mulching, grazing and mowing) when the activity has been identified consistent with the framework described in "A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy Implementation Plan." Such activities:

- Shall be conducted consistent with agency and Departmental procedures and land and resources management plans; and

- Shall not be conducted in wilderness areas or impair the suitability of wilderness study areas for preservation as wilderness; and

- Shall not include the use of herbicides or pesticides or the construction of new permanent roads or other new permanent infrastructure.

- Activities (such as reseeding or planting, fence construction, culvert repair, installation of erosion control devices, and repair of roads and trails) necessary for the rehabilitation of habitat, watersheds, historical, archeological, and cultural sites and infrastructure impacted by wildfire and/or wildfire suppression. Such activities:

- Shall be conducted consistent with agency and Departmental procedures and land and resource management plans; and

- Shall not include the use of herbicides or pesticides or the construction of new permanent roads or other new permanent infrastructure.

#### Comments on the Proposal

Almost 39,000 responses in the form of letters, postcards, faxes, and e-mail messages were received during the comment period. These comments came from private citizens, elected officials, and groups and individuals representing businesses, private organizations, and Federal agencies. Responses consisted of nearly 1,900 individual letters and over 37,000 form letters.

Public comment on the proposal addressed a wide range of topics, many of which were directed generally at the President's Healthy Forest Initiative and hazardous fuels reduction. Many people supported the proposal or favored further expansion, while many other opposed the proposal or recommended further restrictions.

*Comment:* Some respondents voiced general agreement with the proposal. Some indicated that they think current analysis and documentation requirements are too burdensome and that the proposal would provide for more efficient management. Others believed that the proposal had appropriate limitations on the use of the categorical exclusions and that the agencies had done sufficient analysis to include that the categories of hazardous fuels reduction activities and fire rehabilitation activities do not individually or cumulatively have significant effects. Still others agreed that the collaboration requirements ensure that local affected communities will be involved.

*Response:* These comments were in support of the proposal and need no specific response. A summary of the remainder of public comments and the agencies' responses follows:

*Comment:* Some respondents stated that the proposal is not needed inasmuch as current laws and policies allow sufficient action to be taken to lower the forest fire risk in urban-wildland interface areas. They stated that agency policies already provide sufficient authority of using categorical exclusions.

*Response:* The Forest Service and the land management agencies within the Department of the Interior have various categorical exclusions for fire management in their NEPA procedures. Consequently, there are inconsistencies among agencies. Some agencies have the ability to categorically exclude some or all hazardous fuels reduction activities and some of or all fire rehabilitative activities while others cannot. For

example, the U.S. Fish and Wildlife Service has utilized similar categories for fire management activities since 1997. In contrast, before the issuance of the categories set out in this notice, a jointly proposed Forest Service and Bureau of Land Management (BLM) hazardous fuels reduction activity using prescribed fire would have required BLM to prepare an environmental assessment, while the Forest Service may have categorically excluded such an action. These final categories provide a tool for more efficient planning of hazardous fuels reduction and fire rehabilitation activities. Having the same categories available to all of these land management agencies will facilitate inter-agency coordination and allow for more efficient planning and more timely decisions across agency jurisdictions. It will also provide greater consistency of practice. The addition of these categories, however, does not represent a substantial change for some agencies nor does it replace or prevent the use of existing categories with similar purposes. See "Comparision of USDA Forest Service and Department of the Interior Agency Categorical Exclusions" at <http://www.fs.fed.us/emc/hfi>.

*Comment:* Some respondents stated that the proposal inappropriately adopts a nationwide approach over a site-specific approach and that certain geographical regions or areas with specific ecological characteristics should not be included in the category. They suggested that fire does not play a significant role in some areas due to high precipitation and humidity. Suggestions included taking the Southern Appalachian forests, national monuments, Eastern forests, forests in the Pacific Northwest, old growth, and alpine forests out of these categories of actions.

*Response:* Data on hazardous fuels reduction and fire rehabilitation activities was collected from field units within the Forest Service, Bureau of Land Management, Bureau of Indian Affairs, Fish and Wildlife Service, and National Park Service, across the United States. Based on a review of this data, it is the professional judgment of the Departments that the categories of actions identified in the hazardous fuels reduction and fire rehabilitation categorical exclusions do not individually or cumulatively have significant effects on the human environment. The data represents a broad spectrum of hazardous fuels reduction activities across vegetation types, geographic regions, and agency jurisdictions. Indeed, it is this broad representation of activities that leads the

agencies to conclude that the hazardous fuels reduction and fire rehabilitation categories should not be restricted to any specific geographic area, vegetation type, or jurisdiction. Additional information is available at <http://www.fs.fed.us/emc/hfi>. The categorical exclusion are provided as a tool to improve planning efficiency.

The applicability of hazardous fuels reduction activities and the level of NEPA documentation appropriate to any given area is a matter for informed professional judgment on the part of the local resource manager. The hazardous fuels categorical exclusion has been modified to limit its use to areas in wildland-urban interface or in Condition Classes 2 or 3 in Fire Regime Groups, I, II, or III, outside the wildland-urban interface. Further, hazardous fuels reduction actions using this category will be identified through a collaborative process as described in "A Collaborative Approach for Reducing Wildland Fire risks to communities and the Environment 10-Year Comprehensive Strategy Implementation Plan" (hereafter called the 10-Year comprehensive Strategy implementation Plan). Therefore, if hazardous fuels reduction activities are not needed or appropriate, they are not likely to be identified through this process.

The rehabilitation category is to be used only for rehabilitation of resources and infrastructure after a wildfire, so it is already limited to those areas impacted by wildland fire and wildfire suppression. Further restricting this category to certain geographic areas may exclude areas that, while not typically susceptible to wildland fire, may be subject to wildland fire because of conditions such as extreme drought, blow down, or insect infestation.

Moreover, the two categories will not apply where there are extraordinary circumstances, such as adverse effects on the following: threatened and endangered species or their designated critical habitat; wilderness areas; inventoried roadless areas; wetlands; impaired waters; and archaeological, cultural, or historic sites.

*Comment:* Some respondents stated that the public cannot adequately comment until they have reviewed the results of the required Council on Environmental Quality (CEQ) consultation for the proposed categorical exclusions.

*Response:* Pursuant to regulations at 40 CFR 1505.1 and 1507.3, the USDA Forest Service and the Department of the Interior consulted with CEQ during the development of the categorical exclusions. Prior to the publication of

these final categorical exclusions, CEQ provided written confirmation that amending the Forest Service and Department of the Interior NEPA procedures by adding the new categorical exclusions was in conformity with NEPA and the CEQ regulations.

*Comment:* Some respondents stated that the agencies should have provided addresses listing where hard copies of information can be obtained. These respondents said that they do not have access to the Internet and that they have not been able to obtain information.

*Response:* Two contacts and their phone numbers were provided in the **Federal Register** notice (67 FR 77038) as sources for additional information. Paper copies of the information were available on request from the two contacts.

*Comment:* Some respondents questioned why the public should have to cite specific laws, regulations, or policies when making comments.

*Response:* There was no request for the public to cite specific laws, regulations, or policies when making comments.

*Comment:* Some respondents stated that, according to the **Federal Register** notice, instructions for applying the proposed fire management categorical exclusions will not be issued until after the procedures are finally established; thus neither the agencies nor the public can comment on how, where, and how often these categorical exclusions will be utilized.

*Response:* The only instructions not yet produced are those providing Department of the Interior agencies guidance for the format and content of memos that will document the agency's use of either of these two categorical exclusions. Historically, requirements for documenting decisions concerning categorically excluded activities have varied across agencies within the Department of the Interior. The new Department of the Interior instructions will be consistent with existing Forest Service requirements and provide for standardized documentation for using the hazardous fuels reduction and fire rehabilitation categorical exclusions among agencies. The Forest Service requirements are available at <http://www.fs.fed.us/im/directives/fsh/1990.15/1909.15,30.txt>. The Department of Interior instruction can be found at <http://www.doi.gov/oepec/esms.html>.

*Comment:* Some respondents said they believe that the proposal will restrict public involvement and that timber harvest for purposes other than hazardous fuels reduction will be categorically excluded.

*Response:* The hazardous fuels reduction categorical exclusion explicitly states that it may only be used where the primary purpose of the project is hazardous fuels reduction. Moreover, it is restricted to activities identified through a collaborative framework as described in the 10-Year Comprehensive Strategy Implementation Plan. As stated in the 10-Year Comprehensive Strategy Implementation Plan, "Local level collaboration should involve participants with direct responsibility for management decisions affecting public and/or private land and resources, fire protection responsibilities, or good working knowledge and interest in local resources. Participants should include Tribal representatives, local representatives, local representatives from Federal and State agencies, local governments, landowners and other stakeholders, and community-based groups with a demonstrated commitment to achieving the four goals described in the Comprehensive Strategy 10-Year Implementation Plan (improve fire prevention and suppression, reduce hazardous fuels, restore fire-adapted ecosystems, and promote community assistance). Existing resource advisory committees, watershed councils, or other collaborative entities may serve to achieve coordination at this level. Local involvement, expected to be broadly representative, is a primary source of planning, project prioritization, and resource allocation and coordination at the local level."

This requirement supports public involvement and collaboration, and helps ensure a focus on reducing wildland fire risks. Through such collaboration, actions believed necessary to abate the risk of high-intensity wildfire will be identified. This collaboration will, where appropriate, seek to address conflicts concerning alternative uses of resources and be used by the federal agencies to consider, as appropriate, reasonable alternatives to recommend courses of action. 42 U.S.C. 4332(2)(E). The hazardous fuels reduction category will utilize a collaborative framework as described in the 10-Year Comprehensive Strategy Implementation Plan even after the ten years of the 10-Year Comprehensive Strategy Implementation Plan have passed. In addition, the use of the hazardous fuels reduction category is limited to the reduction of fuels in the wildland-urban interface or in Condition Classes 2 or 3



in Fire Regime Groups I, II, or III, outside the wildland-urban interface.

*Comment:* Some respondents asked the agencies to clarify the public involvement process for the rehabilitation categorical exclusion.

*Response:* Responsible officials will consider options for involving potentially interested and affected agencies, organizations, and persons in the analysis process, commensurate with public interest in a proposed action, regardless of how the analysis is documented.

*Comment:* Various respondents questioned the methodology used to gather and interpret activity information used in the agencies' conclusion that the proposed category of hazardous fuels reduction actions do not individually or cumulatively have a significant environmental effect on the human environment. Some do not believe there is sufficient evidence for this conclusion. Others suggest various biases are reflected in the activities selected. Some respondents suggested that the time period in which the data were collected from field units was too short to gather accurate data.

*Response:* To identify activities for review, the Forest Service relied on a national database implemented in October 2000. The database includes fuel hazard reduction and rehabilitation and stabilization projects accomplished in fiscal years 2001 and 2002. The Forest Service reviewed 100 percent of the completed projects in the database. The Department of the Interior, having comprehensive fuel hazard reduction and rehabilitation and stabilization project records dating back many years, chose a 100 percent sample of projects accomplished in fiscal year 2002 and a 10 percent random sample of projects accomplished in fiscal years 1998 through 2001. As the request of both the Forest Service and Department of the Interior, field units added additional hazardous fuels reduction and rehabilitation projects that had not been entered in their respective national databases. The information request was distributed to field units to verify and supplement the project information because that is the organizational level where project information would be readily available. Field units responded to questions about projects for which they had already reported accomplishments through their agency reporting systems. Field units responded with over 3,000 hazardous fuels reduction and fire rehabilitation projects. The information supplied included 30 different data items for each activity, including information on activity location and size, vegetation

cover type, fuels treatment type, predicted environmental effects, actual environmental effects after activity completion, and mitigation measures. Over 2,400 of the projects reviewed had some form of validation of the environmental effects predicted, in the form of formal monitoring, forest plan monitoring, or personal observation. Some of these included multiple activities. Environmental effects included ecological, aesthetic, historic, cultural, economic, social, or health effects as defined in 40 CFR 1508.8. The agencies identified some inconsistencies and missing information in the data provided by the field units and followed up with specific units for clarification.

The agencies relied on the professional judgment of the responsible officials concerning the significance of environmental effects. The agencies believe that resource specialists and stakeholders involved in the design and analysis of each specific on-the-ground project were best qualified to identify resulting environmental effects or whether extraordinary circumstances were present.

*Comment:* Some respondents questioned the fire statistics presented in the proposal. Some said that the fire statistics fail to provide sufficient information to make any conclusions that justify the proposal.

*Response:* The fire statistics in the preamble to the proposal were drawn from the Administration's "Healthy Forests: An Initiative for Wildfire Prevention and Stronger Communities" and "A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy." Statistics for past fire seasons are also available from the National Interagency Fire Center at <http://www.nifc.gov/stats>. The statistics were provided to explain why the agencies believed the proposal was necessary and timely. These statistics are not a basis for evaluating the significance of the environmental effects of hazardous fuels reduction or rehabilitation activities.

The proposal is focused on how the attendant environmental analyses will be documented. The CEQ regulations implementing NEPA direct agencies to reduce excessive paperwork by using categorical exclusions to define categories of actions which do not individually or cumulatively have a significant effect on the human environment and for which, therefore, neither an environmental assessment nor an environmental impact statement is required. The agencies believe that the projects they reviewed provided

ample information to define the two categorical exclusions.

*Comment:* Some respondents believe that the initiative is contrary to the Roadless Area Conservation Rule which prohibits road construction in roadless areas unless needed to protect public health and safety under an imminent threat of a catastrophic event that would cause the loss of life or property. Others say that roadless areas should be included in the proposed categorical exclusions.

*Response:* Categorically excluded actions must be consistent with applicable law, regulations and policy. The Roadless Area Conservation Rule (36 CFR 294) prohibits certain activities in inventoried roadless areas. Further, Forest Service NEPA procedures continue to require an environmental impact statement for proposals that would substantially alter the undeveloped character of an inventoried roadless area of 5,000 acres or more (FSH 1909.15, Section 20.6(3)).

*Comment:* Some respondents state that the agencies should strengthen the proposed fire management categorical exclusions by adding a paragraph that specifies that they also apply in extraordinary circumstances in either Presidential Disaster Declaration areas, or areas where it is demonstrated that a high risk to human life, safety, property, or infrastructure exists.

*Response:* The categorical exclusions are based on the agencies' conclusion that these are categories of actions, which do not individually or cumulatively have a significant effect on the human environment. The need for emergency actions not justification for a categorical exclusion. CEQ regulations provide for procedures that allow action in emergencies when an environmental impact statement would be required (40 CFR 1506.11).

*Comment:* Some respondents stated that the agencies should modify the initiative to specify that the proposed fire management categorical exclusions can be used in storm/wind damaged forest areas.

*Response:* The proposed categorical exclusion for hazardous fuels reduction may be used in storm/wind damaged areas as long as the criteria in the text of the categorical exclusion are met. The agencies do not believe that such additional specificity is necessary.

*Comment:* Some respondents suggest specific criteria to further define and limit the proposed categories of actions, e.g., project goals, outcomes, acreage limitations, the number of activities within a single watershed, and the types of forests for which methods apply. Some respondents state that the



agencies should limit the size of the proposed fire management categorical exclusions to 40 acres or less and within one-half mile of communities. Some state that the agencies should limit activity size to no more than 250 acres, while others suggest that the agencies should restrict removal for a specific activity to 250,000 board feet.

*Response:* The categorical exclusions are limited to activities with a specific goal and outcome as suggested by some respondents. Accordingly, activities could include the sale of vegetative material only if hazardous fuels reduction is the primary purpose of the activity. The hazardous fuels categorical exclusion is limited to activities identified through a collaborative process as described in the 10-Year Comprehensive Strategy Implementation Plan. The collaborative process will identify areas that are a priority for treatment using the hazardous fuels reduction categorical exclusion.

Project data was collected from five land management agencies across the United States. The data represents the spectrum of hazardous fuels reduction and fire rehabilitation projects of different sizes across vegetation types, geographic regions, agency jurisdictions. Not all projects reviewed had post activity validation of the predicted environmental effects. The agencies focused on an analysis of the acreage figures from over 2,500 hazardous fuels reduction and rehabilitation activities where the environmental effects were predicted to not be significant and where those predictions were validated. Hazardous fuels reduction activities using fire, ranged in size from less than one acre to 90,000 acres. Mechanical hazardous fuels reduction activities, ranged in size from less than one acre to 11,690 acres. Fire rehabilitation activities, ranged in size from one acre to 39,000 acres.

In response to requests from more specificity of limits, the agencies have further constrained the hazardous fuels categorical exclusion of activities within wildland-urban interface or in Condition Classes 2 or 3 in Fire Regime Groups I, II, or III, outside the wildland-urban interface.

The wildland urban interface is defined in the Forest Service and Department of the Interior **Federal Register** notice "Urban Wildland Interface Communities Within the Vicinity of Federal Lands That Are at High Risk From Wildfire" published January 4, 2001 (66 FR 753), as an "interface community" and an "intermix community". For purposes of defining these communities, a structure

is understood to be either a residence or a business facility, including Federal, State, and local government facilities. Structures do not include small improvements such as fences and wildlife watering devices.

The "interface community" exists where structures directly abut wildland fuels. The wildland interface community exists where humans and their development meet or intermix with wildland fuel. There is a clear line of demarcation between residential, business, and public structures and wildland fuels. Wildland fuels do not generally continue into the developed area. The development density for an interface community is usually 3 or more structures per acre, with shared municipal services. Fire protection is generally provided by a local government fire department with the responsibility to protect the structure from both an interior fire and an advancing wildland fire. An alternative definition of the interface community emphasizes a population density of 250 or more people per square mile.

The "intermix community" exists where structures are scattered throughout a wildland area. There is no clear line of demarcation; wildland fuels are continuous outside of and within the developed area. The development density in the intermix ranges from structures very close together to one structure per 40 acres. Fire protection districts funded by various taxing authorities normally provide life and property fire protection and may also have wildland fire protection responsibilities. An alternative definition of intermix community emphasizes a population density of between 28–250 people per square mile.

Based on coarse scale national data, Fire Condition Classes measure general wildfire risk as follows:

*Condition Class 1.* For the most part, fire regimes in this Fire Condition Class are within historical ranges. Vegetation composition and structure are intact. Thus, the risk of losing key ecosystem components from the occurrence of fire remains relatively low.

*Condition Class 2.* Fire regimes on these lands have been moderately altered from their historical range by either increased or decreased fire frequency. A moderate risk of losing key ecosystem components has been identified on these lands.

Fire Regime Groups are defined in the 10-Year Comprehensive Strategy Implementation Plan, which is available on a number of Web sites including <http://www.fs.fed.us/emc/hfi>. A fire regime is a generalized description of the role fire plays in an ecosystem. It is

characterized by fire frequency, predictability, seasonality, intensity, duration, scale (patch size), as well as regularity or variability. Five combinations of fire frequency, expressed as fire return interval in fire severity, are defined as Groups I through V. Groups I and II include fire return intervals in the 0–35 year range. Group I includes ponderosa pine, other long needle pine species, and dry site Douglas-fir. Group II includes the drier grassland types, tall grass prairie, and some Pacific chaparral ecosystems. Groups III and IV include fire return intervals in the 35–100+ year range. Group III includes interior dry site shrub communities such as sagebrush and chaparral ecosystems. Group IV includes lodgepole pine and jack pine. Group V is the long interval (infrequent), stand replacement fire regime and includes temperate rain forest, boreal forest, and high elevation conifer species.

In response to requests to consider acreage limitations on the categorical exclusions for hazardous fuel reduction and fire rehabilitation activities, the agencies reviewed the data to determine prudential limits on the scope of these categorical exclusions. Although the data did not establish a relationship between acres treated and environmental effects, the agencies have elected to limit the categorical exclusion for hazardous fuels reduction activities using fire to 4,500 acres, hazardous fuels reduction activities using mechanical methods up to 1,000 acres, and fire rehabilitation activities to 4,200 acres. These acreages are well within the range of the data. This responds to public concerns while maintaining the effectiveness of the categorical exclusions as a management tool.

Using timber volume as a limitation, instead of acreage, does not reflect the size of an activity inasmuch as a small project in one part of the country may result in as much timber volume as a much larger project in another part of the country. Moreover, activities in the review that were identified as having significant environmental effects were not those of a particular activity, location, or size but were identified as having extraordinary circumstances, which precluded the use of a categorical exclusion.

These acreage limits for the hazardous fuels reduction and fire rehabilitation categories differ from those in a separate Forest Service proposal for three categorical exclusions for limited timber harvest (68 FR 1026). In conducting the review for its limited timber harvest categories, the Forest Service selected projects that would have qualified

under the agency's former Categorical Exclusion 4, which allowed up to 1 million board feet of salvage and 250,000 board feet of merchantable wood products. As previously discussed, volume per acre can vary considerably from place to place or by treatment method. However, by limiting timber harvests in the Forest Service's review for its limited timber harvest categorical exclusions to actions limited by a specified volume, the projects in the review were still inherently limited in acreage. Conversely, the activities reviewed for the hazardous fuels reduction and fire rehabilitation categorical exclusions were not constrained by a acreage or board feet limitations. Accordingly, the acreage limits proposed for the Forest Service's three limited timber harvest categorical exclusions are smaller than the acreage limits in these hazardous fuels and fire rehabilitation categorical exclusions. Since the Forest Service's limited timber harvest categorical exclusion data is constrained, it is not comparable to the hazardous fuels and fire rehabilitation categorical exclusions data.

*Comment:* Some respondents stated that the initiative contradicts the original intent of categorical exclusions, which is to expedite minor, routine administrative actions. According to these respondents, there will be more stringent requirements for administrative actions such as moving and trail maintenance than for vegetation management on hundreds of thousands of acres of land, under this initiative.

*Response:* Categorically excluded actions include those that are minor, routine, and administrative. Forest Service NEPA procedures do apply the term "routine" in reference to some of the actions that are currently categorically excluded. In addition, the categorical exclusions are intended to expedite actions that fit within categories of actions that do not individually or cumulatively have a significant effect on the human environment and for which, therefore, neither an EA nor an EIS is required. In this case, the agencies have analyzed a substantial body of data. As the agencies' experience with environmental analysis for natural resource management activities grows, it stands to reason that additional categorical exclusions will be defined.

*Comment:* Some respondent said the application of extraordinary circumstances screens is insufficient and open to abuse. Others stated a belief that hazardous fuels reduction and fire rehabilitation actions automatically trigger the Department of the Interior's

exceptions to categorical exclusions, including "controversy," "uncertainty," and "precedent for future action" and, as such, cannot be categorically excluded.

*Response:* When using these two categorical exclusions, the responsible officials will consider, on a project-by-project basis, whether or not any of the Department of the Interior's exceptions and Forest Service extraordinary circumstances apply. The responsible official will prepare a decision memo that will be available for public review.

*Comment:* Some respondents suggested that the agencies monitor categorically excluded hazardous fuels and rehabilitation activities actions to ensure that they do not have significant environmental effects.

*Response:* Monitoring would take place after the categories are established and after they are used for a particular action. Monitoring is not relied upon as a basis or rationale for establishing these categorical exclusions. Although the data established that the covered activities do not individually or cumulatively have a significant effect on the human environment, the agencies, nevertheless, recognize the need for a scientifically sound and consistent approach to environmental monitoring for both hazardous fuels reduction and rehabilitation actions and agree that a monitoring program should apply to a representative sampling of those hazardous fuels reduction and rehabilitation projects conducted using these new categorical exclusions. Therefore, guidance for the development of monitoring protocols, one for fuels treatments and one for rehabilitation actions, is being prepared. It will be peer reviewed and is scheduled for completion in May. Monitoring protocols will be prepared shortly thereafter. The agencies will monitor the effects of categorically excluded hazardous fuels reduction and fire rehabilitation activities to assess whether the categorical exclusions are being applied within their prescribed parameters and to confirm the agencies' assessment of their individual and cumulative environmental impacts.

*Comments:* Some respondents suggested changing the categorical exclusion language to specify that the proposed fire management categorical exclusions will be "guided by" rather than "be consistent with" the 10-Year Comprehensive Strategy Implementation Plan. They state that failure to implement such changes will result in new causes for appeals and litigation due to "inconsistency."

*Response:* The agencies have modified the proposal to limit it to

activities identified through a collaborative framework as described in the 10-Year Comprehensive Strategy Implementation Plan. The change was made to eliminate any confusion concerning consistency.

*Comment:* Some respondents stated the initiative's list of routine actions (e.g., reseeding and replanting) is misleading inasmuch as the effects from the listed actions are not comparable to the effects that will be created by road construction, skid trail and landing construction, and timber harvest. Some respondents also stated that phrases such as "small combustibles," "overstocked stands," and "brush thinning" are inadequate with reference to likely timber harvest activities under the initiative.

*Response:* Reseeding and replanting are allowed under the fire rehabilitation category, which does not include skid trail and landing construction, or timber harvest. Fuel reduction activities involving the sale of vegetative material are allowed under the hazardous fuels category only where the primary purpose of the activity is hazardous fuels reduction. Thinning brush and overstocked stands characterize common tasks allowed under the hazardous fuels reduction categorical exclusion. The phrase "small combustibles" was not used in the proposed or final text. The examples provided in the proposal were intended to illustrate a range of possible activities. The text of the hazardous fuels reduction categorical exclusion defines the specific actions for which each may be applied.

The agencies' review of hazardous fuels reduction and fire rehabilitation projects encompassed the specific activities included in the two categorical exclusions. Hazardous fuels reduction activities reviewed involved broadcast burning and burning of piles, and mechanical treatments consisting of crushing, piling, thinning, pruning, cutting chipping, mulching, and mowing.

*Comment:* Some respondents assert that the stated requirements that activities must be consistent with land and resource management plans is misleading since Forest Service plans will be categorically excluded.

*Response:* Forest Service NEPA procedures do not presently provide a categorical exclusion for amendments to land and resource management plans. The Forest Service may, if it implements its proposed planning rule, identify a category of plan decisions which do not individually or cumulatively have a significant effect on the human environment and may, therefore, be

categorically excluded from NEPA documentation in an environmental assessment or an environmental impact statement. The public would have an opportunity to review and comment on such an amendment to the Forest Service handbook if such a categorical exclusion proposal is made.

It should be noted that under the proposed Forest Service planning regulations, new plans, plan revisions, and amendments continue to require a rigorous public involvement process. Categorical exclusions apply to the level of documentation required under CEQ's regulations implementing NEPA (40 CFR 150.4(p) and 1508.4). Any action that is not consistent with an applicable land and resource management plan's standards, guidelines, goals, and objectives would require a plan amendment. The Forest Service will continue to conduct the appropriate level of environmental analysis and disclosure commensurate with the significance of environmental effects, for both land and resource management plans and project-level planning.

*Comment:* Some respondents suggested that the agencies should clearly define such terms as "hazardous fuels," "primary purpose," "ecosystem integrity," and "adverse effect" as they pertain to extraordinary circumstances.

*Response:* "Hazardous fuels" consist of combustible vegetation (live or dead) such as grass, leaves, ground litter, plants, shrubs, and trees, that contribute to the threat or ignition, and high fire intensity and/or high rate of spread. The term "primary purpose" is not a term of art and has only the dictionary definition. Synonymous phrasing is that the "main reason" for the activity must be hazardous fuels reduction.

"Ecosystem integrity" is defined in "A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy" as the completeness of an ecosystem that at geographic and temporal scales maintains its characteristic diversity of biological and physical components, composition, structure, and function. The use of the term "adverse effect" was used in conjunction with the agencies' descriptions of extraordinary circumstances in their NEPA procedures. Specific agency direction pertinent to identifying extraordinary circumstances may be found in Forest Service Handbook 1909.15, section 303.3 (67 FR 54622), and Department of the Interior Manual 516 DM 2, Appendix 2.

*Comment:* Some respondents commented that the proposal was misleading because it stated that the

proposed hazardous fuels reduction categorical exclusion would not cover timber sales that do not have hazardous fuel reduction as their primary purpose, but then several pages later stated that products would be sold.

*Responses:* The intent of the statement concerning timber sales was to point out that only timber sales with hazardous fuel reduction as their primary purpose could be categorically excluded under the proposal. The categorical exclusion for hazardous fuels reduction allows for the sale of vegetative material as one method for removal. The sale of vegetative material includes all types of products from plant material, including biomass, posts, poles, and sawlogs. The hazardous fuels reduction categorical exclusion has been edited to add that activities may include the sale of vegetative material if the primary purpose of the activity is hazardous fuels reduction.

*Comment:* Some respondents suggested that, without NEPA analysis, categorically excluded actions would not consider the best available science and managers would be unaware of extraordinary circumstances that preclude the use of a categorical exclusion.

*Response:* The agencies have repeatedly conducted NEPA analyses for hazardous fuels reduction and fire rehabilitation projects using the best available science. Based upon the projects reviewed for these categorical exclusions, the agencies have concluded that these categorical exclusions describe categories of actions which do not individually or cumulatively have a significant effect on the human environment.

Consistent with existing direction, agencies must conduct sufficient review to determine that no extraordinary circumstances exist when using categorical exclusions. This determination includes appropriate surveys and analyses, using the best available science, attendant in appropriate consultation with Tribes and consultation with regulatory agencies, such as those required by the Endangered Species Act, the National Historic Preservation Act, Clean Water Act, and Clear Air Act.

The agencies will take the additional measure of monitoring to determine that these categories are being appropriately used and to further validate the agencies' conclusions regarding environmental significance.

*Comment:* Some respondents stated that NEPA and other environmental laws have served the country well for years, and the agencies should follow these laws in conducting fuels reduction

efforts. Respondents suggest that if rule changes are needed, they should be made through Congress, not through administrative actions.

*Response:* The agencies are not changing laws or regulations. The CEQ regulations implementing NEPA provide for three levels of environmental documentation: environmental impact statements; environmental assessments; and categorical exclusions. The agencies are following CEQ's regulations, which direct agencies to define categorical exclusions to reduce excessive paperwork. Activities conducted under those categories must be consistent with all applicable Federal, State, local, and Tribal laws and requirements imposed for protection of the environment.

*Comment:* Some respondents indicated that there should be no restriction on new road construction, while others believe that no roads should be constructed, as the absence of roads indicates an activity is too far from a community. Other respondents suggested that up to one mile of low-standard road should be allowed, while others believed that roads should only be constructed in rare cases.

*Response:* Hazardous fuels reduction activities and rehabilitation activities involving new permanent roads are not included in the proposed categorical exclusions. Proposals for activities that involve new permanent road construction would be analyzed and documented in an environmental assessment or an environmental impact statement.

*Comment:* Some respondents suggested that any road construction should only be carried out following a thorough environmental analysis. Others indicated that culverts should not be replaced or upgraded without a watershed analysis.

*Response:* The categorical exclusions provide only for construction of temporary roads. Where temporary road construction or culverts are being proposed, agencies must review the proposed action to ensure that no extraordinary circumstances exist.

*Comment:* Some respondents suggested that the categorical exclusions should specify that temporary roads will be constructed only where the project ensures that they will be reclaimed/obliterated upon activity completion.

*Response:* Whether temporary roads are needed and to what extent, along with how they are closed, reclaimed, and/or obliterated are project-specific decisions and therefore appropriately decided at the project level.

*Comment:* Some respondents asked the agencies to clarify the role of grazing

in the proposal. Other respondents suggest that the agencies should not allow grazing to be categorically excluded as a fuels reduction technique because grazing removes grasses, allowing woody vegetation to invade, which contributes to hotter, more intense fires.

*Response:* The grazing activity included in the proposed hazardous fuels reduction categorical exclusion, as the sole biological method, was intended to be limited to livestock grazing to maintain fuelbreaks. Subsequent review determined that only four of the projects reviewed involved livestock grazing for fuelbreak maintenance. While some agencies have effectively used livestock grazing to maintain fuelbreaks in certain circumstances without significant environmental effects, the agencies believe they have not gathered sufficient data for its inclusion in this categorical exclusion. The agencies will continue to review the effects of this type of activity. Therefore, the hazardous fuels reduction categorical exclusion has been modified to remove "biological" and "grazing" from the list of included activities.

*Comment:* Some respondents stated that some prescribed burns have resulted in unanticipated effects such as burns too cool/hot to meet objectives and increases in noxious weeds/non-target grasses.

*Response:* The agencies' review of hazardous fuels reduction and fire rehabilitation projects found 11 cases where the actual results were other than what was predicted. These cases reported that prescribed fires burned either cooler or hotter than anticipated. Cooler than expected burns resulted in less fuel being consumed by fire, and, therefore, not completely achieving the project's fuel reduction objective. Hotter than expected burns resulted in increased scorch of tree crowns and more tree mortality than predicted. In some instances undesirable grass species occupied the site after treatment. In each of these cases, however, the unanticipated effects were found not to be significant.

*Comment:* Some respondents asked that the categorical exclusion for rehabilitation be modified to include, but not be limited to, specific suggested activities such as fire and safety hazard tree removal, natural or mechanical soil rehabilitation, and rehabilitation of recreation sites.

*Response:* The rehabilitation categorical exclusion does not include removal of fire and safety hazard trees. Removal of fire hazards is addressed in the hazardous fuels reduction categorical exclusion. Safety hazard

trees associated with roads, trails, recreation facilities, and administrative sites may be removed as part of routine maintenance of those facilities. Most agencies already categorically exclude these maintenance activities from further analysis and documentation in an environmental assessment or environmental impact statement. Post-fire soil rehabilitation, either natural or mechanical, and recreation site rehabilitation are included in the category of actions described in the rehabilitation categorical exclusion. The list of examples is not exhaustive.

*Comment:* Some respondents indicated a belief that the proposal for rehabilitation is unnecessary as existing legal frameworks provide for emergency fire rehabilitation.

*Response:* In January 2003, the Wildland Fire Leadership Council, a cooperative, interagency organization dedicated to achieving consistent implementation of the goals, actions, and policies in the National Fire Plan and the Federal Wildland Fire Management Policy, identified three types of fire recovery activities: Emergency stabilization; rehabilitation; and restoration. Emergency stabilization is defined as planned actions within one year of a wildland fire to stabilize and prevent unacceptable degradation to natural and cultural resources, to minimize threats to life or property resulting from the effects of a fire, or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources. The rehabilitation categorical exclusion does not cover emergency stabilization. The Wildland Fire Leadership Council defines rehabilitation as "Post-fire efforts (<3 years) to repair or improve lands unlikely to recover to a management approved condition from wildland fire damage, or to repair or replace minor facilities damaged by fire." The Wildland Fire Leadership Council defines restoration as the continuation of rehabilitation beyond three years. The rehabilitation categorical exclusion has been edited to be consistent with the Wildland Fire Leadership Council's definition of rehabilitation. The scope of fire rehabilitation activities allowed under the proposed categorical exclusion has not changed as a result of this new definition. What has changed is the time limit of three years for completion of those activities and a size limit of 4,200 acres.

*Comment:* Some respondents believe that rehabilitation activities should require an environmental impact statement. Others believe that these activities should not be carried out at

all. They say the use of heavy equipment generates noise, air and water pollution, soil compaction, vegetation and habitat changes, and ecosystem modifications greater than those which follow fires. Still others cite research studies (*e.g.*, Beschta, *et al.*, 1995) that report that there is generally no ecological need to act, and that quick actions may create new problems.

*Response:* The agencies have repeatedly conducted NEPA analyses for fire rehabilitation projects using the best available science. Based upon approximately 300 fire rehabilitation projects reviewed, the agencies have concluded that the category of activities described do not individually or cumulatively have a significant effect on the human environment. When using the rehabilitation categorical exclusion, agencies must review the proposed action to ascertain whether extraordinary circumstances exist.

While the Beschta report focused on salvage logging, there are also statements on rehabilitation practices in the report. This report questions, in general, the effectiveness of installation of hard structures and their siting on the landscape. This report also criticizes introduction of non-native species. Situations such as steep slopes, drinking water protection, and threats of invasive species may influence the need to act in local situations. Years of research since the Beschta report have informed current choices of technologies. The utility of fire rehabilitation practices chosen and the need for these practices will be decided on a site-specific basis using current knowledge and technologies. Thus, the projects selected, based on local scientific expertise, will both meet the environmental protection goals for the projects and have no potential to individually or cumulatively have a significant effect on the human environment.

*Comment:* Some respondents requested that herbicide use be allowed under the fire rehabilitation categorical exclusion, while others oppose herbicide use and even want an explicit prohibition against herbicide use on future activities that follow categorically excluded actions.

*Response:* the agencies will continue to review and analyze new information on the effects of herbicides used for hazardous fuel reduction. At the present time, the agencies have elected to not include actions involving herbicide use.

*Comment:* Some respondents are concerned that 30 days was insufficient time to review the proposed categorical exclusions along with the other proposals. Others criticized the release

of the proposal during the Christmas holidays.

*Response:* The agencies extended the comment period through January 31, 2003.

*Comment:* Some respondents expressed frustration with e-mail errors near the comment period deadline.

*Response:* The office receiving e-mail comments notes that many e-mail comments were received during the final days of the comment period. The office receiving the e-mail comments analyzed e-mail server performance. No problems were identified.

*Comment:* Some respondents said they do not believe that the agencies should block e-mail originating from a third party e-mail generator. These respondents said that such e-mail generators are important to groups interested in the environment and that such blocking prevents voices from being heard.

*Response:* The Forest Service regrets any difficulty experienced in submitting comments. The Forest Service is committed to electronic government and is a participant in the Regulations.gov project, which will allow third-party e-mail generators to submit electronic comments. In the meantime, the Forest Service has provided maintainers of public comment web pages with a simple procedure that they can use to keep their messages from being blocked by the Forest Service's spam filter. For more information please contact Sandra Watts, (703) 605-4695.

*Comment:* Some respondents stated that agencies should accept and consider all comments and not just those deemed to be "original and substantive."

*Response:* The agencies agree and accepted and considered all comments. Each comment was considered on its own merits.

*Comment:* Some respondents said that the 10-Year Comprehensive Strategy Implementation Plan should have been included with the proposal.

*Response:* The 10-Year Comprehensive Strategy Implementation Plan is available on a number of Web sites including <http://www.fs.fed.us/emc/hfi>. In addition, two contacts were provided in the **Federal Register** notice for additional information. These contacts were available to provide more information on this strategy.

*Comment:* Some respondents expressed a desire for public hearings to record testimony.

*Response:* The agencies believe that the public comment opportunity provided was the most efficient means of gathering public input for a proposal

of this nature and that public hearings were not necessary.

*Comment:* Some respondents wanted the agencies to specify which implementation tasks within the 10-Year Comprehensive Strategy Implementation Plan are addressed by the proposed fire management categorical exclusions.

*Response:* The categorical exclusions contribute to the implementation task, "Assess state and federal regulatory process governing projects and activities done in conformance with the 10-Year Comprehensive Strategy and Implementation Plan and identify measures to improve timely decision-making." This task is under "Goal Two—Reduce Hazardous Fuels."

*Comment:* Some respondents suggested that the agencies should provide opportunities for public involvement on the initiative following the release of the report from the General Accounting Office on the relationship between administrative appeals and fuels reduction activities.

*Response:* Because of controversy over whether appeals and litigation have delayed implementation of Forest Service hazardous fuels reduction activities, the General Accounting Office was requested to provide information to Congress on the number of decisions involving hazardous fuels reduction activities, the number of these decisions appealed or litigated, and the acreages affected. The agencies did not believe that this information would be helpful in defining these categorical exclusions, nor aid the public in commenting on the agencies' proposal.

*Comment:* Many respondents asked that the agencies adhere to various laws, executive orders, and agency policies such as: the Endangered Species Act, Clean Air Act, Clean Water Act, National Forest Management Act, Migratory Bird Treaty Act, National Historic Preservation Act, Forest Service Transportation System Management Policy, Northwest Forest Plan, the Grizzly Bear Recovery Plan, and executive orders on management of floodplains and wetlands, and Tribal consultation.

*Response:* The agencies agree. The level of NEPA consideration does not affect agency responsibility to follow applicable laws, regulations, executive orders, and policies. For example, categorically excluded hazardous fuels reduction and fire rehabilitation actions are reviewed for their potential to impact waters listed as impaired by State water quality agencies and for compliance with smoke management plans. When appropriate, the Forest Service and the Department of the

Interior agencies conduct appropriate consultation with Federal, State, and Tribal agencies for hazardous fuels and fire rehabilitation actions. For example, agencies must consult with Tribal governments when an action may have Tribal implications, even though it may be categorically excluded from further analysis and documentation in an environmental assessment or environmental impact statement. Agencies must also review the potential effects from these types of actions on threatened and endangered species and designated critical habitat and consult as appropriate with the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration (NOAA), Fisheries. Similarly, categorically excluded actions are reviewed for potential effects on properties protected by the National Historic Preservation Act along with appropriate consultation with State and Tribal Historic Preservation Officers. Such consultations help ensure that cumulative effects across jurisdictions will not be significant.

*Comment:* Some respondents stated that rehabilitation work should only be carried out in areas already consumed by fires.

*Response:* The agencies agree. The proposed and final categorical exclusion for rehabilitation activities state that it is for rehabilitation of habitat, watersheds, historical, archaeological, and cultural sites and infrastructure damaged by wildfire and/or wildfire suppression.

*Comment:* Some respondents said that agencies should follow the 10-Year Comprehensive Strategy Implementation Plan and that additional laws or regulations are not needed.

*Response:* The categorical exclusions are prepared in conformity with the law (NEPA) and CEQ regulations. They contribute to the implementation task under the 10-Year Comprehensive Strategy Implementation Plan's "Goal Two—Reduce Hazardous Fuels," which says, "Assess state and federal regulatory process governing projects and activities done in conformance with the 10-Year Comprehensive Strategy and Implementation Plan and identify measures to improve timely decision-making." In addition, the hazardous fuels reduction categorical exclusion will apply only to activities identified through a collaborative framework as described in the 10-Year Comprehensive Strategy Implementation Plan.

*Comment:* Some respondents asked that the agencies work collaboratively with Federal and State agencies in developing proposed activities and

determining effects on wildlife resources prior to approval of specific activities.

*Response:* Hazardous fuels reduction activities will be identified collaboratively with governments and stakeholders, through a collaborative framework as described in 10-Year Comprehensive Strategy Implementation Plan.

*Comment:* Many respondents offered suggestions about Forest Service and Department of the Interior management and funding, where and how to focus hazardous fuels reduction efforts, the efficacy of various hazardous fuels treatments and post-fire rehabilitation measures, technologies for utilization of small-diameter trees, alternative fiber sources, fire suppression tactics, land acquisition, multiple-use, the President's Healthy Forests Initiative, and the 10-Year Comprehensive Strategy Implementation Plan.

*Response:* Respondents offered many creative and original suggestions that addressed issues beyond the proposal. The agencies provided these comments to appropriate personnel for their consideration.

*Comment:* Some respondents stated that the agencies should comply with Executive Order 12866 by assessing the economic costs and benefits of the initiative. Respondents say that this assessment should include the non-market costs of the initiative to landowners, businesses, communities, water quality, recreation, scenery, non-traditional forest products, and game.

*Response:* In compliance with Executive Order 12866, the agencies have determined that these categorical exclusions will not have an annual effect of \$100 million or more on the economy or adversely affect productivity, competition, jobs, the environment, public health or safety, or State, Tribal, or local governments. The economic effect expected to result from this action is a reduction in the administrative burden of preparing unnecessary environmental assessments and findings of no significant impact, and benefits to the environment and nearby communities as a result of expeditious fuel reduction and post-fire rehabilitation activities. These benefits were not quantified due to the level of uncertainty associated with the amount of time saving and the number of projects that would use these categorical exclusions.

### Conclusion

The USDA Forest Service and the Department of the Interior find that the categories of action defined in the categorical exclusions presented at the

end of this notice do not individually or cumulatively have a significant effect on the human environment. The agencies' findings is first predicated on the reasoned expert judgment of the responsible officials who made the original findings and determinations in the hazardous fuels and fire rehabilitation projects reviewed; the resource specialists who validated the predicted effects of the reviewed activities through monitoring or personal observation of the actual effects; synthesis of peer-reviewed scientific publications; and finally, the agencies' belief that the profile of the past hazardous fuels reduction and fire rehabilitation activities represents the agencies' past practices and is indicative of the agencies' future activities.

### Regulatory Certifications

#### *Environmental Impact*

These categorical exclusions add direction to guide field employees in the USDA Forest Service and the Department of the Interior regarding procedural requirements for National Environmental Policy Act (NEPA) documentation for fire management activities. The Council on Environmental Quality does not direct agencies to prepare a NEPA analysis or document before establishing agency procedures that supplement the CEQ regulations for implementing NEPA. Agencies are required to adopt NEPA procedures that establish specific criteria for, and identification of, three classes of actions: Those that require preparation of an environmental impact statement; those that require preparation of an environmental assessment; and those that are categorically excluded from further NEPA review (40 CFR 1507.3(b)). Categorical exclusions are one part of those agency procedures, and therefore establishing categorical exclusions does not require preparation of a NEPA analysis or document.

Agency NEPA procedures are internal procedural guidance to assist agencies in the fulfillment of agency responsibilities under NEPA, but are not the agency's final determination of what level of NEPA analysis is required for a particular proposed action. The requirements for establishing agency NEPA procedures are set forth at 40 CFR 1505.1 and 1507.3, and the USDA Forest Service and the Department of the Interior have provided an opportunity for public review and have consulted with the Council on Environmental Quality during the development of these categorical exclusions. The determination that establishing categorical exclusions do not require

NEPA analysis and documentation has been upheld in *Heartwood, Inc. v. U.S. Forest Service*, 73 F. Supp. 2d 962, 972-73 (S.D. Ill.1999), aff'd, 230 F.3d 947, 954-55 (7th Cir. 2000).

#### *Regulatory Impact*

These categorical exclusions have been reviewed under Departmental procedures and Executive Order 12866 on Regulatory Planning and Review. The Office of Management and Budget (OMB) has determined that this is a significant regulatory action as defined by Executive Order 12866. Accordingly, this action is subject to OMB review under Executive Order 12866 and OMB has reviewed these categorical exclusions at both the proposed and final stages.

This action to add two categorical exclusions to the agencies' NEPA procedures will not have an annual effect of \$100 million or more on the economy or adversely affect productivity, competition, jobs, the environment, public health or safety, or State, Tribal, or local governments. This action may interfere with an action taken or planned by another agency or raise new legal or policy issues. Finally, this action will not alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients of such programs.

Moreover, this action has been considered in light of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), and it is hereby certified that the categorical exclusions will not have a significant economic impact on a substantial number of small entities as defined by the act because it will not impose record-keeping requirements on them; it will not affect their competitive position in relation to large entities; and it will not affect their cash flow, liquidity, or ability to remain in the market.

#### *Federalism*

The agencies have considered these categorical exclusions under the requirements of Executive Order 13132, Federalism, and have concluded that they conform with the federalism principles set out in this Executive Order; will not impose any compliance costs on the States; and will not have substantial direct effects on the States or the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, the agencies have determined that no further assessment of federalism implications is necessary.

*Consultation and Coordination With Indian Tribal Governments*

These categorical exclusions do not have tribal implications as defined by Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, and therefore advance consultation with Tribes is not required.

*No Takings Implications*

These categorical exclusions have been analyzed in accordance with the principles and criteria contained in Executive Order 12630, Governmental Actions and Interference with Constitutionally Protected Property Rights, and it has been determined that the proposed categorical exclusions do not pose the risk of a taking of Constitutionally protected private property.

*Civil Justice Reform*

In accordance with Executive Order 12988, it has been determined that these categorical exclusions do not unduly burden the judicial system and that they meet the requirements of sections 3(a) and 3(b)(2) of the Order.

*Unfunded Mandates*

Pursuant to Title II of the Unfunded Mandates Reform Act of 1995 (2 U.S.C. 1531–1538), which the President signed into law on March 22, 1995, the agencies have assessed the effects of these categorical exclusions on State, local, and Tribal governments and the private sector. These categorical exclusions do not compel the expenditure of \$100 million or more by any State, local, or Tribal government or anyone in the private sector. Therefore, a statement under section 202 of the act is not required.

*Energy Effects*

These categorical exclusions have been reviewed under Executive Order 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use. It has been determined that these categorical exclusions do not constitute a

significant energy action as defined in the Executive Order.

*Controlling Paperwork Burdens on the Public*

These categorical exclusions do not contain any additional record keeping or reporting requirements or other information collection requirements as defined in 5 CFR part 1320 that are not already required by law or not already approved for use, and therefore, impose no additional paperwork burden on the public. Accordingly, the review provisions of the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*) and its implementing regulations at 5 CFR part 1320 do not apply.

Dated: May 29, 2003.

For the Forest Service, U.S. Department of Agriculture.

**Sally D. Collins,**

*Associate Chief.*

Dated: May 29, 2003.

For the U.S. Department of the Interior:

**P. Lynn Scarlett,**

*Assistant Secretary—Policy, Management, and Budget.*

**Categorical Exclusions**

**Note:** The USDA Forest Service and the Department of the Interior have issued the categorical exclusions in their respective NEPA procedures. The categorical exclusions appear in Forest Service Handbook (FSH) 1909.15, Environmental Policy and Procedures, ID 1909.15–2003–1, and Department of the Interior Manual 516 DM, Chapter 2, Appendix 1, Departmental Categorical Exclusions. Reviewers who wish to view the entire chapter 30 of FSH 1909.15 may obtain a copy electronically from the USDA Forest Service directives page on the World Wide Web at <http://www.fs.fed.us/im/directives/>. Reviewers who wish to view the Department of the Interior Manual 516 DM may obtain a copy electronically from the Department of the Interior page at <http://elips.doi.gov/table.cfm>.

Following is the text of the two categorical exclusions:

- Hazardous fuels reduction activities using prescribed fire not to exceed 4,500 acres, and mechanical methods for crushing, piling, thinning, pruning,

cutting, chipping, mulching, and mowing, not to exceed 1,000 acres. Such activities:

- Shall be limited to areas (1) in wildland-urban interface and (2) Condition Classes 2 or 3 in Fire Regime Groups I, II, or III, outside the wildland-urban interface;
- Shall be identified through a collaborative framework as described in “A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy Implementation Plan;”
- Shall be conducted consistent with agency and Departmental procedures and applicable land and resource management plans;
- Shall not be conducted in wilderness areas or impair the suitability of wilderness study areas for preservation as wilderness;
- Shall not include the use of herbicides or pesticides or the construction of new permanent roads or other new permanent infrastructure; and may include the sale of vegetative material if the primary purpose of the activity is hazardous fuels reduction.
- Post-fire rehabilitation activities not to exceed 4,200 acres (such as tree planting, fence replacement, habitat restoration, heritage site restoration, repair of roads and trails, and repair of damage to minor facilities such as campgrounds) to repair or improve lands unlikely to recover to a management approved condition from wildland fire damage, or to repair or replace minor facilities damaged by fire. Such activities:
  - Shall be conducted consistent with agency and Departmental procedures and applicable land and resource management plans;
  - Shall not include the use of herbicides or pesticides or the construction of new permanent roads or other new permanent infrastructure; and
  - Shall be completed within three years following a wildland fire.

[FR Doc. 03–14104 Filed 6–2–03; 12:53 pm]

**BILLING CODE 3410–11–M; 4310–70–M**



Illustration 9 - 53 IAM 5-H

	Old 516 DM 6 Appendix 4 BIA Cat X's 9/14/98	New 516 DM 2 Appendix 1 DOI Cat X's 6/30/03	Effect of New Cat X on Bureau Activities	
			Current Management Plan in Place with Programmatic EA/ EIS	No Current Management Plan /No Programmatic EA/EIS
Hazardous Fuels Reduction Activities	<p>Allows:</p> <ul style="list-style-type: none"> <li>Prescribed fire on less than 2000 acres when in compliance with a current management plan addressed in an earlier NEPA analysis.</li> </ul>	<p>Allows:</p> <ul style="list-style-type: none"> <li>Hazardous fuels reduction activities using prescribed fire not to exceed 4,500 acres.</li> </ul>	<ul style="list-style-type: none"> <li>Increases prescribed fire project size from 2000 to 4,500 acres. However, additional 2,500 acres must meet all other requirements of New Cat X.***</li> </ul>	<ul style="list-style-type: none"> <li>Allows for the implementation of burn treatments up to 4,500 acres in size which meet all other requirements of New Cat X.***</li> </ul>
	<ul style="list-style-type: none"> <li>Forest Stand Improvement projects less than 2000 acres when in compliance with a current management plan addressed in an earlier NEPA analysis.</li> </ul>	<ul style="list-style-type: none"> <li>Mechanical methods for crushing, piling, thinning, pruning, cutting, chipping, mulching, and mowing, not to exceed 1,000 acres.</li> </ul> <p>***Such activities: Shall be limited to areas (1) in wildland-urban interface and (2) Condition Classes 2 or 3 in Fire Regime Groups I, II, or III, outside the wildland-urban interface; Shall be identified through a collaborative framework as described in "A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy Implementation Plan;" Shall be conducted consistent with agency and Departmental procedures and applicable land and resource management plans; Shall not be conducted in wilderness areas or impair the suitability of wilderness study areas for preservation as wilderness; Shall not include the use of herbicides or pesticides or the construction of new permanent roads or other new permanent infrastructure; and may include the sale of vegetative material if the primary purpose of the activity is hazardous fuels reduction.</p>	<ul style="list-style-type: none"> <li>No Effect. In fact, the old BIA Cat X provides for an additional 1000 acres to be treated.</li> </ul>	<ul style="list-style-type: none"> <li>Allows for the implementation of mechanical treatments up to 1,000 acres in size which meet all other requirements of New Cat X.***</li> </ul>
Post-Fire Rehabilitation Activities	<ul style="list-style-type: none"> <li>BAER Activities on not to exceed 10,000 acres.</li> </ul>	<ul style="list-style-type: none"> <li>Post-fire rehabilitation activities not to exceed 4,200 acres (such as tree planting, fence replacement, habitat restoration, heritage site restoration, repair of roads and trails, and repair of damage to minor facilities such as campgrounds) to repair or improve lands unlikely to recover to a management approved condition from wildland fire damage, or to repair or replace minor facilities damaged by fire.</li> </ul> <p>Such activities: Shall be conducted consistent with agency and Departmental procedures and applicable land and resource management plans; Shall not include the use of herbicides or pesticides or the construction of new permanent roads or other new permanent infrastructure; and Shall be completed within three years following a wildland fire.</p>	<ul style="list-style-type: none"> <li>No Effect. In fact, the old BIA Cat X provides for an additional 5,800 acres to be treated.</li> </ul>	



**ACTION:** Final rule; correcting amendments.

**SUMMARY:** This document contains corrections to the final regulations that were published in the **Federal Register** on Wednesday, March 23, 2005, (70 FR 14561). The regulations related to cooperating agencies and cooperating agency status.

**DATES:** Effective on April 22, 2005.

**FOR FURTHER INFORMATION CONTACT:** Robert Winthrop at (202) 452-6597 or Mark Lambert at (202) 452-7763.

**SUPPLEMENTARY INFORMATION:**

### Background

#### *Need for Correction*

As published, the final regulations contain errors which may prove to be misleading and need to be clarified. The final regulations stated the corrections in singular form when some of the actual regulation text was in plural form. We need to make these corrections so that all of the necessary changes appear in the Code of Federal Regulations.

### List of Subjects in 43 CFR Part 1600

Administrative practice and procedures, Environmental Impact Statements, Indians, Intergovernmental relations, Public lands.

■ Accordingly, 43 CFR part 1600 is corrected by making the following correcting amendments:

### PART 1600—PLANNING, PROGRAMMING, BUDGETING

■ 1. The authority citation for part 1600 continues to read as follows:

**Authority:** 43 U.S.C. 1711-1712.

#### § 1610.1 [Corrected]

■ 2. Section 1610.1(a)(1) is amended by removing the misspelled word “suct” and add in its place the word “such.”

#### § 1610.1 Resource management planning guidance [Amended]

■ 3. Amend § 1610.1(a)(1) and (b) by revising the phrases “resource area” and “resource areas” to read “resource or field office area” and “resource or field office areas”, respectively.

#### § 1610.2 [Amended]

■ 4. Amend § 1610.2(j) by removing the phrase “District or Area Manager” and adding the phrase “Field Manager” and removing the phrase “Area or Field Manager” and adding the phrase “Field Manager.”

#### § 1610.3-1 [Amended]

■ 5. Amend § 1610.3-1 by removing the phrase “District Managers” from

paragraph (d) introductory text and adding in its place the phrase “Field Manager.”

Dated: May 11, 2005.

**Ian Senio,**

*Acting Group Manager, Regulatory Affairs.*

[FR Doc. 05-10015 Filed 5-19-05; 8:45 am]

**BILLING CODE 4310-84-P**

## DEPARTMENT OF THE INTERIOR

### Office of the Secretary

#### 48 CFR Parts 1437 and 1452

**RIN 1084-AA00**

#### Woody Biomass Utilization

**AGENCY:** Office of the Secretary, Interior.

**ACTION:** Final rule.

**SUMMARY:** This rule converts an interim final rule to a final rule, with minor adjustments in response to public comment. In addition, the numbering scheme was revised to conform to the existing regulatory structure. As a result of this rulemaking, Department of the Interior will allow service contractors to remove woody biomass generated as a result of land management service contracts whenever ecologically appropriate and in accordance with applicable law.

**DATES:** *Effective Date:* May 20, 2005.

**FOR FURTHER INFORMATION CONTACT:**

Delia Emmerich, Office of Acquisition and Property Management, Department of the Interior at (202) 208-3348, or e-mail at [Delia\\_Emmerich@os.doi.gov](mailto:Delia_Emmerich@os.doi.gov). Individuals who use telecommunications devices for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 1-800-877-8339 twenty-four hours a day, 7 days a week.

**SUPPLEMENTARY INFORMATION:** On August 27, 2004, the Department published an interim final rule with request for comments at 69 FR 52607; the interim rule established procedures to allow service contractors to remove woody biomass generated as a result of land management service contracts whenever ecologically appropriate and in accordance with applicable law. This publication revises that rule in response to public comments. This rule establishes consistent and efficient procedures to allow contractors the option to remove woody biomass by-products from Department of the Interior land management activities. This option, where ecologically appropriate, will provide economic and social benefits by creating jobs and conserving natural resources. Removal or use of woody biomass will reduce

smoke and emissions from prescribed and natural fires; preserve landfill capacities, reduce the threat of catastrophic wildfires to communities and public/private utilities; improve watershed and wildlife habitat protection; and improve forest, woodland, and rangeland health.

This final rule, while substantially the same as the interim final rule published on August 27, 2004, contains minor changes to respond to comments and to improve clarity. It is also reformatted to move the required contract clause to Part 1452 of 48 CFR.

### I. Response to Public Comments

We received several comments from two sources. Our response to each comment follows, in order by section. The discussion of the comments shows the former section title and number, followed by the revised section number and (if different) title.

#### *Section 1437.100 General (New § 1437.7200)*

*Comment:* The woody biomass should stay where it is.

*Response:* The fundamental method of addressing forest health and hazardous fuel reduction strategies under the National Fire Plan and Healthy Forests Initiative is to remove small diameter trees. Contractors are cutting the trees to meet resource objectives. The removal is incidental to the project. The projects would occur whether or not there was an option for removal. The Rule simply makes these materials available for removal by contractors, rather than disposal through burning or other on-site disposal methods.

*Comment:* I oppose allowing the contractors to damage and destroy this area for their own enrichment.

*Response:* Contractors have been secured to provide a service to the federal agency, which includes the cutting or destruction of vegetation to meet a prescribed management objective, such as thinning small trees to improve forest growth or clearing of roads and building sites. Projects under Rule are developed under the requirements of the National Environment Policy Act, which is designed to “prevent or eliminate damage to the environment \* \* \*” If damage beyond that anticipated in the NEPA analysis were to occur, by design this would be accidental. By the nature of these projects, the removal of the low-value biomass has very little if any commercial value. If the biomass had commercial value, the project would most likely be a timber/vegetative sales contract offering unrelated to the

procurement regulations covered under this Rule.

*Comment:* There does not need to be any immediate need to rush through this plundering. I think the rush is to try to make it escape from public view. The Administrative procedure act calls for public input. I ask for extension of the time for the public to comment instead for a 90-day period.

*Response:* Urgent and immediate actions are called for under the National Fire Plan Hazardous Fuel Reduction Program. Thousands of projects are taking place every year. This Rule will make the by-products from these treatments immediately available. Removal of the biomass, in most cases, is preferable to leaving the material in the woods. Removal will reduce the threat of escaped wildfires from burning the material, reduce air pollution, and stimulate jobs for the local economy. Only two comments were received during the public comment period, one of which was from a federal agency. The Rule does not appear to be controversial, complex, or require additional analysis such that a 90-day comment period is necessary. No additional comments were received after closure of the official public comment period.

*Comment:* There is no "threat".

*Response:* The **Federal Register** of August 17, 2001 (66 FR 43435) includes 11,376 communities within the vicinity of Federal lands that are at high risk to wildfire. This list was jointly developed by States, tribes, and Federal agencies. The 2004 wildfire season, as well as the 2000 and 2002 seasons, are well above the 10-year average for acres burned due to wildfires. The trend for larger, more damaging fires has been increasing, with little relief in sight. The Congress, the Administration, and the States have made a national and local priority of addressing wildfire threats.

*Comment:* This rule will have an effect of \$100 million and therefore has a significant economic effect.

*Response:* Optimistic projections of woody biomass removal under the National Fire Plan, the largest and most active vegetation management program in the Federal government, could include the removal of approximately 7 million green tons per year. At the minimum rate of \$0.10 per green ton, or even an optimistic \$0.25 to \$0.50 per green ton, this represents less than \$5 million.

*Comment:* NEPA plans must be prepared and the public must be allowed to comment.

*Response:* As specific in the Interim Rule, "Federal agencies should consider the environmental effects of woody

biomass utilization in each project where woody biomass utilization is appropriate and make a determination of significance for the project." This would include, where appropriate, a public comment solicitation and a public record of decision. It is not necessary, nor in the best interest of the public, to delay implementation in order to prepare an environmental impact statement.

#### *Section 1437.104 Definitions (New § 1437.7203)*

*Comment:* The definition of "ecologically appropriate" states, "where the Deciding Officer and/or Contracting Officer determines it is not necessary to retain specific woody material \* \* \*" Only the Deciding Officer (Field Manager or other responsible line officer) will make this decision.

*Response:* The Responsible Official for the NEPA document makes the decision to include or not include woody biomass removal. The procurement Contracting Officer decides whether to include the clause from § 1452.237-71 in the solicitation or service contract, presumably in consultation with the Responsible Official. The timber/vegetative sales contract, if required, may be executed by the timber/vegetative sales Contracting Officer with the delegated authority to dispose of forest products, per Bureau policies. Clarification has been included in the final rule.

## **II. Procedural Matters**

### *1. Regulatory Planning and Review (E.O. 12866)*

This document is not a significant rule and the Office of Management and Budget has not reviewed this rule under Executive Order 12866.

(1) This rule will not have an effect of \$100 million or more on the economy. It will not adversely affect in a material way the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal communities. The contractors and the general public are not required to perform services or process materials' woody products will be removed and compensated, if appropriate, at fair market value as agreed upon.

(2) This rule will not create a serious inconsistency or otherwise interfere with an action taken or planned by another agency. This policy only applies to Department of the Interior Bureaus; other agencies and governments could positively benefit from the development of small-wood markets and any tax or economic rewards.

(3) This rule does not alter the budgetary effects of entitlements, grants, user fees, or loan programs or the rights or obligations of their recipients. The contractor will be provided a new option, if executed, which is exclusive of other rights and benefits.

(4) This rule does not raise novel legal or policy issues. This policy uses existing authorities within existing policies.

### *2. Regulatory Flexibility Act*

The Department of the Interior certifies that this document will not have a significant economic effect on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*). The scope of the action is minor (less than \$100 million in economic impact); the benefits of the rule are to the contractor and may be exercised at their discretion.

### *3. Small Business Regulatory Enforcement Fairness Act (SBREFA)*

This rule is not a major rule under 5 U.S.C. 804(2), the Small Business Regulatory Enforcement Fairness Act. This rule:

a. Does not have an annual effect on the economy of \$100 million or more. The woody by-products have limited economic value (small diameter, low trees and woody material), are unused or underutilized in current market conditions, and/or are by nature, incidental by-products.

b. Will not cause a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. The quantities are small in size and amounts, are widely scattered across the nation, and are low-value products.

c. Does not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S.-based enterprises to compete with foreign-based enterprises. The policy would increase U.S.-based economic opportunities, employment, innovation, and conservation of energy and resources.

### *4. Unfunded Mandates Reform Act*

This rule does not impose an unfunded mandate on State, local, or tribal governments or the private sector of more than \$100 million per year. The rule does not have a significant or unique effect on State local or tribal governments or the private sector. A statement containing the information required by the Unfunded Mandates Reform Act (2 U.S.C. 1531 *et seq.*) is not required.

### 5. Takings (E.O. 12630)

In accordance with Executive Order 12630, the rule does not have significant takings implications. No rights, property or compensation has been, or will be taken. A takings implication assessment is not required.

### 6. Federalism (E.O. 13132)

In accordance with Executive Order 13132, the rule does not have sufficient federalism implications to warrant the preparation of a federalism assessment. The rule grants optional rights and increased economic opportunities to individuals, States, local governments, and Tribes, in furtherance of section 2(h) of E.O. 13132. A federalism assessment is not required.

### 7. Civil Justice Reform (E.O. 12988)

In accordance with Executive Order 12988, the Office of the Solicitor has determined that this rule does not unduly burden the judicial system and meets the requirements of sections 3(a) and 3(b)(2) of the Order.

### 8. Consultation With Indian Tribes (E.O. 13175)

In accordance with Executive Order 13175, we have evaluated this rule and determined that it has no potential negative effects on federally recognized Indian tribes. We have fully considered tribal views in the final rule. We have consulted with the appropriate bureaus and offices of the Department about the potential effects of this rule on Indian tribes, including the Bureau of Indian Affairs.

### 9. Paperwork Reduction Act

This regulation does not require an information collection from 10 or more parties and a submission under the Paperwork Reduction Act is not required. An OMB form 83-I is not required.

### 10. National Environmental Policy Act

This rule does not constitute a major Federal action significantly affecting the quality of the human environment. Federal agencies should consider the environmental effects of woody biomass utilization in each project where woody biomass utilization is appropriate and make a determination of significance for that project.

### List of Subjects

#### 48 CFR Part 1437

Government contracts, Forests and forest products, Wood, Fire prevention, Service contracting,

#### 48 CFR Part 1452

Government contracts, Forests and forest products, Wood, Fire prevention, Contract clause.

Dated: March 22, 2005.

**P. Lynn Scarlett,**

*Assistant Secretary—Policy, Management and Budget.*

■ For the reasons given in the preamble, the Department of the Interior hereby amends 48 CFR chapter 14 as set forth below.

### PART 1437—[AMENDED]

■ 1. Part 1437 is revised to read as follows:

### PART 1437—SERVICE CONTRACTING

#### Subpart 1437.72—Utilization of Woody Biomass

Sec.

1437.7200 General.

1437.7201 When can woody biomass be removed?

1437.7202 When is the biomass utilization clause required?

1437.7203 Definitions.

**Authority:** 30 U.S.C. 601–604, 611, as amended; 16 U.S.C. 668dd; 16 U.S.C. 1; 25 U.S.C. 3101 *et seq.*; 43 U.S.C. 1701 *et seq.*

#### Subpart 1437.72—Utilization of Woody Biomass

##### § 1437.7200 General.

This subpart establishes consistent and efficient procedures to allow contractors the option to remove woody biomass by-products from Department of the Interior land management activities where ecologically appropriate. If the woody biomass has fair market value and payment is required, or as required by regulation, Bureau policy or the Mineral Materials Disposal Act of 1947 (30 U.S.C. 601 *et seq.*) a separate timber/vegetative sales contract must be executed.

##### § 1437.7201 When can woody biomass be removed?

(a) The Department of the Interior allows and encourages contractors to remove and use woody biomass from project areas when:

(1) The biomass is generated during land management service contract activity; and

(2) Removal is ecologically appropriate.

(b) A contractor removing biomass under this part shall:

(1) Do so only within legal limits applicable to the contractor, including National Environmental Policy Act (NEPA) compliance; and

(2) If required, comply with the terms, conditions and special provisions of the

applicable timber/vegetative sales notice.

##### § 1437.7202 When is the biomass utilization clause required?

(a) The contracting officer must insert a clause reading substantially the same as § 1452.237–71 in each solicitation and contract that is expected to generate woody biomass that meets the criteria in § 1437.7201(a), unless biomass removal is required elsewhere in the contract.

(b) In addition, the contract will specify any limitations on types of woody biomass that may not be removed and any areas from which woody biomass must not be removed.

##### § 1437.7203 Definitions.

*Ecologically appropriate* means those situations where the Responsible Official determines it is not necessary to retain specific woody material or reserve specific areas from woody biomass removal to meet ecological objectives. For example, it may be necessary to retain snags or small woody debris to meet wildlife habitat objectives, or to create specific prescribed burning conditions to stimulate native plant development; therefore it would not be appropriate to allow removal of the specified woody biomass.

*Responsible Official* means the Secretary of the Interior or designee having the delegated authority to responsibility to:

(1) Oversee the planning process and make decisions to carry out a specific planning action;

(2) Render a National Environmental Policy Act decision; or

(3) Sign the authorizing environmental document.

*Timber/vegetative sales contract and/or notice* means the agency-specific authorized contract instrument for the sale, barter, exchange, billing or other compensation for the payment, removal, and/or transportation of woody biomass material.

*Woody biomass* means the trees and woody plants, including limbs, tops, needles, leaves, and other woody parts, grown in a forest, woodland, or rangeland environment, that are the by-products of management, restoration and/or hazardous fuel reduction treatment.

*Woody biomass utilization or use* means the harvest, sale, offer, trade, and/or utilization of woody biomass to produce the full range of wood products, including timber, engineered lumber, paper and pulp, furniture and value-added commodities, and bio-energy and/or bio-based products such as plastics, ethanol and diesel.

**PART 1452—SOLICITATION PROVISIONS AND CONTRACT CLAUSES**

■ 2. The authority for part 1452 is revised to read as follows:

**Authority:** Sec. 205(c), 63 Stat. 390; 40 U.S.C. 486(c); 5 U.S.C. 301; 30 U.S.C. 601–604, 611, as amended; 16 U.S.C. 668dd; 16 U.S.C. 1; 25 U.S.C. 3101, et seq.; 43 U.S.C. 1701, et seq.,

■ 3. A New § 1437–237–71 is added to read as follows:

**§ 1452.237–71 Utilization of Woody Biomass.**

As prescribed in § 1437.7202, insert the following clause:

**Utilization of Woody Biomass**

1. The contractor may remove and utilize woody biomass, if:

(a) Project work is progressing as scheduled; and

(b) Removal is completed before contract expiration.

2. To execute this option, the contractor must submit a written request to the Government.

3. Following receipt of the written request, and if appropriate, the Government and the contractor will negotiate and execute a separate timber/vegetative sales contract. Payment under the timber/vegetative sales contract must be at a price equal to or greater than the appraised value of the woody biomass. The contractor must make any appropriate payment specified in the related timber/vegetative sales contract before removal may be authorized.

4. If required by law, regulation or Bureau policy, the Government will prepare a timber/vegetative sales notice and/or prospectus, including volume estimates, appraised value and any appropriate special provisions.

5. The contractor must treat any woody biomass not removed in accordance with the specifications in the service contract.

6. The sales contract and service contract are severable; default or termination under either contract does not remove the contractor from payment or performance obligations under the other contract.

7. Definitions:

*Timber/vegetative sales contract and/or notice* means the agency-specific authorized contract instrument for the sale, barter, exchange, billing or other compensation for the payment, removal, and/or transportation of woody biomass material.

*Woody biomass* means the trees and woody plants, including limbs, tops, needles, leaves, and other woody parts, grown in a forest, woodland, or rangeland environment, that are the by-products of management, restoration and/or hazardous fuel reduction treatment.

[FR Doc. 05–10095 Filed 5–19–05; 8:45 am]

**BILLING CODE 4310–RF–M**

Letterhead

Fictional Allotment  
Make Believe Reservation

April 24, 2001

Dear Owner:

Our records indicate that you are an heir on the Fictional allotment located on the Make Believe Reservation. The description of the property is the SE 1/4 SE 1/4 Section 30, Township 29 North, Range 3 East, Spiro Agnew County, Maryland. You have a    undivided interest in this allotment.

We are proposing a white pine release on approximately 14 acres in the north east portion of this allotment. Under this treatment we would identify and release approximately 400 white pine seedlings per acre. These seedlings, which are currently over topped and suppressed by hardwood competition, need to be released in order to survive. The goal of this release would be to maintain a white pine component on your allotment. This release would be accomplished by removing all tree and brush competition within 5 feet of the good quality white pine seedlings. All work to be accomplished would be funded by the Bureau of Indian Affairs and administered by the Make Believe Tribe under a Forest Development Contract. This project would be accomplished at no cost to you.

Although this action will not produce income for the heirship at this time, the proposed release would provide the opportunity to receive increased stumpage receipts from management activities in the future.

If you are opposed to this proposed treatment, please inform the Agency Forester, in writing at the following address, by June 1, 2001:

Bureau of Indian Affairs  
Agency Forester, Maryland Agency  
P.O. Box 273  
Edgar Allan Poe, MD 21132-0273.  
410-682-4527

If greater than 50% of the heirs are opposed to this treatment the project will be removed from our treatment plan.

If you have a questions or concerns regarding this project, please contact the Forest Development Forester at 410-588-9165.

Sincerely,

Superintendent

## ANNOUNCEMENT

The Make Believe Nation Forest Development Program announces the availability of the following projects for contracting by Tribal members:

### 1. Fantasy Logging Unit Pre-commercial Thin

Contract #	Units	Acres	Location
04-24	12C	169	T8N R16E, section 32

### 2. Fantasy Logging Unit Pre-commercial Thin

#	Unit	Acres	Location
03-22	22	88	T8N R12E, section 26

### 3. Fantasy Slash/pile

#	Units	Acres	Location
03-23	27	103	T8N R12E, section 26

**Slashing** involves cutting small trees which are cull material, regardless of spacing. **Piling** requires the contractor to pass through the unit with a piece of heavy equipment, ripping up brush and pushing that and logging and thinning slash into a large, well-compacted pile.

Tribal members may bid for these contracts by filling out an appropriate form and returning it to the Forest Development Program office in the Agency building on \_\_\_\_\_ Road. The **deadline** for returning application forms is June 27, 2003. Contracts will be awarded to the lowest qualified bidder. Bids will be opened on June 30, 2003.

A representative of the Forest Development Program will give a brief tour of the units and explain the practices to be applied. All prospective bidders are urged to meet at the Forest Development office in \_\_\_\_\_ at 8:30 on June 25, 2003 for the above contracts. Maps and further details are available at either Forest Development Office (\_\_\_\_\_ or \_\_\_\_\_), or by calling \_\_\_\_\_.

**BID FORM**

**1. Eligibility:**

I am eligible for open-bid pre-commercial thinning contracts due to the following:

\_\_\_\_\_ I previously completed a contract for the Make Believe Nation.

\_\_\_\_\_ I previously completed a contract for the following organization:

Name of Organization \_\_\_\_\_

Phone \_\_\_\_\_

Contact Person \_\_\_\_\_

Other experience (explain)- \_\_\_\_\_

**2. Bid:**

I have reviewed the contract specifications and understand my obligations should I be awarded the contract.

My bid for Contract 03-21 (Pile, 55 acres) is \$\_\_\_\_\_/acre.

My bid for Contract 03-22 (Slash/pile, 88 acres) is \$\_\_\_\_\_/acre.

My bid for Contract 03-23 (Slash/pile, 103 acres) is \$\_\_\_\_\_/acre.

Signed

\_\_\_\_\_

Telephone: \_\_\_\_\_

Print Name \_\_\_\_\_

Enrollment # \_\_\_\_\_

Social Security # \_\_\_\_\_

Address \_\_\_\_\_

## CONSULTANT AGREEMENT

Between

The MAKE BELIEVE NATION

And

Specific Tribal Contractor

THIS AGREEMENT is entered into on the date shown below between the Make Believe Nation and **Specific Tribal Contractor** (Contractor). Contract is for the following Forest Development Project: **Pre-commercial Thinning, Fantasy Logging Unit, Units 1-4.**

### TERMS AND CONDITIONS OF CONTRACT

1. TERM

The period of this contract shall be from

July 16, 2004

Until

September 14, 2004.

2. PERFORMANCE

The Contractor agrees to perform the services contemplated by this agreement, which are set forth below in the attached scope of work, Exhibit A. The Make Believe Nation agrees to compensate the Contractor for services provided in the amounts and under the terms and conditions set forth below.

3. COMPENSATION

The total amount of this contract shall not exceed \$5,658, which includes compensation for services, mileage and travel payment or reimbursement and payment or reimbursement to direct actual costs and expenses, as further broken down and set forth in detail in the attached budget, Exhibit B.

- A. The rate of compensation for Consultant's services shall be as shown in the attached Exhibit C.
- B. The maximum allowable amount of compensation for the Contractor's services shall be \$5,658.
- C. Payment for mileage or reimbursement for travel expenses shall be made to the Contractor only upon the prior written approval of the Make



Believe Nation. Subject to prior approval, both parties agree that:

1. The maximum allowable amount of compensation for mileage shall be \$~~0~~, which shall be calculated at the rate of \$0.31 per mile traveled. Mileage shall not be paid for travel in vehicles provided by the Make Believe Nation.
  2. The maximum allowable amount of reimbursement for travel expenses incurred by the Contractor shall be \$0.
  3. The reasonableness and allowability of travel expenses shall be determined in accordance with 41 CFR >F= 301.
- D. The maximum amount of reimbursement (if any) for other direct costs and expenses including, but not limited to travel, mileage, and copying costs, incurred by Contractor in connection with this contract shall be \$~~0~~. Contractor will not be reimbursed for such costs and expenses unless they were incurred with the prior written approval of the Make Believe Nation or its designated representative.
- E. For disbursements made pursuant to this agreement, the Contractor shall submit an invoice(s) and supporting documentation, including a brief summary of the Contractor=s daily activities associated with the tasks identified in Exhibit A, to an invoice, shall be submitted to the Make Believe Nation. Unless the parties agree to different terms, such an invoice(s) shall be submitted within fifteen (15) working days after the end of the month in which the services were provided and the expenses incurred. The billing cycle will approximately represent the calendar month in which work was performed. Subject to approval of the Make Believe Nation, billing cycles may overlap into adjacent months. Upon the Make Believe Nation's request, the Contractor will provide oral reports and presentations to the Make Believe Tribal Council.

The Make Believe Nation shall retain from each partial payment 10% of that payment until the project is fully completed. This retainage may be used by the Make Believe Nation to complete a project in the event of default or for any costs necessary to clean up a project. Upon final approval of the project, Make Believe Nation will immediately pay the retainage to the contractor.

#### 4. MAINTENANCE AND RETENTION OF AUDITABLE RECORDS

The Contractor shall maintain and retain auditable records during the term of

this agreement and for a period of at least three (3) years following the expiration or termination of this agreement. Subject to applicable law, the Contractor agrees that the Make Believe Nation, the Comptroller General of the United States, or any of their duly authorized representatives, shall have access to any books, documents, papers and records of the Contractor, which are directly pertinent to the subject matter of this agreement and the performance obligations contained herein, for the purpose of making audit, examination, excerpts, and transcriptions.

5. FINANCIAL MANAGEMENT FOR ACCOUNTING SYSTEMS AND AUDITS

Notwithstanding the requirements of Paragraph 4 above, any and all of the Contractor=s accounting records and/or financial reports shall be subject to audit, and shall be maintained so as to comply with the requirements of the Single Audit Act of 1984, Public Law 98-502, 31 USCS Sections 7501 et. seq., and OMB Circular A-128, Audits of State and Local Governments.

The Contractor, as a recipient or sub-recipient of funds, shall also adhere to a systematic method to assure timely and appropriate resolution of audit finding and recommendations. So as to determine the reasonableness, allowability, and allocability of costs, the Contractor shall comply with the administrative requirements set forth in:

- A. OMB Circular A-122, Costs Principles for Nonprofit Organizations; and
- B. OMB Circular A-87, Cost Principles for State and Local Governments; and
- C. 48 CFR Parts 31.2 and 931.2, Contracts with Commercial Organizations.

6. PROPERTY DEVELOPED BY THE CONTRACTOR

The Contractor agrees that it will retain no interest in the information, data, proposals, papers, copyrights, patents, or any other material or property developed, discovered, invented, and/or accumulated by Contractor in connection with the performance of this agreement. Subject to applicable law, the Contractor shall turn over such information, data, proposals, papers, copyrights, patents, discoveries, inventions, and other material or property to the Make Believe Nation upon the expiration or termination of this agreement or upon request.

7. PUBLICATION OF INFORMATION

The dissemination or publication of documents, information, material or other property developed or generated by the Contractor during the course of this agreement shall require written approval of the Make Believe Nation. This paragraph shall not be construed to prohibit or impair the transfer of information contemplated by paragraphs 4, 5 and 6 above.

8. ACCESS TO RECORDS, PERSONNEL AND FACILITIES

Subject to applicable law, the Make Believe Nation will provide the Contractor access to its personnel, facilities, and records necessary to the performance of the agreement. Further, the Make Believe Nation will ensure that its officials and employees reasonable cooperate with the Contractor, and will make prompt decisions on matters which affect the progress of the Contractor=s work.

9. INDEPENDENT CONTRACTORS

At all times during the course of this agreement, the Contractor shall act as an independent contractor and shall not receive any benefits to which employees of the Make Believe Nation are entitled. Unless expressly agreed to in paragraph 3 herein, the Make Believe Nation shall not be responsible for payment of any taxes, permits, licenses or other expenses required by the Contractor during the performance of this agreement.

10. SUBCONTRACTING

The Contractor shall not be permitted to hire a subcontractor to perform the services contemplated by this agreement.

11. ASSIGNMENT OF INTEREST

The Contractor shall not assign its interest in this contract, or any part thereof, including its right to receive payment for services performed, to another party.

12. INDEMNIFICATION

The Contractor shall hold harmless and indemnify the Make Believe Nation and its officers and employees against any and all losses, costs, damages, expenses or other liabilities whatsoever, arising out of or connected with, directly or indirectly, the contractor's performance under this agreement including, but not limited to accidents or injuries to person or property.

13. TERMINATION OF AGREEMENT

- A. The Make Believe Nation may terminate this agreement, without cause, upon 30 days written notice or sooner. Upon such termination, the liability of the parties for the further performance of this agreement shall cease, but the parties shall not be relieved of the duty to perform their obligations up to the date of termination.
- B. The Make Believe Nation may terminate this agreement at any time in the event of a breach or violation of any of the terms and provisions of this agreement.
- C. Upon such breach, violation, or termination of this agreement, the Make Believe Nation, to the extent permitted by applicable law, shall be entitled to enforce its rights under this Agreement, and recover its court costs and reasonable attorney=s fees, as determined by the court. The foregoing

shall not in any way limit or restrict any right or remedy at law or equity which would otherwise be available to the Make Believe Nation, including, but not limited to, the right to contract with other qualified persons to complete the performance of services identified in or contemplated by this agreement. Termination or expiration of this agreement shall not relieve any party of its obligations set forth in paragraphs 4, 5, 6, and 7 above.

14. FORCE MAJEURE

This agreement is subject to force majeure, and is contingent on strikes, accidents, acts of God, weather conditions, fire regulations, the actions of any government, including funding and/or budgetary decisions, and other circumstances which are beyond the control of the parties. If the terms and conditions of this agreement are unable to be performed as a result of any cause of force majeure, then this agreement shall be void, without penalty to any party for such non-performance. Such an event shall not relieve any party of its obligations set forth in paragraphs 4, 5, 6, and 7 above.

15. SEVERABILITY

If any provisions of this contract are held invalid, the remaining provisions shall not be affected and shall remain in full force and effect.

16. NOTICE

Notice to the Contractor shall consist of a letter, delivered postage prepaid, addressed, or hand delivered, to:

Specific Tribal Contractor  
PO Box 310  
Somewhere, Some State 99889

Notice to the Make Believe Nation shall consist of a letter, delivered postage prepaid, addressed to \_\_\_\_\_, Chairman, Make Believe Tribal Council, P.O. Box 151, Somewhere, Some State 99889, with a copy to the Make Believe Nation designated representative.

17. SUPERVISION OF CONTRACT/DESIGNATED REPRESENTATIVE

The Contractor shall act under the supervision of the following designated representative of the Make Believe Nation in performing services under this agreement:  
Forest Development Forester.

18. COMPLIANCE PROVISIONS

A. Discrimination

The Consultant will not discriminate against any employee or applicant for employment because of race, age, religion, or sex. The Consultant will take affirmative

action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, age, religion, or sex.

B. Indian Preference

Notwithstanding the provisions of paragraph 18(A) above, for all work performed under this agreement, the Contractor shall give preference in employment for all work performed under the Contract, including subcontracts thereunder, to qualified Indians regardless of age, religion or sex. To the extent feasible and consistent with the efficient performance of the contract, the Contractor shall provide employment and training opportunities to Indians that are not full qualified to perform under this agreement, regardless of age religion or sex. Further, the Contractor shall comply with any Indian preference requirements established by the Make Believe Nation to the extent that such requirements are consistent with the purpose and intent of this paragraph.

C. Applicable Law

The Contractor shall comply with the laws of the Make Believe Nation and all applicable Federal laws and regulations.

19. PENALTY FOR THEFT, EMBEZZLEMENT AND/OR FRAUD

By law, any officer, director, agent, employee or such other person connected in any capacity with this contract or any subcontract thereunder that embezzles, willfully misapplies, steals or obtains by fraud any of the money, funds, assets or property provided through the contract shall be fined no more than \$10,000 or imprisoned for not more than two years, or both. If the amount embezzled, misapplied, stolen, or obtained by fraud does not exceed \$100, such person shall be fined not more than \$1,000 or imprisoned not more that one year, or both. These penalties are not exclusive.

20. ENTIRE AGREEMENT

This Contract incorporates all the agreements, covenants and understanding between the parties. No agreement of understanding, verbal or otherwise, of the parties of their responsibilities shall be valid or enforceable unless embodied in this agreement.

21. DISPUTE RESOLUTION

In the event a dispute arises between the Contractor and the Make Believe Nation relating to the performance or interpretation of this agreement, the aggrieved party shall submit the matter, in writing, to the Chairman of the Make Believe Tribal Council, with a courtesy copy to the Program Manager and Deputy Director of Natural Resources within ten (10) days of its occurrence. A copy of the aggrieved party's submission shall be served on the other party. The Program Manager and Deputy Director shall attempt to resolve the dispute. In the event the aggrieved party is not satisfied, the aggrieved party may request a meeting with the Chairman which shall be held in Somewhere, Some State, to resolve the matter. The decision of the Chairman

shall be final and binding upon both parties.

Nothing herein this paragraph shall operate to prohibit the Make Believe Nation from enforcing its rights under this agreement, including, but not limited to, those set forth in paragraphs 2 and 8.

22. SOVEREIGN IMMUNITY

The Make Believe Nation, by entering into this agreement, does not waive its sovereign immunity from suit. This Agreement shall be governed by the laws of the Make Believe Nation and shall become affective on the first day written above.

23. ADDITIONAL SERVICES

Except as otherwise provided in this contract, no payment for additional services shall be made, unless such services and the price therefore have been requested and authorized in advance in writing by the Make Believe Nation.

24. SPECIAL PROVISIONS

In addition to the foregoing, the following special requirements are agreed to and shall apply to this contract.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_.

IN WITNESS WHEREOF, we have hereunto set our hands and seals the day and year first above written.

Confederated Tribes and Bands of the Make Believe Nation

\_\_\_\_\_

By: \_\_\_\_\_

Contractor

\_\_\_\_\_, Chairman  
Make Believe Tribal Council

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

**Exhibit A**  
**Scope of Work**

Contractor's Initial Here: \_\_\_\_\_

(Contractor has reviewed and understands the Scope of Work)

**SPECIFICATIONS FOR TIMBER STAND IMPROVEMENT (TSI) CONTRACTS**

SECTION A - General Specifications

A-1. General

This Scope of Work will outline the specifications needed to fulfill the timber stand improvement (TSI) contract on the **Make Believe Tribe (MBT)** forested area on the **Fantasy Logging Unit** requiring the contractor to treat **230** acres, as outlined on the Project Information Summary Sheet and Project Map attached to this contract.

This work shall be in compliance with the terms, specifications, and provisions set forth within the contract. The contractor is responsible for furnishing labor, equipment, supervision, transportation, operating supplies, and incidentals unless specifically noted in this Scope of Work.

A-2 Period of Contract

Work shall commence within seven calendar days of the approval of the contract. Approval of the contract shall be at the date of the signing of the Tribal Chairman's signature, with the Term of the contract stated in Section 1 of the contract. If work is not started within 7 days of the approval of the contract, the Program may elect to serve notice to the contractor that the contract is terminated.

A-3 Representation

The final authority to approve contracts and changes therein lies with the Tribal Chairman. The Forest Development Program (Program) will appoint a Contracting Officer's Representative (COR) to represent the MBT in carrying out the terms of this agreement.

The COR may order the contractor, in writing, to suspend, delay, or interrupt all or any part of the work for the period of time that the Program determines appropriate for the convenience of the MBT.

The COR may appoint a Project Inspector as his representative in the field. The Project Inspector will have authority to coordinate with the contractor in the routine day-to-day details regarding implementation of the agreement's terms and conditions.

The contractor may designate an on-site representative responsible for contract

completion. Any and all such representatives will be identified to the COR by the contractor.

A-4 Contractor Obligations

a. Operations

The contractor is responsible for all operations involved in the precommercial thinning of trees. The contractor is responsible for the safe operation of project activities, and is encouraged to supply safety equipment and provide safety orientation to new workers. Examples of safety equipment for tree thinners include hard hats, chainsaw chaps, boots and gloves.

b. Supervision

The contractor is responsible for all labor required to complete the obligations of the contract, and the supervision thereof. The contractor is responsible for the payment of his employees. The MBT Nation will not be held liable for payment to anyone other than the contractor.

All contractors who hire personnel not eligible for federal Indian Health Service benefits are required by the Tribe to provide medical support for workers by establishing a workmen's compensation account with the State of \_\_\_\_\_.

The contractor is liable for all loss and/or damage to Tribal property associated with this project until completion and final acceptance of work required by this agreement. Tribal property includes equipment checked out by the contractor and seedlings supplied to the contractor.

c. Taxes

Contractors must meet all federal requirements regarding withholdings for their employees. Inexperienced contractors are urged to seek the assistance of an experienced bookkeeper or accountant when setting up withholding accounts. All contractors who hire personnel must obtain a federal employer identification number (Form SS-4) from the Internal Revenue Service. Additionally all employers will give employees a wage and tax statement (W-2 Form) by January 31 of the year following their employment. Contractor shall supply a copy of proof of compliance with provision to the COR upon request.

All contractors, including sole proprietors with no employees, that have net annual earnings from self-employment of \$400 or more, will pay self employment tax to the federal government. Contractors who pay wages of greater than \$1,500 during a calendar quarter, or who have employees on the payroll for 20 different calendar weeks, must pay federal unemployment tax at year's end. Contractor shall supply a copy of proof of compliance with provision to the COR upon request.



The MBT will issue Form 1099 to any contractor earning more than \$600 during a year. This form serves as income documentation for the IRS and for the contractor. Likewise, the contractor will provide the same form to any sub-contractors involved in this project.

Contractors are urged to keep accurate, detailed records of business transactions to support figures on income and expenses. IRS Publication 334, Tax Guide for Small Business, provides a helpful summary of income and employment taxes. Contractors are urged to consult with an experienced accountant if the preceding requirements become confusing or difficult to master. The MBT Nation is not responsible for contractors who run into legal problems arising from failure to follow withholding or tax guidelines as required by law.

d. Protection of Cultural Resources

All projects within timber sale areas have received an archeological and cultural review and a Cultural Clearance. The contractor shall be responsible for learning the location of, and protecting all known and identified objects or sites against destruction, damage, obliteration, or removal.

If either the contractor or Tribal representatives discover cultural or archeological resources on the project area, all activities shall cease and the COR may modify portions of this contract to protect any area, object of antiquity, artifact, and/or resources which may need protection regardless of when or where discovered or by whom. If cultural or archeological resources are damaged, the contractor may be responsible for all costs of restoration, provided that such payment shall not relieve the contractor from civil or criminal penalties as provided by law.

The contractor will keep other Tribal natural resources in as natural state as possible. The contractor will remove any litter which can be attributed to him (her) before departing the job site.

e. Fire Safety

All contractors are required to follow all designated measures to reduce danger from forest fires. Fire Precaution Levels will be enforced by the Program when applicable. A fire extinguisher of at least 8 oz. minimum capacity as approved by the COR or his representative shall be carried if a chainsaw is operating in the woods during Fire Precaution Levels of 2 or greater. A shovel shall be available in the immediate working area for use in fire suppression. Other hand tools may be required on-site when fire danger so warrants.

No fires are permitted on Tribal land that contains hazardous fuel slash such as thinning or logging slash. Neither the contractor nor any of his representatives

will smoke in any thinning unit unless he positions himself in a slash-free area (e.g. a road) at least ten feet in diameter.

The contractor, under the direction of the Bureau of Indian Affairs (BIA) Forest Manager, or in the absence of said officer, acting independently, shall immediately extinguish, without expense to the Tribes, all fires on or in the vicinity of the project which are caused by him or his employees whether set directly or indirectly as a result of the work on this project. The contractor may be held liable for all damages resulting from the operation of this contract. If the amount and character of labor, subsistence, supplies, and transportation which the contractor is in a position to furnish for fire suppression prove inadequate, the Program may suspend operations.

For the purpose of fighting forest fires on or in the vicinity of the project which are not caused by the contractor or his employees, the contractor, when requested by the COR, shall place his employees and equipment temporarily at the disposal of the Bureau of Indian Affairs, Branch of Forestry, Fire Control. Payment for such services will be made by the federal government at not less than the current rate of fire fighting services established by the Bureau of Indian Affairs in the area concerned.

Any employees and equipment furnished will be relieved from fire fighting as soon as the Bureau of Indian Affairs finds that it is practicable to employ other labor and equipment adequate for the protection of the area. An equitable adjustment in purchase order time may be made for this period.

A-5 MBT Obligations

The COR or designee will provide timely inspection and feedback to the Contractor about the quality and progress of the work. The MBT Nation will provide timely payment to the Contractor of approved work.

A-6 Location and Description of Units

a. Entry

The work areas are located on the closed area of the MBT Reservation. Any person working on the project who is not an enrolled member of the MBT Nation must obtain an Entry Permit in order to enter the closed area.

b. Accessibility

The work areas may be reached by the forest roads that are accessible by standard 2 or 4 wheel drive pickup, weather permitting. If roads become inaccessible due to snow, fallen trees, slides, washouts, etc., the COR at his option may direct the contractor to use other access routes, open the road, or delete affected units from the contract. No payment will be made for deleted

units except for acceptable work completed prior to deletion. No vehicles will be allowed to operate off system roads without approval of the COR or authorized representative.

c. Ground Conditions

The MBT Nation may extend the length of the contract to compensate the contractor for down time caused by whether conditions, upon the request of the contractor. If a contract is suspended indefinitely due to whether conditions prior to the ending contract term date, then the contractor would be eligible for full payment of all satisfactory work with no penalties for not finishing the project.

d. Boundaries

The boundaries are marked on the ground by flagging. If questions arise by the contractor, then the contractor will request the COR to designate boundaries on the ground.

e. Description

The attached Project Information Sheet and Project map contains more detailed information related to the individual contract units.

A-7 Workers

MBT descendants, spouses and others are eligible employees provided they obtain an Entry Permit to enter the closed area of the MBT Nation forest. For contracts longer than 60 days, Contractors will be required to sign a Tribal Employment Rights Ordinance (TERO) Agreement and abide by the conditions stated therein. Under TERO, Contractors will be required to hire Indian preference candidates for at least 85% of their vacancies. Enforcement of this agreement is the responsibility of the TERO Program.

Undocumented or illegal alien workers shall not be allowed in the closed area. Failure to comply shall place the contractor in default.

A-8 Use of Non-Timber Products

In accordance with Tribal regulations, contractors will be allowed free use of any non-timber forest product obtained from the project area, except if the project area happens to be an Indian allotment. Contractors are allowed free use of non-timber product on allotted land only after receiving written permission from the allottees.

SECTION B - AWARD

This contract is awarded on a competitive bid price basis, with the lowest qualified bidder being offered the contract. Qualified bidders are those who are

capable of completing a job of a size and complexity similar to the present. Qualifications are determined by previous completion of TSI projects or similar crew-type activities of parallel size and complexity.

SECTION C - INSPECTION AND ACCEPTANCE OF SERVICES

C-1 Inspection Procedures

The Project Inspector and/or COR will make periodic inspections. The Contractor or his representative is encouraged to observe the inspection and will receive inspection summaries upon request. Initial inspections consist of a 100 percent visual inspection and will be based on adherence to the technical specifications.

Inspections for acceptance and payment for contracts will involve inspection of a series of plots distributed over the entire unit sufficient to yield at least a one percent sample of the project area. Plot size will be 1/50 acre. Plot centers will be marked and numbered. A blank inspection form is included and attached as Appendix A.

Trees on the plot shall be classified as satisfactory crop, merchantable, unsatisfactory - spacing, unsatisfactory - poor form, unsatisfactory - wrong species, or unsatisfactory - improperly cut.

Upon inspection of all plots for a unit, the TSI quality score shall be calculated as follows:

$$1.00 - \frac{(\text{\# of unsatisfactory trees})}{(\text{\# of satisfactory crop trees} + \text{\# of merchantable trees})} \times 50 = \text{Quality}$$

C-2 Unsatisfactory Work

If field inspection of contractor's work indicates that contract specifications were not met because too many trees were left on site (unsatisfactory - spacing), then the contractor will be instructed to re-work the area. Payment may be withheld until this deficiency is corrected.

If field inspection of contractor's work indicates that contract specifications were not met because of poor selection of cut and leave trees, then the inspector will indicate to the contractor in writing both the mistakes observed on the unit and the corrective measures necessary to bring unit compliance up to standard. If it is possible to re-work the areas to improve the quality, then the inspector will halt further progress into new areas until the corrections are made. If, after informing the contractor of necessary corrective actions, those recommendations

are not followed, the inspector may recommend to the COR that field work on the contract be suspended until this can be resolved.

Re-inspection after rework will be made in the same manner as the first inspection but on different plot lines. If the corrections to be applied are relatively minor and easily observed, then the inspector may alternatively approve the re-work based on a visual inspection, and support that in writing.

C-3 Re-inspection of Planting upon Contractor Request

If the original inspection results are unacceptable to the contractor and a second inspection is requested without rework, the same inspection procedure will be used. However, the inspection pattern will be shifted. If the second inspection shows less than 5 percent variance in quality from the first inspection, the result of the first inspection will be used in determining payment. If the second inspection results in variance in quality of greater than 5 percent from the first inspection, then the results of the second inspection will be used in determining payment. Requests for reinspection must be made in writing.

SECTION D - PAYMENT AND MEASUREMENT (see Appendix 1 for Inspection Sheet)

D-1 Payment for Acceptable Completed Work

If field inspection of contractor's work indicates that contract specifications were met and work is acceptable, the Inspector will forward the Billing Form to the Program for payment. The MBT will process the invoice and issue a check for payment within 15 working days after receipt of an approved invoice.

The contractor may request the first partial payment after 15 days from the start of the contract, provided at least 25% of the project area is successfully completed. Partial payment requests prior to 15 days may be made if more than 50% of the contract area is completed. Additional partial payments may be requested by the contractor provided the contractor has completed 25% increments or more over the project area. The program will withhold 10% from partial payments in lieu of a performance bond. The holdback will be paid off upon satisfactory completion of the entire unit.

Final payment may be withheld for units not completed within the specified time, unless a written extension has been granted. Conditions for granting extensions may be inappropriate weather, and shutdowns originating from the MBT Nation. Domestic problems, labor problems or equipment breakdowns are not acceptable conditions for contract extension.

D-2 Payment When Work is of Unacceptable Quality

In order to receive full bid price payment, contractor must have a TSI quality score of 90% or higher. If the TSI quality score is between 80% and 90%, then the contractor is eligible for a payment at a score proportional rate applied to the bid price. In other words, for a TSI quality score of 85%, contractor would be paid at 85% of the bid price. If the TSI quality score is less than 80%, then the work is considered incomplete and will not be paid. The TSI quality score is applied to bids independent of any partial payment holdbacks.

D-3 Acreage Measurement

a. Method of Measurement

The areas to be treated and paid for lie within the unit boundaries as designated according to the data information sheets. Unit boundaries have been logged into the information system using geographic positioning system (GPS) technology.

b. Re-measurement

Re-measurement of the acreage under this contract will be made upon the written request of the contractor. Request for re-measurement must be made in writing within 5 days after treatment has been completed on the unit.

If re-measurement indicates a difference of not more than 5% from the original measurement the original measurement will be used. Payments will be based on the second measurement where the difference between measurements is more than 5%. Payment will be made to the nearest whole acre.

SECTION E - TECHNICAL SPECIFICATIONS

E-1 Selection of Leave Trees for Overstocked Small Diameter Groups

The principal focus of this project is to pre-commercially thin the overstocked (crowded) small diameter groups which are scattered throughout the project area. The contractor will remove excess trees even if they may exhibit commercial potential. The contractor shall select the leave trees, except that the program may mark individual leave trees or individual take trees.

Leave tree selection criteria, in order of application, are:

a. Spacing

Leave trees will be spaced at 16-foot intervals, with a permitted variance of 25%. Spacing variation is permitted in order to adapt to variable ground conditions. For example, at a recommended spacing in 16 feet, leave trees must be greater than 12 feet but less than 20 feet away from the nearest other leave tree. Spacing variation spacing control shall be maintained as much as possible, however, and the number of trees per acre shall not be materially increased or decreased.

Trees that are both greater than eight inches in diameter, and of a form that is capable of generating scalable log volume, are classified as commercial-sized and merchantable, and thus will not be thinned. Pre-commercial trees will be spaced 16 feet from existing trees of commercial size, with the 25% spacing variation. Wildlife trees will be ignored in spacing the leave stand.

#### b. Form

Within the spacing and 25% variation, leave trees will be determined by crown position, stem quality, and freedom from disease. Thinners will select for straight stems with dominant and co-dominant crowns, select against stems which are crooked or which have defects, and select against crowns that are intermediate or suppressed. Thinners will eliminate trees that demonstrate problems such as disease or damage.

Snag trees will not be felled unless they present a safety hazard. Designated wildlife trees or trees which appear to receive heavy use by wildlife will not be felled.

#### c. Species

After spacing and form criteria have been met, species will be the third priority in determining crop tree selection. Generally, the preferred species are ponderosa pine, western larch, Douglas-fir, lodgepole pine, western white pine, spruce, grand fir, all other true firs, and all other conifers.

### E-2 Selection of Trees to be Slashed

One focus of this project is to remove non-crop quality trees from the existing stand. Non-crop quality trees are those that will never grow into a merchantable product. Non-crop quality trees are evidenced by form characteristics such as the following:

- \*dead top;
- \*excessive spruce budworm infection;
- \*excessive forks, crook, sweep, twist, or limbiness;
- \*signs of fungal infection;
- \*bole scars (true firs);
- \*excessive dwarf mistletoe
- \*very slow apical (tip) growth (less than six inches per year).

Non-crop quality trees up to 12 inches in diameter will be removed regardless of spacing or species.

### E-3 Cutting Guidelines

No tree over 8.0 inches dbh will be cut unless as provided above. All trees will

be completely severed from the stump. Stump height shall not exceed eight inches above the ground or four inches above natural obstacles. All cut trees shall be cut below the lowest live limb, except when presented by natural obstacles, in which case any live limbs below the cutting point shall be removed.

E-4 Slash Treatment

Slash will be pulled back away from the edge of the roads & ditch lines. Pull back distances shall be measured from the center of the ditch line or where no ditches exist, from a point 3 feet from the edge of the physical road surface. Sawyers will limb true fir and Douglas-fir cut trees greater than five inches in diameter such that the bole of the tree lies on the ground. Other trees require no slash treatment.

E-5 Felling Guidelines

Cut trees shall be felled away from designated crop trees. Thinners will leave trees on the ground and not hanging up in the residual canopy. Thinners are encouraged to leave felled trees parallel to the slope.

Cut trees shall be felled away from unit boundaries, roads, telephone lines, electrical lines, established trails, stock driveways, fence lines, established land corners, other physical improvements, and streams. Any trees falling on such areas shall be removed and treated as specified below and elsewhere herein.

Removal of felled trees from roads shall be accomplished immediately and from roadside shoulders and ditches within 12 hours.

Removal of trees or those portions of trees felled across trails and which impede trail use shall be accomplished immediately. Additionally, trees or portions thereof which cross trails but do not impede trail use shall be removed as soon as possible or prior to completion of work activities on the day which the tree(s) was (were) cut. Removal of felled trees from other areas shall be accomplished prior to acceptance of the unit for payment.

E-6 Definition of Technical Specifications Terms

a. Thinning

The cutting trees in excess of those to left for timber stand development.

b. Girdling

A cut, or series of cuts, through the bark and cambium tissue, completely encircling the tree trunk, for the purpose of killing the tree.

c. Spacing

The horizontal distance from the center of one leave tree to the center of the next



nearest leave tree.

d. Average Spacing

The average of the distance between all leave trees necessary to provide the desired number of leave trees per acre.

e. DBH (Diameter Breast Height)

Diameter of the trunk measured at a point 4 and 2 feet above the ground level on the uphill side of tree. Diameter shall be measured to the nearest whole inch with the lower limits of each diameter class to be 0.51 inches below the diameter; i.e., 8 inches DBH shall be from 7.51 to 8.50 inches, 6 inches DBH shall be from 5.51 to 6.50 inches.

f. Manual Release

The treatment of vegetation within a specified radius around a leave tree.

g. Leave Tree

Any tree that is selected or required to be left standing as provided in the specifications. Leave/release trees may also be referred to as crop trees.

h. Cut Tree

All trees required to be cut as designated in the Technical Specifications.

i. Excess Tree

A tree which the contractor has left uncut which is outside of the contract specifications, or a tree that is not completely severed from the stump, or a tree left hung-up in another tree, or a tree left with a stump exceeding the specified maximum height of 8 inches, or a tree improperly girdled.

j. Deficient Trees

Those trees cut which should have been left to maintain average spacing requirements; trees not properly selected according to the Technical Specifications requirements; trees that are excessively damaged by thinning operation, or cut trees that do not meet the specifications for removal of lower limbs.

k. Damaged Tree

Includes any defect or deformity of a tree resulting from such agents as wind, snow, animals, insects, disease, and equipment; and evidenced by such things as dead or broken tops or trunks, crooks, and deep scars. Examples of excessively damaged trees include the following:

- i. Trees with Crook, Sweep, or Snowbound - Crooks or bends in the main

bole which are less than 13 feet from the ground and offset more than 3 inches from the longitudinal axis;

ii. Forked or Defective Top - One or more forks in the live crown, or dead or broken-out top of the bole within 13 feet of the ground surface;

#### l. Diseased Tree

Any tree, regardless of species, which exhibits one or more of the following characteristics:

i. stress cone crop;

ii. abnormal yellowing of foliage;

iii. abnormally thin crown;

iv. an unthrifty appearance;

v. mistletoe infection, that is, small parasitic flowering plants, with mature shoots less than 6-8 inches long, that cause excessive growth and swelling to branches and stems (Hawksworth Mistletoe rating system shall be used when selecting a crop tree);

vi. Western White Pine Blister Rust, that is, a disease of Western White Pine, characterized by some or all of the following symptoms: stem cankers, drab gray-green or yellow needles, poor foliage density, short needles, or an unthrifty appearance;

vii. bole cankers, that is, trees with one or more visible bole infections, abnormal/dead areas or spot caused by certain species of fungi;

viii. root rots, that is, areas that have one or more dead or dying trees usually (Douglas-fir or Western Hemlock) per 10-foot radius are suspected root rot pockets, including both *Phellinus Weirii* (laminated root rot), *Armillaria mellea* (Armillaria root rot, and black stain).

#### m. Hang-up Trees

Any cut tree that leans against or is suspended by an uncut tree.

#### n. Fuel Break

An area within a thinned unit where thinning slash is removed or treated in order to reduce spread of fire to adjacent areas.

#### o. Buffer Zone

An area within a thinning unit in which no cutting is required, in accordance with Technical Specifications.

#### p. Competing Vegetation

All plant species, including forbs, grasses, woody shrubs or brush, and trees, which because of their position, age, size, or numbers, affect the growth and survival of leave or release trees.

q. Slash

Any vegetation that was cut by the Contractors.

r. Slashing

Removal of non-crop potential stems regardless of spacing.

s. Bucking

Cutting the main stem of cut trees into lengths as required to maintain contract compliance.

t. Lopping and Scattering

Cutting limbs from trunks of cut trees and moving and rearranging of slash concentrations to reduce the fuelbed height above ground level, according to Technical Specifications.

u. Pre-commercial

Stems smaller than the minimum size which can be sold as a commercial product. Generally established as eight inches diameter at 4 2 feet above the ground.

### Exhibit B -- Budget

1. Contractor shall be compensated at a rate of \$62.50 per acre for services rendered on the Fantasy project.
2. Total acres completed by this agreement shall not exceed 230 acres.

Per Acre Cost	x	# acres	=	Project Cost
\$62.50	x	230	=	\$14,375

### Exhibit C

#### Compensation

The total amount of compensation to the contractor shall be \$\_\_\_\_\_.

## Appendix 1. TSI Inspection Form

Project Name: \_\_\_\_\_  
 Unit(s) #: \_\_\_\_\_  
 Inspector: \_\_\_\_\_  
 Date: \_\_\_\_\_

Unit Size: \_\_\_\_\_ ac.

Contractor: \_\_\_\_\_  
 Inspection Plot Size: 1/50 acre  
 Target Stocking: 170 trees / acre  
 Spacing: 16 x 16 feet

	Tree										Total			
Plot	1	2	3	4	5	6	7	8	9	10	Satisfactory	Deficient	Excess	Wasted
<b>Total</b>														

$$1.00 - \frac{(\text{\# of deficient trees} + \text{\# of excess trees})}{(\text{\# of leave trees that should have been left})} \times 100 = \text{Quality}$$

**MBT Nation  
Forest Development Project  
PROJECT INFORMATION SUMMARY SHEET**

**Contractor:** \_\_\_\_\_  
**Project Name:** \_\_\_\_\_ **Legal Location:** \_\_\_\_\_  
**Project Number:** \_\_\_\_\_ **Elevation:** \_\_\_\_\_  
**Activity:** \_\_\_\_\_ **Slope:** \_\_\_\_\_  
**Unit:** \_\_\_\_\_ **Aspect:** \_\_\_\_\_  
**Acres:** \_\_\_\_\_

**Initial Site Condition**

**Stand Goal:**

The goal for this stand will be to establish vigorous and healthy commercial stocking. For areas of multiple age class trees, the area will be managed as uneven-aged. For each cohort (age class) to develop, it must receive a treatment which keeps it healthy and vigorous. For the older trees, the goal is to keep the individual trees healthy. For the fire exclusion cohort, the follow-up will serve to complete the thinning and improvement activities begun in the timber sale, with the goal of concentrating good diameter growth on commercially valuable trees. For the precommercial size class, generally 8 inches in diameter at 4.5 feet above high ground side, the goal is to keep diameter growth rapid.

**Follow-up Activities**

The follow-up is based on the forest conditions described above.

- Thin the crop-quality pre-commercial stems to 16 feet spacing;
- Slash non-viable fir understory, and any precommercial sized trees closer than 16 feet to a larger tree of better form.

**Exhibit A**  
**Scope of Work**

Contractor's Initial Here: \_\_\_\_\_

(Contractor has reviewed and understands the Scope of Work)

**SPECIFICATIONS FOR TREE PLANTING CONTRACTS**

SECTION A - General Specifications

A-1. General

This Scope of Work will outline the specifications needed to fulfill the tree planting contract and related vegetative control on the **Make Believe Tribe (MBT)** forested area on the \_\_\_\_\_ unit requiring the contractor to plant approximately \_\_\_\_\_ tree seedlings on \_\_\_\_\_ acres, as outlined on the Project Information Summary Sheet and Project Map attached to this contract.

This work shall be in compliance with the terms, specifications, and provisions set forth within the contract. The contractor is responsible for furnishing labor, equipment, supervision, transportation, operating supplies, and incidentals unless specifically noted in this Scope of Work.

A-2. Period of Contract

Work shall commence within five calendar days of the approval of the contract. Approval of the contract shall be at the date of the signing of the Tribal Chairman's signature, with the Term of the contract stated in Section 1 of the contract. If work is not started within 5 days of the approval of the contract, the Program may elect to serve notice to the contractor that the contract is terminated.

A-3. Representation

The final authority to approve contracts and changes therein lies with the Tribal Chairman. The Forest Development Program (Program) will appoint a Contracting Officer's Representative (COR) to represent the MBT in carrying out the terms of this agreement.

The COR may order the contractor, in writing, to suspend, delay, or interrupt all or any part of the work for the period of time that the Program determines appropriate for the convenience of the MBT.

The COR may appoint a Project Inspector as his representative in the field. The Project Inspector will have authority to coordinate with the contractor in the routine day-to-day details regarding implementation of the agreement's terms and conditions.



The contractor may designate an on-site representative responsible for contract completion. Any and all such representatives will be identified to the COR by the contractor.

#### A-4 Contractor Obligations

##### a. Operations

The contractor is responsible for all operations involved in planting the appropriate trees and treating the local vegetative competition. The contractor is responsible for the safe operation of project activities, and is encouraged to supply safety equipment and provide safety orientation to new workers. Examples of safety equipment for tree planters include boots and gloves.

A limited quantity of specialized tree planting equipment may be available from the Program for use by the contractor which may include tree planting shovels, t-bars, dibble sticks and planting bags. If planting equipment is checked out to the contractor, it will be the contractor's responsibility to return the equipment in the same condition. Equipment not returned at the end of the contract period will be charged against the contract as outlined below.

##### b. Supervision

The contractor is responsible for all labor required to complete the obligations of the contract, and the supervision thereof. The contractor is responsible for the payment of his employees. The MBT will not be held liable for payment to anyone other than the contractor.

All contractors who hire personnel not eligible for federal Indian Health Service benefits are required by the Tribe to provide medical support for workers by establishing a workmen's compensation account with the State of \_\_\_\_\_.

The contractor is liable for all loss and/or damage to Tribal property associated with this project until completion and final acceptance of work required by this agreement. Tribal property includes equipment checked out by the contractor and seedlings supplied to the contractor.

##### c. Taxes

Contractors must meet all federal requirements regarding withholdings for their employees. Inexperienced contractors are urged to seek the assistance of an experienced bookkeeper or accountant when setting up withholding accounts. All contractors who hire personnel must obtain a federal employer identification number (Form SS-4) from the Internal Revenue Service. Additionally all employers will give employees a wage and tax statement (W-2 Form) by January 31 of the year following their employment.

All contractors, including sole proprietors with no employees, that have net annual earnings from self-employment of \$400 or more, will pay self employment tax to the federal government. Contractors who pay wages of greater than \$1,500 during a calendar quarter, or who have employees on the payroll for 20 different calendar weeks, must pay federal unemployment tax at year's end.

The MBT will issue Form 1099 to any contractor earning more than \$600 during a year. This form serves as income documentation for the IRS and for the contractor. Likewise, the contractor will provide the same form to any sub-contractors involved in this project.

Contractors are urged to keep accurate, detailed records of business transactions to support figures on income and expenses. IRS Publication 334, Tax Guide for Small Business, provides a helpful summary of income and employment taxes. Contractors are urged to consult with an experienced accountant if the preceding requirements become confusing or difficult to master. The MBT is not responsible for contractors who run into legal problems arising from failure to follow withholding or tax guidelines as required by law.

#### d. Protection of Cultural Resources

All projects within timber sale areas have received an archeological and cultural review and a Cultural Clearance. The contractor shall be responsible for protecting all known and identified objects or sites against destruction, damage, obliteration, or removal.

If either the contractor or Tribal representatives discover cultural resources on the project area, the COR may modify portions of this contract to protect any area, object of antiquity, artifact, and/or resources which may need protection regardless of when or where discovered or by whom. If cultural resources are damaged, the contractor may be responsible for all costs of restoration, provided that such payment shall not relieve the contractor from civil or criminal penalties as provided by law.

The contractor will keep other Tribal natural resources in as natural state as possible. The contractor will remove any litter which can be attributed to him (her) before departing the job site.

#### e. Fire Safety

All contractors are required to follow all designated measures to reduce danger from forest fires. Fire Precaution Levels will be enforced by the Program when

applicable. A fire extinguisher of at least 8 oz. minimum capacity as approved

by the COR or his representative shall be carried if a chainsaw is operating in the woods during Fire Precaution Levels of 2 or greater. A shovel shall be available in the immediate working area for use in fire suppression. Other hand tools may be required on-site when fire danger so warrants.

No fires are permitted on Tribal land that contains hazardous fuel slash such as thinning or logging slash. Neither the Contractor nor any of his representatives will smoke in any thinning unit unless he positions himself in a slash-free area (e.g. a road) at least ten feet in diameter.

The contractor, under the direction of the Bureau of Indian Affairs (BIA) Forest Manager, or in the absence of said officer, acting independently, shall immediately extinguish, without expense to the Tribes, all fires on or in the vicinity of the project which are caused by him or his employees whether set directly or indirectly as a result of the work on this project. The contractor may be held liable for all damages resulting from the operation of this contract. If the amount and character of labor, subsistence, supplies, and transportation which the contractor is in a position to furnish for fire suppression prove inadequate, the Program may suspend operations.

For the purpose of fighting forest fires on or in the vicinity of the project which are not caused by the contractor or his employees, the contractor, when requested by the Contracting Officer, shall place his employees and equipment temporarily at the disposal of the Bureau of Indian Affairs, Branch of Forestry, Fire Control. Payment for such services will be made by the federal government at not less than the current rate of fire fighting services established by the Bureau of Indian Affairs in the area concerned.

Any employees and equipment furnished will be relieved from fire fighting as soon as the Bureau of Indian Affairs finds that it is practicable to employ other labor and equipment adequate for the protection of the area. An equitable adjustment in purchase order time may be made for this period.

#### A-5 MBT Obligations

The COR or designee will provide timely inspection and feedback to the Contractor about the quality of the planting effort through Inspection Reports.

The MBT will provide the appropriate number and species of tree seedlings indicated in the Project Summary Sheet. Seedlings will be available for check-out at a cold storage located at either White Swan Forest Development Building, Land Enterprise cold storage in Wapato, or McMahan's Nursery in Wapato. The Program will notify the contractor of the location of the seedling prior to the start of the contract. Pick up of seedlings will be at the location from 7:00 to 9:00 AM

on weekdays during the course of this project, and at other times via special arrangement with the Forest Development Program.

The MBT may assist the contractor in the form of loaning out tree planting tools, when that may be advantageous to the Nation. If loaned out, the contractor is responsible to return the same equipment in good condition. Equipment not returned to the MBT by the contractor will be assessed against the contractor's final payment with the following amounts:

* Hoedad	\$56.00
* Planting Shovel	\$56.00
* Dibble Stick	\$47.00
* Planting Bag (single)	\$20.00
* Planting Bag (double)	\$36.00

A-6 Location and Description of Units

a. Entry

The work areas are located on the closed area of the Make Believe Reservation. Any person working on the project who is not an enrolled member of the MBT must obtain an Entry Permit in order to enter the closed area.

b. Accessibility

The work areas may be reached by the forest roads that are accessible by standard 2 or 4 wheel drive pickup, weather permitting. If roads become inaccessible due to snow, fallen trees, slides, washouts, etc., the COR at his option may direct the contractor to use other access routes, open the road, or delete affected units from the contract. No payment will be made for deleted units except for acceptable work completed prior to deletion. No vehicles will be allowed to operate off system roads without approval of the COR or authorized representative.

c. Ground Conditions

Planting trees in the appropriate ground conditions is important to the success of the reforestation effort. If ground conditions become too dry, the COR may determine that tree planting should be suspended. If conditions improve then tree planting may be re-started at the COR's discretion. The MBT may extend the length of the contract to compensate the contractor for down time caused by dry conditions. Alternatively, under continued dry conditions, the MBT may suspend the remainder of a project if it felt that further tree planting would not be cost effective. If a contract is suspended indefinitely due to dry ground prior to the estimated completion date, then the contractor would be eligible for full payment of all satisfactory work with no penalties for not finishing the project.

d. Boundaries

The boundaries are marked on the ground by flagging. If questions arise by the contractor, then the contractor shall request the COR to designate boundaries on the ground.

e. Description

The attached Project Information Sheet and Project map contains more detailed information related to the individual contract units.

A-7 Workers

Make Believe descendants, spouses and others are eligible employees provided they obtain an Entry Permit to enter the closed area of the MBT forest. For contracts longer than 60 days, Contractors will be required to sign a Tribal Employment Rights Ordinance (TERO) Agreement and abide by the conditions stated therein. Under TERO, Contractors will be required to hire Indian preference candidates for at least 85% of their vacancies. Enforcement of this agreement is the responsibility of the TERO Program.

Undocumented or illegal alien workers shall not be allowed in the closed area. Failure to comply shall place the contractor in default.

A-8 Use of Non-Timber Products

In accordance with Tribal regulations, contractors will be allowed free use of any non-timber forest product obtained from the project area, except if the project area happens to be an Indian allotment. Contractors are allowed free use of non-timber product on allotted land only after receiving written permission from the allottees.

SECTION B - AWARD

This contract is awarded on a competitive bid price basis, with the lowest qualified bidder being offered the contract. Qualified bidders are those who are capable of completing a job of a size and complexity similar to the present. Qualifications are determined by previous completion of tree planting or similar crew-type activities of parallel size and complexity.

SECTION C - INSPECTION AND ACCEPTANCE OF SERVICES

C-1 Inspection Procedures

The Project Inspector and/or COR will make periodic inspections. The contractor or his representative is encouraged to observe the inspection and will receive inspection summaries. Contract inspection involves both informal and formal components. The informal component of project inspection involves walking through the work area and meeting with the contractor or his

representative in order to get an idea of project issues, progress, and quality. Informal inspections will be used to tally wasted trees outside of inspection plots. Tree handling areas will be inspected informally. Formal inspection will be in the form of a written inspection report.

Inspection for acceptance and payment for contracts will involve the survey of a series of plots distributed over the entire unit sufficient to yield at least a one percent sample of the project area. Plot size will be 1/50 acre. Plot centers will be marked and numbered. A blank inspection form is included in Appendix 1.

Each plot will be examined to record findings on the items listed below:

1. Total # of trees planted;
2. Quality of trees planted (satisfactory or unsatisfactory and justification);
3. Credits for areas where a tree might have been planted but was not;
4. Wasted trees.

Inspection results are determined by dividing the sum of satisfactory trees and credits by the target stocking, as shown in the following example:

Satisfactory trees	40
Unsatisfactory trees	7
Credits	4
# plots	10
Plot size	1/100 acre
Target stocking	436 trees per acre (tpa)

Planting

$$\text{Quality Percent} = \left[ \frac{(\text{Satisfactory Trees} + \text{Credits})}{\left( \frac{\text{Target Stocking T/Ac}}{\text{Plot Size (1/50Ac)}} \times \# \text{ Plots} \right)} \right] \times 100$$

A Planting Quality of 85% or greater will equal one and be applied to the payment as outlined in Section D-1. If the Planting Quality is less than 85%, the payment calculation will be that percentile. An example is shown in Section D-1. If the Planting Quality is less than 50%, no payment will be made for those acres until the Planting Quality exceeds this level.

C-2 Rework and Reinspection After Rework

When inspection results are below 85 percent and wide spacing (too few trees per acre) constitute any part of the deficiency, payment will not be made until this has been corrected by filling in the area with more trees. Reinspection after rework will be made in the same manner as the first inspection but on different plot lines.

If inspection results are below 85 percent because an excess of trees are being planted incorrectly, and there are additional seedlings available, then the MBT

may grant the contractor the option of re-working the unit to bring the quality level up. However, in this situation, the MBT retains the option of not providing additional resources for re-planting. If there are no appropriate seedlings available for re-planting, then the contractor will not be allowed to re-plant.

C-3 Reinspection of Planting Upon Contractor Request

If the original inspection results are unacceptable to the contractor and a second inspection is requested without rework, the same inspection procedure will be used. However, the inspection pattern will be shifted. If the second inspection shows less than 5 percent variance in quality from the first inspection, the result of the first inspection will be used in determining payment. If the second inspection results in variance in quality of greater than 5 percent from the first inspection, then the results of the second inspection will be used in determining payment. Requests for reinspection must be made in writing.

SECTION D - PAYMENT AND MEASUREMENT (see Appendix 1 for Inspection Sheet)

D-1 Payment

Contract payment is based on both the quality and quantity of work performed. Project payment is determined by the following formula:

If Planting Quality is greater than or equal to 85%:

Payment = 1 x bid price x satisfactory acres

If Planting Quality is less than 85%:

Payment = Planting Quality % x acres

If Planting Quality is less than 50%: no payment

Work must be at least 85% of the target quality in order to be paid at the full bid price. For units that demonstrate less than 85% quality, the quality percent will be applied to the bid price for payment. For example, a unit which is done at 75% of full quality will be paid at 75% of the bid price. For quality percent less than 50%, no payment will be made.

If field inspection of contractor's work indicates that contract specifications were met and work is acceptable, the COR or Inspector will forward the contractor's invoice to the MBT for payment. The MBT will process the invoice and issue a check for payment within 15 working days after receipt of an approved Billing Form.

The contractor may request the first partial payment after 15 days from the start of the contract, provided at least 25% of the project area is successfully completed. Partial payment requests prior to 15 days may be made if more than 50% of the contract area is completed. Additional partial payments may be requested by the contractor provided the contractor has completed 25%

increments or more over the project area. The program will withhold 10% from partial payments in lieu of a performance bond. The holdback will be paid off upon satisfactory completion of the entire unit.

Final payment may be withheld for units not completed within the specified time, unless a written extension has been granted. Conditions for granting extensions may be inappropriate weather, and shutdowns originating from the MBT. Domestic problems, labor problems or equipment breakdowns are not acceptable conditions for contract extension.

D-2 Acreage Measurement

a. Method of Measurement

The areas to be treated and paid for lie within the unit boundaries as designated according to the data information sheets. Unit boundaries have been logged into the information system using geographic positioning system (GPS) technology.

b. Re-measurement

Re-measurement of the acreage under this contract will be made upon the written request of the contractor. Request for re-measurement must be made in writing within 5 days after treatment has been completed on the unit.

If re-measurement indicates a difference of not more than 5% from the original measurement the original measurement will be used. Payments will be based on the second measurement where the difference between measurements is more than 5%. Payment will be made to the nearest whole acre.

SECTION E - TECHNICAL SPECIFICATIONS

E-1 Tree Handling

a. Removal from Cold Storage

Tree seedlings will be delivered to one of the following cold storage units:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

A Forest Development Program representative will be on hand to sign the seedlings out from 7:00 AM to 9:00 AM each weekday morning during the course of this contract. Additional seedlings may be checked out at different times if arranged separately with the Forest Development Program. The contractor will remove only those trees designated for the contracted project.

b. Transport



Tree seedlings will be transported in an environment which is protected from sun and wind. Seedlings will be placed in the transport device in a form which avoids damage to the seedlings from breaking, excessive bending, crushing, etc. Seedlings will be transported directly from the cold storage to the planting site.

c. Holding (Interim Daily Storage)

All seedlings in the holding area will be stored in a cool damp environment. Seedling roots will be protected from drying by covering. Seedlings spending more than one half day in the holding area will be "heeled in" by placing the roots in wet mud until removal for planting. Contractor may establish as many holding areas as desired as long as each area meets the above standards.

d. Field Handling

Tree planters will carry seedlings from the holding area inside of a tree planting bag. Seedlings will be placed in the bag with the roots toward the bottom, in a form that avoids damage to the seedlings from breaking, excessive bending, crushing, etc. Seedlings will be removed for planting one at a time. Tree planters will pick up no more than one hour's worth of seedlings from the holding station. Any seedlings which fall from the planting bag will be picked up and planted as soon as possible.

e. Wasted Trees (handling)

Wasted trees are those which are handled contrary to the above specifications, such that they become unviable seedlings. Examples of wasted trees include seedlings which have fallen out a tree planting bag and lie with roots exposed to the sun for over an hour. Another type of wasted tree is one in which the stem has been crushed in transport. Wasted trees are charged at a rate of \$.80 per tree and may be deducted from the contract price. Wasted trees at storage areas will be counted individually, but wasted trees found in the planting units during the formal inspection plots will be counted by extrapolating the number of trees found within inspection plots only.

E-2 Site Selection

The micro-site where the seedling is placed plays an important role in determining the growth and development of the individual seedling. The micro-site also has a strong bearing on planting ease, speed and quality. Therefore, site selection is a factor which is addressed during the inspection process. Site selection has both quality and quantity components.

a. Site Quality

An acceptable site unites a series of conditions which allow the planted seedling to grow and develop quickly. Quality site conditions include accessible un-compacted mineral soil, freedom from intense vegetative competition, access to sunshine, and outside of logging work areas. Acceptable sites are perhaps best

described as those which avoid unacceptable characteristics. Unacceptable characteristics include the following:

- \* dense slash on ground
- \* dense turf (grass)
- \* very dense brush
- \* extremely barren ground (indicates poor site)
- \* extremely rocky site
- \* landing site
- \* skid trail.

The contractor will not be paid for trees planted in unsatisfactory sites; they will be so designated during the formal inspection. When the formal inspection encounters unacceptable sites with no seedlings planted, a credit will be awarded to the contractor in lieu of a planted tree. Planting credits count positively toward the compliance percentage.

#### b. Spacing

Seedlings will be planted at an approximate distance which is set for each unit and is detailed in the Data Information Sheet. Spacing varies by planting unit site characteristics in this project. The planter will be allotted a 25% spacing allowance from each potential planting site in order to plant in the best micro-site. Thus, under a target spacing of 10 feet, trees should be within 7.5 and 12.5 feet apart. Trees which are closer than the designated spacing (including spacing allowance) will be tallied as unsatisfactory during the formal inspection. Trees which are too far apart will be accounted for when the inspection results are summarized by triggering the re-plant requirement.

Seedlings will also be spaced in a similar manner from established crop quality trees. Crop quality trees will be counted as credits on the inspection. Established trees which are not crop quality will be ignored in tree planting.

### E-3 Planting Guidelines

#### a. Hole Depth and Width

Tree planters will open a hole of a depth sufficient to place the seedling's roots and lower stem below the first needles underground. The hole will be wide enough that the seedling slides easily into the space.

#### b. Tree Placement

Seedling placement must be at the proper height, not too high or too low. The seedling will ideally be placed such that the soil surface comes to about 1/2" below the lowest needles. A seedling planted too low will have some needles below the soil surface; a seedling planted too high will have the upper roots exposed to the air. The root bunch will be planted in a straight vertical position so as to produce no "J-rooting". A J-root forms when a seedling is planted in too

shallow of a hole, preventing the seedling roots to grow in a downward position.

c. Soil Packing

After the seedling is placed into the hole, soil will be packed around the roots. The soil packed around the roots will be dirt free of organic matter, leaves, twigs, etc. The soil will be packed back into the hole in a firm manner. Planters will avoid leaving air pockets below the seedlings' root bottoms by either calibrating hole depth to the length of the seedling roots, or, if the hole is too deep, filling in the bottom of the hole with loose dirt free of organic matter.

d. Unsatisfactory Trees (Planting)

Unsatisfactory trees are trees which are planted contrary to the above specifications. Examples of unsatisfactory trees are those which are planted too high or too low, seedlings with bent or J-roots, trees with roots planted at too much of a slant away from the vertical, and holes filled in with organic matter. Trees which are planted incorrectly are generally considered unsatisfactory and not wasted.

E-4 Vegetative Control

The contractor will be required to apply the appropriate vegetation control if the contract bid announcement specifically states that vegetation control is part of the requirement. If vegetation control was listed as part of the bid announcement, the contractor will be responsible for the treatment, to all planted trees, of a spot application of herbicide designed to eliminate the vegetative competition for the site's moisture and other resources. The contractor will use the product OUST in accordance with the directions specified on the product label. Any variations on vegetative control product used must be approved by the Forest Development Program prior to use in this contract. The contractor will use a colored dye to mark all trees that have been treated with the herbicide. It will be the contractor's responsibility, as part of this contract, to purchase, secure and properly store this herbicide. The contractor, or a least one of the contractor's workers, will be required to maintain a current Pesticide Applicator's license issued by the State of \_\_\_\_\_. Although the MBT does not recognize the jurisdictional authority of the State of \_\_\_\_\_ in relation to on-Reservation projects conducted by Tribal members, the possession of the Applicator's license will ensure proper understanding of the handling and application of this herbicide for the best protection of the Tribal resources. In addition, \_\_\_\_\_ State law prohibits the purchase of this herbicide by anyone not licensed.

E-5 Definition of Technical Specifications Terms

a. Satisfactory Tree

A tree (seedling) which is planted properly according to the specifications

designated in section E of this document. Satisfactory trees count positively toward the planting quality standard.

b. Unsatisfactory Tree

A tree (seedling) which is planted improperly according to the specifications designated in section E of this document. Trees count as unsatisfactory because of being planted too high, too low, too close together, with bent or angled roots, with soil packed too loosely or packed with organic matter instead of soil, among other reasons. Unsatisfactory trees are not counted toward the planting quality standard, nor are they penalized during the payment calculation.

c. Tree Credit

A credit is awarded on an inspection plot to compensate the contractor for spaces occupied by an established natural regeneration tree seedling or in areas which have been found to be unfavorable for planting. Examples of credits include a healthy established tree seedling or areas of dense turf, dense brush, landings, skid trails, extremely barren ground, and extremely rocky sites. Credits are awarded for plots whose centers are inside the planting unit, but whose area lies partially outside the unit.

d. Wasted Tree

A tree (seedling) which, because of improper handling or negligence, becomes unviable. Examples of wasted trees include trees which are crushed, excessively bent, broken, allowed to dry up, or lost. Wasted trees are charged against the contractor at \$.80 per tree.

e. Spacing

Distance between planted trees (seedlings) or between planted trees and established trees.

f. Crop quality tree

Established tree which is or has potential to grow into a merchantable product.

g. Non-crop quality tree

Established tree which will never grow into a merchantable product because of some kind of defect. Defects include excessive sweep, crook or forks, interior rot, extremely slow growth over three years or more, and broken tops among others.

**Exhibit B -- Budget**

1. Contractor shall be compensated at a rate of \$\_\_\_\_\_ per acre for services rendered on the \_\_\_\_\_ project.

2. Total acres completed by this agreement shall not exceed \_\_\_\_\_ acres.

$$\begin{array}{rcccccc} \text{Acres Cost} & \times & \# \text{ acres} & = & \text{Project Cost} \\ \$ \_\_\_\_\_\_ & \times & \_\_\_\_\_\_ & = & \$ \_\_\_\_\_\_ \end{array}$$

### Exhibit C

#### Compensation

The total amount of compensation to the contractor shall be \$\_\_\_\_\_.

## Appendix 1. Planting Inspection Form

Project Name: \_\_\_\_\_  
 Unit(s) #: \_\_\_\_\_  
 Inspector: \_\_\_\_\_  
 Date: \_\_\_\_\_

Unit Size: \_\_\_\_\_ ac.  
 (One plot per 2 acres)

Contractor: \_\_\_\_\_  
 Inspection Plot Size: 1/50 acre (16.7ft radius)  
 Target Stocking: \_\_\_\_\_  
 Spacing: \_\_\_\_\_

		Tree										Total			
Plot	1	2	3	4	5	6	7	8	9	10	Satisfactory	Unsatis.	Credit	Wasted	
<b>Total</b>															

**Tree Codes:**

*X=Satisfactory / S=Spacing (too close) / H=Planted too high / L= Planted too low / J=root bent / V=root slanted away from vertical / F= hole fill inadequate / C=Credit /W=Wasted tree/ Z=No Vegetative Treatment*

Planting

$$\text{Quality Percent} = \left[ \frac{(\text{Satisfactory Trees} + \text{Credits})}{(\text{Target Stocking T/Ac} \times \# \text{ Plots})} \right] \times 100$$

Plot Size (1/50Ac)

**MBT  
Forest Development Project  
PROJECT INFORMATION SUMMARY SHEET**

Contractor: \_\_\_\_\_  
 Project Name: \_\_\_\_\_      Legal Location: \_\_\_\_\_  
 Project Number: \_\_\_\_\_      Elevation: \_\_\_\_\_  
 Activity: \_\_\_\_\_      Slope: \_\_\_\_\_  
 Unit: \_\_\_\_\_      Aspect: \_\_\_\_\_  
 Acres: \_\_\_\_\_  
 # Seedlings: \_\_\_\_\_  
 Spacing: \_\_\_\_\_ x \_\_\_\_\_

**Initial Site Condition Summary**

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**Stand Goal:**

The goal for this stand will be to re-establish vigorous and healthy commercial stocking.

**Prescription:**

- Plant a mix of ponderosa pine, Douglas fir and Western larch at about 12 foot spacing, or 302 trees per acre. Planting stock may be containerized or plug+1.
- Other higher elevation species may be planted including lodgepole pine, true firs, hemlock, spruce and western white pine.
- Complement planting with spot herbicide treatment if applicable.
- Target stocking of 200 potential crop quality trees per acre after year 5.

**Planned Stock type:**

Quantity	Species	Stock Type	Nursery	Seedlot
2,250	ponderosa pine	Styro-8 plugs	Silva Seed	R00215



ARTICLE 1 - BUREAU PROGRAM(S) TO BE PERFORMED

301. SCOPE OF BUREAU PROGRAM(S) TO BE PERFORMED

The Bureau program(s) to be performed by the Contractor under this contract are as follows:

Forest Development: Contractor activities conducted under this Program are: Performing stocking surveys and stand exams, collecting processing cones, planting, road closures, TSI access, seedling thinning, precommercial thinning, and collecting / analyzing data in tree plantations and other periodic projects (e.g. CFI).

302. PROGRAM FUNCTION

The Contractor shall:

- I. Plant pine seedlings on unstocked or understocked commercial Forest acres on the [REDACTED] Indian Reservation. Ensures that stands are fully restocked within 5 years after planting. Conducts stocking surveys at 1,3 and 5 years for plantation / treated seed tree unit certification guidelines:
  - A. PIPO/PRvi/VIca: 250 trees/acre/fifth year
  - B. PIPO/PRvi/SHca and lower: 200 trees/acre/fifth year
  - C. Stands that have been planted / burned must be progressing towards satisfactory stocking for the fifth year after planting or underburning.
  - D. First year growing season should determine if the plantations will fail or progress. Failure is defined as 20 percent or more of the plantation needing a full replant or 30 percent or more of the stand needs interplanting. Stands should not be progressed any longer than necessary to insure certification and reduce examination costs.
  - E. Failing stands that do not meet the criteria set forth in 4 must be rescheduled for a replant immediately.
  - F. Certified stands must meet the following criteria:
    1. Establishment.

2. The required natural regeneration has survived at least three full growing seasons, is in healthy condition (healthy leaders and buds,) and is a minimum of 6 inches high.
  3. Planted stock has survived two growing seasons and is in healthy condition (healthy leaders and buds).
  4. At least 90 percent of the reforestable land area in the stand meets the stand management stocking standards and age criteria specified above in B and C.
  5. This determination will be made by an individual with plantation evaluation experience. The stand certification will be documented in the permanent plantation file. Refer to Exhibit #5 for more details.
- II. Collection cones by climbing superior trees, falling cone bearing trees and picking cones from fallen trees in active timber sale areas.
  - III. Perform precommercial thinning and seedling thinning on overstocked, stagnant and commercially harvested timber stands to prescriptions by habitat type derived from target stands that will be constructed by the BIA.
  - IV. Perform stand exams to specifications and in areas designated by the BIA.
  - V. Perform various TSI Projects.
  - VI. Burn slash piles.
  - VII. Hire one full time professional Forest Development Forester.
  - VIII. All contract inspections will be performed by a permanent Tribal Forestry employee who has been properly trained and has prior experience.
  - IX. Advertise and bid out all planned projects competitively and accept no bids without a minimum of two bidders.
  - X. Purchase of 150,000 to 190,000 of seedlings using [REDACTED] seed stock from the State Nursery for the Baby Dean Burn reforestation project.

303. NON-CONTRACT PORTION OF BUREAU PROGRAM(S)

THE GOVERNMENT, THROUGH THE BUREAU OF INDIAN AFFAIRS SHALL:

- I. Provide, the extent possible, special technical assistance to assist the Tribal Organization to satisfactorily operate the program and enable it to avoid retrocession.

- II. Monitor the submission of contract required data collection program reports.
  - A. Non-delegatable: Approve contract payment request through the 638 system.
- III. The Bureau will perform contract inspections of work at the rate of 10 percent on a random basis as determined by the Bureau. The Bureau will also be available for other occasional inspections related to the contract for request submitted in writing by the Tribe. The inspections will be performed in 10 days and the result furnished to the Tribe in writing.

304. SPECIAL PERFORMANCE STANDARDS

I. THINNING

- A. The Contractor agrees to thin between 667 and 1,500 acres annually based on the specifications for thinning and payment to Sub-Contractors specified below.
  - 1. Tribal Forestry will provide a written prescription specifying spacing and diameter limits to be applied to each stand, and identifying any changes from specifications listed below. Unless changed in the prescription, 16 foot spacing will be applied to all stands treated under this project with the exception of PIPO/PRvi/VIca habitat types which will be 14 foot spacing. The target stand will contain an average of 170 TPA with a maximum tolerable stocking deviation of +/- 10% for all habitat types except PIPO/PRvi/VIca. PIPO/PRvi/VIca will contain 222 TPA with a maximum tolerable deviation of +/- 10%.
  - 2. The selection of leave trees shall be accordant with guidelines in this contract and [REDACTED] Thinner's Handbook, Exhibit #1 and Keen's classification for the Black Hills. Site specific prescriptions written for the stand being thinned will supercede the contract and N.C. Thinners's Handbook.
  - 3. All trees 12 inches and taller in height, except those selected as leave trees, shall be cut off below the lowest live limb. "All trees" refers to all pine, aspen but excludes juniper ("cedar") within the block boundary.
  - 4. Cut trees shall be completely severed from the stump.
  - 5. Stump height shall not exceed 8 inches.

*157 trees to 222 trees  
(17%)*

6. Slash from thinning greater than 3" in diameter will be lopped into 4 foot pieces to a depth no greater than 18 inches. Hang-ups will not be permitted.
7. Trees that are heavily damaged, deformed, diseased, or insect infected, shall be cut regardless of spacing, diameter, species or position in the stand, unless specified in the project proposal.
- \*\*8. Thinners may vary spacing between leave trees to enable selection of the best leave trees, providing this does not change the number of leave trees by more than 10% from the desired stocking level specified in the prescriptions and thinning intensities will be based on the following guidelines: Refer to 304, A. 12
9. Felled material and thinning debris will be removed from all access roadways to a point two feet back from the upper cut slopes or lower full slope, and at least two feet from the outer edge of the road where no cut or fill exists.
10. All precommercial thinning will be completed between July 1, of the current calendar year and January 31, of the following year and at times designated by BIA on recommendations from research on the Ips pini outbreak.
11. Special provisions may be developed for sepcific projects.
12. Payments for thinning:

The Contractor shall pay the Sub-Contractor the bid price per acres for thinning in accordance with the Tribal Forestry Contracting Policy (Exhibit #4). Payments shall be based on acreage of precommercial thinning as determined by standards map measurements or a 2% sample of the thinned area. A 2% sample plot will always override a visual walk through. Full or partial payments must be documented on an inspection sheet. All vouchers for thinning payment shall include an inspection sheet per thinning inspection guidelines.

B. Slash Disposal Guidelines

The determination for contract payment shall be based upon the following percentages for acceptable contract parameters and shall represent one-third of the overall contract payment schedule.

PAYMENT RATE                      ACCEPTABLE CONTRACT SPECIFICATIONS

100% = less than or equal to 100% of prescription specs.  
98% = 101 = 105% or equal to 100% of prescription specs.  
96% = 106 = 110% or equal to 100% of prescription specs.  
94% = 111 = 115% or equal to 100% of prescription specs.  
92% = 116 = 120% or equal to 100% of prescription specs.  
90% = 121 = 125% or equal to 100% of prescription specs.

If prescription specifications exceed 125 percent, corrective action will be allowed to bring slash work into contract compliance.

C. Stump Cutting Guidelines

The determinations for contract payment shall be based upon the following percentages for acceptable contract parameters and shall represent one-third of the overall contract schedule.

PAYMENT RATE                      ACCEPTABLE CONTRACT PARAMETERS

100% = 90-110% of prescription specifications  
98% = 89% of prescription specifications  
96% = 88% of prescription specifications  
94% = 87% of prescription specifications  
92% = 86% of prescription specifications  
90% = 85% of prescription specifications

If prescription specs, fall below 85 percent of acceptable contract parameters, corrective action will be allowed to bring the cutting into contract compliance.

D. Spacing Guidelines

The determination for contract payment shall be based upon the following percentages for acceptable contract parameters and shall represent one-third of the overall contract payment schedule.

PAYMENT RATE                      ACCEPTABLE CONTRACT PARAMETERS

100% = 90 TO 110% of prescription specifications  
94% = 88 to 89% of prescription specifications  
88% = 86 to 87% of prescription specifications

If prescription specifications fall below the minimum acceptable specifications, the contract will be in default.

If the specs fall between 90 percent and 110 percent of the acceptable specifications, payment will be based upon the above schedule.

If the specs exceed 110 percent of the acceptable specifications, corrective action will be allowed to bring the spacing into contract compliance.

The overall contract payment schedule shall include the combined payment rate value of each of the three criteria and shall be the basis for payment.

Example:	Stump cutting	= 98% payment
	Spacing	= 96% of payment
	Slash disposal	= 94% of payment
	.98 X .90 X .94	= 83% overall payment of contract

No payment will be made if any one of the prescription specs fall outside of the acceptable parameters or if spacing guidelines fall below 86 percent of the prescription specifications.

Only one subsequent inspection will be conducted after the rework has been completed. If this inspection reveals any deficiency in work quality that falls outside of the contract parameters for any of the three criteria then a default will be issued and no payment will be made. Inspections will be based upon a minimum sample of 2 percent using 1\50th acre plots.

Full or partial payments must be documented on an inspection sheet. All vouchers for thinning must include an inspection sheet per thinning inspection guidelines denoting satisfactory work.

The following table will always be used for calculating the maximum rate for competitive bidding of precommercial thinning. The base index to be used for determining the maximum bid rate is \$136.00 per acre. No bid will be accepted unless there are at least two qualified bids. The contractor will establish the minimum bid at 70 percent of the maximum bid rate.

Cut stems/acre	Factor
1-150	40%
151-200	50%
201-250	60%
251-300	70%
301-350	80%
351-400	90%
401-500	100%
501-600	110%
601-700	120%
701-800	130%

801-900	140%
901-1000	150%
1001 +	160% max.

All contract maximum / minimum allowable bids will be based upon a minimum 2 percent sample of the prescription area using a 1/50th acre fixed radius plot on a grid system. Contractor shall determine maximum allowable bid to the nearest 1 percent per cut stems/acre grouping that the 2 percent sample indicates.

A cut stem is defined as 10 stems under 1 inch DBH, 1 stem between 1 inch and 5 inches DBH, 1/2 stem between 5 and 9 inches DBH, and 1/4 stem for all trees 10 inches plus DBH.

## II. TSI ACCESS

### A. TECHNICAL SPECIFICATIONS

1. Contractor shall remove all dead trees that are tall enough to fall on or within 10 feet of specified road.
2. Contractor shall clear all slash on or within 10 feet of both sides of the road and ditches.
3. If a functional fence exists along the road, all dead trees tall enough to fall on the fence shall be removed.
4. No slash shall be left on fences.
5. Any damage to fences caused by this operation shall be repaired to the original condition the same day the damage occurs.
6. All felled trees shall be slashed in accordance with the precommercial thinning specifications of this contract.
7. Payment for TSI access.

The Contractor shall pay the Sub-Contractor up to \$225.00 for each acre/mile pursuant to the Tribal Forestry Contracting Policy (Exhibit #4). No payments shall be authorized for treated areas until all project specifications have been met by doing a visual and walkthrough inspection.

Payments shall be based on acreage/mile as determined by standard map measurement.

III. SEEDLING THINNING

A. TECHNICAL SPECIFICATIONS

1. The contractor shall provide all equipment needed for contract work and provide regular maintenance of all equipment, including lopping shears.
2. Seedlings will be removed to a uniform spacing of 13 to 15 feet with an average stocking of 230 TPA, +/- 10 percent.
3. In areas where seedlings are very dense, debris shall be removed to an open area where slash can be burned without endangering live seedlings or existing trees.
4. Seedlings must be severed below lowest live branch, flush to the ground.

B. PAYMENT FOR SEEDLING THINNING

The Contractor shall pay the Sub-Contractor the actual bid price up to a maximum of \$88.50 for each acre pursuant to the Tribal Forestry contracting policy (Exhibit #4). Payments shall be based on acreage of seedling thinning as determined by standard map measurements. No payment shall be authorized for treated acres until specifications have been met and approved during visual and walk through inspection by the contractor representative or a 2% sample of the thinned area using 1/50th Acre plots. In no case will a unit receive fewer than 10 plots in on a grid system. A 2% sample plot will always override a visual walk through. Vouchers for thinning Payment shall include an inspection sheet per thinning inspection guidelines.

C. SLASH DISPOSAL GUIDELINES

The determination for contract payment shall be based upon the following percentages for acceptable contract parameters and shall represent one-third of the overall contract payment schedule.

<u>Payment rate</u>	<u>Acceptable Contract Specifications</u>
100% =	less than or equal to 100% of prescription specs.
98% =	101-105% " "
96% =	106-110% " "
94% =	111-115% " "
92% =	116-120% " "



90% = 121-125% " "

If prescription specs exceed 125 percent, corrective actions will be allowed to bring slash work into contract compliance.

D. STUMP CUTTING GUIDELINES

The determination for contract payment shall be based upon the following percentages for acceptable contract parameters and shall represent one-third of the overall contract schedule.

<u>Payment rate</u>	<u>Acceptable Contract Specifications</u>
100%	= 90 - 100% of prescription specifications
98%	= 89% " "
96%	= 88% " "
92%	= 86% " "
90%	= 85% " "

If prescription specifications fall below 85 percent of acceptable contract parameters, corrective action will be allowed to bring the cutting into contract compliance.

C. Spacing Guidelines

The determination for contract payment shall be based upon the following percentages for acceptable contract parameters and shall represent one-third of the overall contract payment schedule.

<u>Payment rate</u>	<u>Acceptable Contract Specifications</u>
100%	= 90 to 110% of prescription specifications
94%	= 88 to 89% " "
88%	= 86 to 87% " "

If the prescription specs fall below the minimum acceptable specs, the contract will be in default.

If the specs fall between 90 percent and 110 percent of the acceptable specs, payment will be based upon the above schedule.

If the specs exceed 110 % of the acceptable specs, corrective action will be allowed to bring the spacing into contract compliance.

The overall contract payment schedule shall include the combined payment rate value of each of the three criteria and shall be for payment.

Example: Stump cutting = 98% payment  
Spacing = 96% of payment  
Slash disposal = 94% of payment  
.98 x .90 x .94 = 83% overall payment for contract

No payment will be made if any one of the prescription specifications fall outside of the acceptable parameters or if spacing guidelines fall below the 86 percent prescription specs.

Only one subsequent inspection will be conducted after the rework has been completed. If this inspection reveals any deficiency in work quality that falls outside of the contract parameters for any of the three criteria then a default will be issued and no payment will be made. All inspections will be based on a minimum sample of 2 percent using 1/50th acre plots put in on a grid system.

Full or partial payments must be documented on an inspection sheet. All vouchers for thinning must include an inspection sheet per thinning inspection guidelines denoting satisfactory work.

#### IV. CONE COLLECTION

##### A. Seed Cone Sources

Cones will be harvested from "select" trees or in areas, which the Contractor has determined to have a collectable crop and are indicated on project maps.

##### B. Seed Cone Delivery

1. Cones will be delivered to the Tribal Forestry Office at times agreed upon between the Sub-Contractor and the Contractor's representative. Delivery will normally be made during the hours of 10:00 a.m. to 3:00 p.m. Monday through Friday.
2. Location of delivery point may be changed if mutually agreed to by the Sub-Contractor and the Contractor's representative.
3. All cones delivered shall be packed in burlap bags of at least two bushels capacity. No more than one bushel of cones will be placed in a burlap bag.
4. Inspection of cones for compliance with section titled, "Acceptable seed cone standards" will be done at the inspection location.

C. Acceptable Seed Cone Standards

1. All cones shall be mature. Seed cones will be considered mature when seed embryo fills a minimum of 90 percent of the embryo cavity. Seed embryo may not secrete any milky fluids.
2. Seed shall be considered sound when the endosperm and embryo are developing normally and there is no evidence of insect, disease, climatic, or other types of damage.
3. Acceptable seed count per cone shall average no less than 5 (ponderosa pine) per face when the cone is cut in half transversely.
4. Only cones more than 2.9 inches will be accepted.
5. Cone lots shall not be contaminated with more than 5% trash (e.g. needles, stems, twigs, etc.) by volume.
6. Each sack of cones shall be identified with a cone identification tag properly filled out in indelible ink and attached to the outside of the burlap bag with string.
7. All seed cone lots delivered shall meet, or exceed, select tree seed certification standards.

D. Acceptable cone picking standards

1. All select trees will be climbed to harvest the cones unless another harvest method such as use of a "cherry picker", is approved by the Contractor's representative.
  2. Tree grippers and ladders shall be used in climbing up to the first green branch. The use of tree spurs is not an acceptable method of climbing.
  3. Cone bearing branches will not be deliberately broken or sheared, except where shearing of branch tips facilitates harvesting and the branch tips do not exceed 1/8 inches in diameter at the point of shearing. Branch tips with the following years conelets or buds will not be broken or sheared under any circumstances.
- E. Cones shall be collected only from the upper half of tree crowns, and shall be collected by the method specified in the individual project proposals. Potential methods include:

1. Tree climbing to pick ripe cones. Tall ladders or a "cherry picker" may be substituted for climbing.
  2. Collection of seed-bearing cones by picking them from recent green logging slash. Seed embryos must confirm to V. C. 1. & 2.
  3. Felling live cone-bearing trees.
  4. Picking cones from squirrel caches must confirm to 3. a. & b.
- F. Cones will be separated by habitat-type while being collected, processed, and stored. Habitat-type will be clearly marked on outside of all containers used to collect, transport, or store cones and seeds.
- G. Only cloth or mesh bags will be used for storage of cones.
1. At least 90% of the cones will be removed from the clean picking area of the tree described as follows:
    - a. That portion of the crown located within six feet of the trunk of the tree and below the one inch diameter of the trunk.
    - b. That portion of the crown located beyond six feet of the trunk of the tree where the cone bearing portion of the branch can be manually pulled to within 6 feet of the trunk with a branch hook.
  2. "Select" trees in which tree improvement seed samples are needed will be collected if there is a minimum of 25 collectable cones per tree. All other trees will be collected if there is a minimum collectable 1/2 bushel present. Select trees requiring tree improvement seed samples will be identified in the prework meeting.
  3. During collection from ponderosa pine select trees, a survey of following conelets will be conducted. Results of the survey will be written on the cone identification tag with the following conelet occurrence description.
    - NIL
    - LIGHT
    - MEDIUM
    - HEAVY
  4. Cones will be sacked in the tree and sacks of cones lowered to the ground by rope so as not to damage cones.

5. A piece of yellow flagging will be tied within 15 ft. of the top of collected trees.
6. So as not to damage bark, climbers shall not wear vibram or clear type soled boots.
7. Trees in other areas may be felled as specified in collecting area specifications.

#### H. Processing

Processing procedures will be done following procedures agreed to in writing by the Contractor's representative. These procedures shall include:

1. Cone storage and drying.
2. Seed extraction
3. Seed moisture testing and adjustment

#### I. Seed Packaging

1. Processed pine seed will be delivered to the tribal forestry in cloth bags that are clearly marked inside and out with the habitat-type and year the seed was collected for storage until they can be forwarded to a nursery facility.

#### J. Inspection of work

1. The Contractor's representative will inspect each tree for compliance with acceptable seed cone and cone picking standards. Trees not meeting or exceeding these standards will not be accepted as satisfactorily selected or picked.
2. In order to meet tree seed certification requirements, the Sub-Contractor shall inform the Contractor's representative daily as to his location in the field.
3. The Contractor's representative has the right to inspect the Sub-Contractor's processing facilities and procedures. Should the Contractor's representative find any equipment or procedure that in anyway could damage the select tree seed or not meet the required specifications the Contractor's representative may terminate that portion of the contract and process the seed else where.

#### K. PAYMENT FOR CONE COLLECTION

The Contractor shall pay the Sub-Contractor \$50.00 for each bushel of cones collected, inspected, and accepted, pursuant to the Tribal Forestry contracting policy (exhibit #4). Payment for trees climbed for cone picking will appraised and adjusted upward. Payment for cones processed will be added and adjusted upward.

#### V. STAND EXAM SPECIFICATION

- A. The Contractor shall provide written project proposals for each of the timber stands that are to be examined.
- B. The contractor shall return completed plot cards for each of the stands examined under this contract. Exhibit #2 is a sample of the plot card that will be used for this project.
- C. Specifications in the [REDACTED] Stand Examination Handbook will be used during all phases of the project.
- D. Each plot center will be marked with a piece of yellow flagging marked with the plot number.
- E. Plots will be completed when required to ensure usability or will not be accepted.
- F. Stand exam work will be bid out pursuant to the Tribal Forestry Contracting Policy (exhibit #4).
- G. [REDACTED] Tribal Forestry will develop acceptable measurement tolerances for stand exams. Tribal Forestry will perform a 5-10 % check cruise of sample plots. Payment will be based on a formula for percent quality of work.

#### VI. REFORESTATION

There are two phases to this project. Phase one is obtaining seedlings and transporting them from the nursery to Lame Deer. Phase two is planting the seedlings on designated sites.

##### A. PHASE ONE - PROVIDING SEEDLINGS

The contractor shall obtain local seedlings from selected nursery and transport them to Lame Deer, Montana.

1. Seedlings will be transported in a refrigerated vehicle and stored in a refrigerated unit at 32-36 degrees Fahrenheit.

2. All storage boxes will be returned to specified nursery after the planting project is complete.
3. Contractor will not accept seedlings without proper inspection. Seedlings that are not acceptable will be rejected.

B. PHASE TWO - PLANTING SPECIFICATIONS

1. The Contractor shall plant approximately 300 acres on sites specified by Contractor upon availability of seedlings.
2. The Contractor will supply planting bars, bags, and all other items, including seedlings. Tree planting will be restricted to the months of March and April with bareroot seedlings.
3. Care of seedlings
  - a. Trees shall be shaded from the sun and shielded from drying winds at all times.
  - b. Tree storage containers shall be stored in a manner to provide air circulation around each one.
  - c. Trees shall be kept damp at all times but not be allowed to stand or lay in water.
  - d. Tree storage containers shall not be removed from storage or opened, except as needed to fill individual tree planting containers.
  - e. Trees left over at the end of the day shall be returned to the tribal inspector. On the following day these left over trees shall be planted first.
  - f. Trees carried by planters shall be in planting bags and arranged for easy removal of one tree at a time. Roots shall be kept moist at all times.
  - g. Gasoline or oil shall not be carried with trees in planting containers, nor shall containers saturated with gas or oil be used to carry trees.
  - h. At planting spot, roots shall not be unnecessarily exposed to drying conditions. Trees shall not be removed from the planting container before a planting hole has been prepared.

- i. Trees shall be planted as received without further root or top pruning or culling. If these operations appear necessary, or if mold, dry roots, freezing, drying, or evidence of other injury is observed, the condition shall be promptly reported to the Contractor's representative. Care shall be taken to prevent damage to the terminal buds.
- j. Seedling storage bags or boxes shall not be sat on or thrown.
- k. Planters, unless authorized by the inspector, shall not take lunch breaks while they have seedlings in planters bags or trays.
- l. Trees wasted or damaged due to improper seedling handling or negligence by the Sub-Contractor, shall be charged to the Sub-Contractor at the rate of \$.70 per tree. This applies to seedlings returned in a damaged condition at the end of the day.
- m. Trees designated for a unit shall not be planted in another unit without the Tribal Inspectors approval.
- n. Planters shall dip tree roots of bare root seedlings into a water mix of Terra-sorb and wrap 50 trees to a bundle using kemtex towels. Bundles will be placed back into boxes for cool storage at 34 degrees. Enough trees should be dipped and wrapped the day before each planting day. Wrapped trees should not normally be stored longer than 48 hours. Dipping and wrapping shall be over seen by Tribal Forestry.
- o. If refrigerated tree storage is not available on a unit, trees will be stored in an insulated cooler unit in the bed of a pick-up or trailer on the planting site.
- p. The Contractor's representative will determine the maximum number of seedlings which may be carried in planting bags. Basis for this decision includes the following:
  - i. Number of trees that can easily be placed in and removed from the planters bag without injury to roots and stem buds.
  - ii. Number of trees which can be planted before critical heating or drying of the seedlings can occur.
- q. Contractor will record ambient temperature, soil temperature, windspeed and relative humidity at two hour intervals starting from the time of arrival at the planting site.



- r. All tree planting inspection cards, maps, notes, weather data and soil moisture readings will be kept in a plantation (unit) file until the plantation has been certified.

**\*\*4. Spacing**

- a. Trees shall be planted in spots distributed over area at intervals prescribed on planting sheets provided that, for individual trees, specified average spacing may be varied as much as 25 percent in any direction to find a suitable planting spot. Where an unplantable spot is encountered the planter shall disregard spacing limits and plant in closest suitable spot. However, average spacing shall be maintained for the unit and number of trees per acre shall not be materially increased or decreased by the method of selecting planting spots. No tree shall be planted closer than half the specified average distance from planted or suitable established trees.
- b. On units to be interplanted, existing trees that are healthy (non-chlorotic) and over 8 inches tall shall be used to meet spacing prescribed for planted trees.
- \*\*c.** Where roads pass through planting units, or where a road is the planting unit boundary, the line of trees nearest the road shall be planted no further than 4 feet from edge of road, road cut or roadfill. No trees shall be planted in unsatisfactory spots.

**5. Planting spot selection**

- a. A satisfactory planting spot is one in which a tree can be planted in accordance with planting specifications with a reasonable effort.
- b. Where possible, within requirement set forth in 6., planting spots shall be cleared and scalped where stumps, logs, dead brush, and terrain features provide partial protection from sun, wind, animals, loose debris, and other agents detrimental to tree survival. Areas such as rock, dense live brush, compacted road surfaces, swamps, and debris or humus over 4 inches deep are not considered satisfactory planting spots. A minimum of 3 attempts no less than 9 inches apart, shall be made at each planting spot. If an unplantable spot is encountered the planter will plant in nearest plantable spot available.
- c. Brush patches containing satisfactory planting spots as defined in section 5. a. & b., planting spot selection, shall be planted even

though this may require spreading stems aside or working around the stems. Landings, road cuts and fill banks shall be planted where satisfactory planting spots exist.

- d. Microsite selection specifications which will be determined for each planting unit and fully explained by Contractor's representative on the planting site (see exhibit 3). These will include, but not be limited to: Using logs and stumps for shade; using stumps to protect seedlings from traveling damage, planting against logs and stumps to reduce deer browse. On each plot seedlings will be evaluated for microsite selection. Planted seedlings demonstrating superior microsite selection will be tallied.
6. Clearing and scalping
- a. Scalping- planting spots shall be scalped of all dry soil, humus, debris, duff, ashes, snow, frost, and vegetative material including the crown of living plants so as to expose bare mineral soil. Size of scalps shall be as follows:
    - i. 1 1/2 foot diameter PIPO/FEid, PIPO/SYal/SYal, and PIPO/SYal/BEre habitat-types or on sites with no living vegetation.
    - ii. 1 foot diameter in pipo/prvi/prvi, pipo/prvi/shca/, pipo/prvi/vica, habitat types or on site with no living vegetation.
  - b. In areas where no living vegetation is present on the planting spot, scalps shall be made where dry duff or soil is present. Scalps will be made large enough to prevent dry soil or other material from falling into the planting hole.

Scalping depth shall be measured from ground surface. Maximum depth shall not exceed 4 inches. If vegetation is present all vegetation is to be cut or scalped (including roots) to moist, mineral soil. Roots larger than 1/2 inch in diameter shall render spot unplantable.

7. Preparing planting hole
- a. For bareroot stock the hole shall be broken out deep enough and wide enough to fully accommodate roots of the tree being planted. The planting hole shall be perpendicular to ground surface on flat ground and shall be located near the center of the scalped area. No debris shall be allowed in the hole. On steep slopes, road cuts and fills banks, planter shall cut slope so tree is planted on a horizontal

plane in the center of the scalped area. Slit planting is not acceptable.

8. Tree placement

- a. Trees shall be suspended near center of hole with roots in a natural arrangement at a depth that after filling, packing, and leveling the soil comes to a point at or up to 1/2 inch above the root collar. Planting hoe blade shall not be used to directly place tree roots into position. No portion of the roots shall be exposed. Only moist soil shall be placed against tree roots. Dry soil, ash, organic matter, large rocks, and other foreign materials shall be kept out of the planting hole.
- b. Roots shall not be doubled up (i.e. "J" or "L" shapes), twisted, tangled, or bunched.
- c. Stems of planted trees shall be upright and perpendicular to the ground.

9. Firmness

- a. Moist mineral soil shall be filled in and firmed around roots. Soil shall be filled in and firmed progressively so no loose soil or air pockets remain. Soil firming shall be such that trees shall not pull loose when the needles are grasped between the thumb and forefinger and jerked upward.
- b. Trees shall not be wedged against the back of the planting hole. The back portion of the planting hole shall be broken out with planting tool in order to allow soil to fall into the hole behind the tree before the front of the hole is filled in. Enough soil must be left between tree roots and the compaction tool to prevent damage to the tree or roots.

10. Mixture of species

- a. On units where more than one species is to be planted, trees shall be planted so as to insure uniform distribution of all species over the entire unit or each species shall be planted in separated portions of the unit as specified by the Contractor's representative.

11. Environmental conditions will be evaluated and recorded every two hours. Contractor's representative may stop planting when any of the following occur:

- a. Soil moisture is less than 15% for the entire depth of the planting hole.
- b. Soil is frozen more than 1/2 inches deep.
- c. Snow cover is greater than two inches.
- d. Air temperature is under 32 degrees or over 65 degrees.
- e. Wind velocity is more than 20 mph.  
(Follow exhibit #7 recommendations)
- f. Inspections fall below 90% - only be in effect for that day.

\*\* The number of trees which can be planted before critical heating or drying of the seedlings can occur. Trees carried by planters shall be in planting bags and arranged for easy removal of one tree at a time. Roots shall be kept moist at all times while in the planting bags. The limit of time trees can be kept in containers may be determined as follows: (See exhibit #6) On clear days, direct radiation will increase the heat lead on planting containers, and shorter holding periods maybe required by the COR.

## 12. Inspection and Acceptance (Sub-Contractors)

Contractor's representative shall inspect all work done by Sub-Contractors to ensure compliance with contract specifications. Contractor's representative shall be properly trained in reforestation, and will inspect planting to determine compliance with specifications and to provide basis for computing rate of payment. Inspections of tree condition, tree handling, site preparation, and planting procedure will be made while work is underway. Examination of individual trees and planting will be made so as to obtain a representative sample of work. Each contract pay item shall be inspected separately and inspection results shall not be averaged with those of other contract pay items.

Determination of acceptability of work performed shall be based on these inspections, which shall be considered conclusive, except as otherwise provided in sub-contracts.

The Sub-Contractor or their representatives are encouraged to observe inspections while they are underway.

## 13. Inspections - Care of Trees

- a. On going operations shall be inspected to assure compliance with section 1, care of seedlings.
- b. Trees that are handled in a manner inconsistent with these specifications shall be declared "wasted" trees, and may be cause for default termination.
- c. Wasted trees - trees which are lost, damaged, destroyed, or handled contrary to the specifications for care of trees. Trees planted in excess of maximum number of trees specified per acre will also constitute wasted trees.

#### 14. Inspection- Planting Quality

Planting procedures shall be observed and planted seedlings on representative sample plots shall be examined to assure and measure compliance with specifications. Specific items include:

- a. Above ground
  - i.* Spacing (11 x 11 ) (plus or minus 25% in any direction).
  - ii.* Planting spot selection (moist, shaded area if available).
  - iii.* Site preparation (diameter and clearance).
  - iv.* Tree location spot (near the center of the scalped area).
  - v.* Planting depth (soil level or at least 1 inch Above, root collar, no roots exposed).
  - vi.* Stem positions and damage (within 15 degrees of vertical; no injury).
  - vii.* Firmness.
- b. Below ground
  - i.* Planting hole orientation (within 15 degrees of vertical).
  - ii.* Root configuration and orientation (downward pointing, no "J" or "L" shapes).

- \*\*
- iii. Altered root length or damage (10 inch average length or roots).
  - iv. Foreign material in planting hole (material other than moist Mineral soil).
  - v. Soil firming around roots (air pockets, loose soil).

## 15. PAYMENT FOR TREE PLANTING

- a. The Contractor will pay the Sub-Contractor the current labor rate for satisfactory planting of seedlings. Acceptance will be determined by inspection of approximately one percent of the planted trees. Inspection for compliance will be made after planting by examinations of 1/30 acre plots by a qualified planting inspector. The inspector shall inspect each tree on the plot for above ground compliance. The inspector shall then dig three to four trees per plot to check for below ground compliance. A minimum of 1 plot per acre will be inspected and plots will be distributed over the entire acreage.
- b. Each plot will be evaluated on a basis of: (1) the total number of plantable spots, (2) the total number of planted trees (t.t.) in the plot, and (3) the number of satisfactorily planted trees (s.t.) in the plot. A missed spot will be considered an unsatisfactory tree. If, after four plots are taken, the % (s.t./t.t.) is still below 80% bareroot or 92% containerized. The inspector may stop further planting for the day. This shut down will only be in effect for the day that it is imposed. If Sub-Contractor is unable to perform at or near 80% bareroot or 92% containerized, contract will be subject to termination at the discretion of Contractor's representative.
- c. There will be a straight charge of \$1.00 per dropped tree. Tree "stashing", that is, purposely hidden trees, will be counted as unsatisfactorily planted trees and tallied on that days inspection. Sub-Contractor will be subject to dismissal for stashed trees.
- d. Payment for bareroot tree planting will be based on the following criteria:
  - i. Frequency of plot inspection

The inspector will mark on the ground a series of plots sufficient in number to yield at least the following:

<u>Acres in pay item</u>	<u>Minimum number of plots</u>
1 through 39	1 plot per acre (2%)
40 through 80	40 plot
81 and over	1 plot per 2 acres.

Plots will be distributed over the entire acreage.

ii. Plot installation / inspection within each plot shall be as follows:

1. Locate and mark the plot center on the ground.
2. Determine from table 1 (1) the number of planting spots for the plot based on the specified spacing. Example, for a 9 x 9 spacing the number of planting spots would equal 11. This is recorded in column 2 of the inspection sheet. Count the number of acceptable existing trees (if followed under specifications) and the number of unplantable spots; these are determined by ground conditions and acceptable existing trees within the specified spacing allowance. This figure is recorded in column 3. Subtract the number of unplantable spots from the number of planting spots and record in column 4. The second column (2) shows the maximum number of plantable spots allowed if no unplantables were on the plot.

TABLE 1

Specified spacing	Max. Planting spots On 1/30 acre plots	Maximum Number of trees 1/30 acre plots
10 x 10	(1) 14	(2) 17
11 x 11	12	14
12 x 12	10	12
13 x 13	9	11

3. Record the maximum number of allowable trees from Table 1 in column 5 of the inspection sheet. This is found in the 2nd column of Table 1 or Table 2.

Table 2

Plantable spots	Maximum number Of allowable trees
1	1
2	3
3	4
4	5
5	6
6	7
7	8
8	10
9	11
10	12
11	13
12	14
13	15
14	16
15	17
16	18
17	20
18	22
19	23
20	24

4. Record the # of trees planted on the plot. This is done by taking a 1/30 acre plot. The radius of the circular is 21.5 feet on a horizontal plane. This is not slope distance. Record in column 6.
5. Determine the # of wasted trees, if any, by subtracting column 5 from column 6, record in column 7. This entry shall be no smaller than zero. When wasted trees are found, and they are considered minor in nature and in no way indicate a trend that average spacing requirements are being exceeded, the COR will waive the wasted tree charge. In no case will a waiver be given if the total of the inspection



from column 6 "planted trees" exceeds the total of column 5 "maximum number of allowable trees" for any sub item. If inspection results for column 7 exceeds column 6, or the number of wasted trees is not minor and indicates a trend that average spacing requirements are being exceeded, wasted trees shall be calculated and a fee charged to the Sub-Contractor.

6. Inspect and determine the number of planted trees which fail to meet the above ground contract specifications. Subtract this number from column 5 or 6, which ever is smaller; record the difference in column 8 (satisfactory trees above ground.)
7. Determine and dig the following number of trees from those determined satisfactory above ground. Use the following table to determine the number of trees to be dug:

Number of satisfactory (Above ground) <u>Planted trees on plot</u>	Minimum number trees to be dug <u>1/30 the acre plots</u>
1	1
2-6	2
7-9	3
10-12	4
13 +	5

The trees to be dug will be the acceptable above ground trees closest to the plot center. Do not dig any seedlings that are unsatisfactory above ground. Record the number of trees to be dug in column 9 (# dug trees).

8. Record the number of trees meeting below-ground contract specifications in column 10 of the planting inspection sheet.
9. The planting quality shall be computed for each plot, unit and pay item by using the following formula:

Planting quality % =

$$\frac{\text{No. of sat. trees above ground}}{\text{No. of plantable spots}} \times \frac{\text{No. of sat. dug trees}}{\text{No. of dug trees}} \times 100$$

10. Record the planting quality percentage for each plot at the far right-hand side of the inspection sheet in column 13. Record the planting quality % for the unit and pay item (only when each has been completed by the Sub-Contractor), at the bottom of the planting sheet. Make sure the percentages are marked.

\* note: Average planting spots and maximum number of allowable trees shown in tables 1 and 2 have been rounded to the nearest whole number and it is mutually Understood and agreed that these figures will be used for determining planting quality even though they are not precisely correct from a mathematical stand point.

16. Contractor Inspection and Acceptance

The Contractor will sample each pay item to verify the quality of the Sub-Contractor's planting. Inspections will follow the previously outlined procedure to determine the contractor's planting quality percentage as calculated in section 9 shall be rounded to the nearest whole percent. Upon completion of each pay item, the inspector will turn in the inspection results to the COR, who will check all the mathematical results. The inspection results for the pay item will be made available, at the Contractor's request, within a maximum 3 working days after completion of planting by the Sub-Contractor.

a. Acceptance of Work Performed

The acceptance quality of the Sub-Contractors shall be considered 100 % acceptable if the pay items overall planting quality is 90 % or better for bareroot units and is 95% for containerized units. Planting quality of 80 to 90 % will be considered acceptable for the bareroot units; however, payment will be lowered to reflect the lower quality (see division d = payment).

b. Unsatisfactory Planting Conditions

- i. On-site- the inspector will install and calculate the planting % for each individual plot. Anytime the planting quality on three consecutive individual plots falls below 80 %, bareroot or 92% for containerized units, the planted area represented by those

plots shall be considered unsatisfactory / unacceptable. When this condition (3 consecutive poor plots) occurs the Sub-Contractor's crew will be required to immediately stop planting the remainder of the unit and replant the acreage where the poor inspection plots are located. This shall be designated by the inspector either verbally or physically. While the acreage is being replanted the inspector shall install new plots within this acreage. The new plots will sample only the newly planted trees if the Sub-Contractor identifies them. In the event the Sub-Contractor does not identify the newly planted trees, the new plots will sample both the original and newly planted trees. An acreage shall only be replanted once and the new plots will be used to calculate the pay items overall %. A second occurrence of three consecutive poor (80%) bareroot or 92% containerized inspection plots, either within the replant or elsewhere during the day, will be cause for immediate shutdown of the crew for the day.

- ii. Pay item- Over all planting quality that is below 80% bareroot or 92% containerized will be considered unsatisfactory / unacceptable and payment on that pay item will be forfeited. If the planting quality % for any item falls below the minimal acceptable %, the Sub-Contractor may be allowed to replant all or part of the pay item in order to achieve a higher planting quality %. Replanting will be subject to the decision of the COR and the availability of tree stock. Replanting must be requested in writing by the Sub-Contractor within 5 calendar days from receipt of notice of payment results. Replanting, if allowed, will be done a maximum of one item, and new inspection plots will be installed.

\* note: All trees planted on replant acreage will be considered "wasted trees" and the Sub-Contractor will be charged for those trees. Also, the amounts of stock are limited, so excessive numbers of replants may cause a loss of contract acreage for the Contractor.

- c. Reinspection upon Sub-Contractor's request

If the original overall inspection results are unacceptable to the Sub-Contractor, a second inspection may be requested. Requests for reinspection must be made in writing within 5 days after receipt of notice of the initial inspection results. The same inspection procedure will be used but new plots will be selected. The inspection pattern will be shifted so new inspection plots will not overlap previously inspected plots.

d. Payment for reinspection by Sub-Contractor

If the results of the reinspection rounded to the nearest whole % are within 5 % points of the previous inspection, the Sub-Contractor shall pay the actual cost of the reinspection. Reinspection costs shall include, but not limited to, the inspector's wages and travel costs incurred for inspection. Final payment on the pay item will be based on the Contractor's reinspection percentage.

Any inspection by the Contractor that falls below the minimal acceptable % level shall receive no payment. Payment will still be based on a % quality as outlined in division d.

e. Only trained tree planters will be used to complete this project.

f. The contractor shall provide a minimum of 4 hrs. of training for each individual or Sub-Contractor hired to plant trees under this project. Previous experience does not exempt any planter from this training.

\*\* g. Contractor shall provide technical expertise and instructional aide in accordance with special provisions section ii and iii of this contract.

h. Specific instructional topics shall include:

i. Proper seedling handling and storage.

ii. Purposes and scope of the tree planting project.

iii. Microsite selection

iv. Correct planting techniques.

v. Hands-on practice in the field.

vi. Safety

vii. Tribal policy as being a Sub-Contractor.

## VII. STOCKING SURVEY

### A. PROJECT SPECIFICATIONS

1. The Contractor shall provide written proposals identifying areas to be surveyed with plot locations and sizes.
2. Contractor shall perform survey using the following specifications:
  - a. Planted areas: 1/100 acre plots, adjust for slope, plot centers shall be flagged with plot numbers written on flagging, count pine seedlings in plot; denotes as follows: h= healthy, u= unhealthy, d= dead, n= natural.
  - b. Aerial seeding area: 1/250 Acre plots; count new seedlings in plot (less than 2 yrs. old); note if there are seedlings nearby that are not inside the plots; flag plot centers and number flags.
3. Sub-Contractors shall turn in completed plot cards to the Tribal Forest Administrator.
4. Payment to the Sub-Contractor shall be \$2.50 per acceptable plot.
5. Plantations / treated seed tree units will be surveyed at 1, 3, and 5 years. Plantations / treated seed tree units will be "certified" according to the specifications to previously defined. Minimum stocking for "certification" shall be 200 tpa in all habitat types except PIPO/PRvi/Vica. PIPO/PRvi/Vica H. T. shall have a minimum stocking of 250 TPA.

## VIII. TSI ROADS CLOSURE

### A. TECHNICAL SPECIFICATIONS

1. General instructions for road closures will ensure that all work adhere to standard rehabilitation and erosion prevention principles. Possible methods of closing roads may include: Metal gates, rocks, ditching, back slopes, road ripping, and eastern berms, or any combinations of these methods.
2. Each road closure project related to all timber sale and forest fire activities will be through a project proposal, developed and approved by the tribal forestry development program as "per" approved by the N.C. Natural Resource Board. Road closure projects will be developed from current U.S.F.S. 2400 manual specifications and Temporary Road Costs Manual. All work will be bid out with bids rejected if the come in 20% over or under the appraisal. All appraisal work will be kept in a

documentation file for 638 contract review. No bids shall be granted without a minimum of two qualified bidders or if only one qualified bidder bids and no other bidders are interested, project work may be negotiated with the qualified bidder starting from the appraisal price.

305. FURNISHING PERSONNEL

The Contractor shall furnish such personnel as are needed to complete the program(s) contracted to be performed. The Contractor will develop a pool of qualified Sub-Contractors locally through training and employment who can perform thinning, planting, etc. that meet contract specifications.

306. FURNISHING FACILITIES, EQUIPMENT, SUPPLIES AND SERVICES

Contract funds may be used to purchase, insure, repair, maintain or acquire the use of facilities, equipment, supplies and services needed to perform this project.

307. SUBMISSION OF REPORTS

The contractor shall furnish to the contracting officer through his authorized representative, the following written reports:

- I. An in-depth forest development program / activities report will be submitted to the [REDACTED] Agency annually. The report will include the following:
  - A. A summary of accomplishments achieved addressing the contract program functions.
  - B. A summary of problems encountered that may have prevented accomplishment of certain provisions in the contract.
  - C. Any deliverable or end product required in the contract.
  - D. Due date: November 1 of each year,
- II. Brief quarterly reports as follows:
  - A. A summary of accomplishments addressing each item provided in the contract program functions.
  - B. A summary of problems encountered that may have prevented accomplishment of certain provisions in the contract.

- C. Any deliverable or end product required in the contract.
  - D. Due date: April 15; July 15; October 15; the annual accomplishment report will be accepted for the fourth quarter.
- III. The Contractor will provide the bias forest development program, planned projects / activities. The report will include the following:
- A. A copy of the project proposals to be accomplished in the upcoming contract year for each item provided in the contract program functions.
  - B. A summary of corrective actions taken on problems encountered in the previous years accomplishment report. A summary of problems identified that could not be satisfactorily resolved.
  - C. Any deliverable or end product required in the previous years contract that will be accomplished in the upcoming contract..
  - D. Due date: September -1 of each year
- IV. Except as otherwise provided in these regulations and providing that the release of information does not constitute an unwarranted invasion of personal privacy. The Contractor shall make all reports and information concerning the contract available to the Indian people served as represented by the contractor providing such requests are reasonable and necessary.
- V. The Contractor and the Bureau of Indian Affairs may negotiate for the provision of other contract related reports, not previously identified or reported as requested by the area director, area education program administrator or secretary.

308. DISPOSITION OF EQUIPMENT

- I. All chainsaws and associated supplies purchased by the BIA Forest Development program shall be turned over to the Tribal Forest Development program by the Forest Manager.
- II. All planting equipment purchased by the BIA Forest Development Program shall become the property of Tribal Forestry.
- III. Other miscellaneous equipment purchased by the BIA Forest Development program shall become the property of Tribal Forestry.

- IV. The BIA will retain possession and responsibility for maintaining of the TD-8 caterpillar, road grader and warehouse housing BIA Fire Management. The BIA and Tribal Forestry Department shall continue to share the building housing Fire Management. Tribal Forestry has one equipment room with electricity, the costs are minor, the BIA will cover those monthly costs. Other uses of the building by Tribal Forestry do not incur monetary costs.
  
- V. The trailer housing Tribal Forestry shall become the property of [REDACTED] Tribe. The [REDACTED] Tribe will be responsible for the cost of utilities and building maintenance.



EXHIBIT NO. 4

TRIBAL FORESTRY CONTRACTING POLICY

I. PROJECT ADVERTISEMENT

Any forest development project that is to be bid out will be advertised for at least one week and bid notices will be posted on bulletin boards located at the Tribal Forestry Office and at the Tribal Building.

II. BIDDING POLICIES

The [REDACTED] Tribe reserves the right to refuse any or all bids.

All forest development project bids shall be submitted to the Tribal Forest Administrator before 5 p.m. on the closing date called for in the bid notice. Only written bids will be accepted. Bidding forms will be available at the Tribal Forestry Office during normal working hours.

Forest development contracts will be awarded to the lowest bidder, subject to these conditions:

In case of a tie, written supplemental bids must be submitted by 3 p.m., on the same day that bids are opened. If no new bids are received, the project block will go to the next lowest bidder, or be readvertised the next month if there are no other acceptable bidders.

Any individual with an uncompleted block shall be restricted to bidding on one new block, unless an exemption is granted by the Tribal Forest Administrator. An exemption will only be made in the following circumstances:

1. Any uncompleted blocks already awarded to the subcontractor are at least 50% complete and in compliance with contract specifications;
2. The subcontractor has not defaulted on a Tribal Forestry contract in the last year, and
3. The subcontractor must file a work schedule with the Tribal Forest Administrator which illustrates his or her ability to satisfactorily perform all contracts awarded.

If an individual's bid is the lowest bid on two or more blocks, the bidder will be required to choose which block will be accepted, unless an exemption has been granted. If the bidder has not made a choice, a contract will be written for the block with the largest acreage. In either case, the second bid or bids will become void, and the block will go to the next lowest bidder, or be readvertised if no other acceptable bids were received prior to bid closing.

Bids received from any person under 18 years of age, who is not an enrolled member of the [REDACTED] Tribe, or who has not attended the mandatory forest development training for all contractors, shall be rejected.

III. CONTRACT VALIDATION:

Prior to start of any contract work, subcontractors are required to attend a pre-contract briefing and must sign a Forest Development Project contract with the Tribal Forestry Program. The pre-contract briefing will be held by the Tribal Forestry Program. Subcontractors will be notified of the date and time. This pre-contract briefing will cover the contract terms and performance requirements. This may involve a field trip to the contracted site area with all parties involved. Any subcontractor not attending the pre-contract briefing or signing a contract on the date arranged by the Tribal Forestry Program shall lose any awarded contract, shall be ineligible to bid on any forest development projects for the following two bidding dates and the effected project area will be readvertised.

IV. EXCEPTIONS TO BIDDING AND STIPULATIONS:

All time constraints except the advertisement period may be waived for contracts which require work completion within restricted time periods. This would only apply to conditions which result from impending expiration of a BIA Forest Development Contract, or projects which must be completed within a specific set of seasonal conditions. Examples of the latter could include tree planting, thinning, insect control, and some fire rehabilitation projects.

Any time extension must be specifically approved by the Tribal Natural Resource Director.

V. GENERAL CONTRACT PROVISIONS:

The subcontractor shall:

1. Restrict all forest development contract work to the boundaries defined in the contract.
2. Comply with all provisions of the contract. Provisions will be included in all contracts, and may be in published guidelines. One example of which is the [REDACTED] Thinner's Handbook.
3. The subcontractor shall repair or replace all existing facilities and improvements that have been damaged or destroyed by the subcontractor's activities or employees. Existing facilities include but are not limited to, roads, fences, cattleguards, waterbars, and gates.
4. The subcontractor shall be responsible for maintaining a clean work site. All trash and broken machinery shall be removed at the end of each working day.

5. All motor vehicle traffic shall be confined to existing roads, or travel lanes designated by the Tribal Forest Administrator. The Tribal Forest Administrator may also close roads to vehicle travel if he determines that excess damage may result from the traffic.
6. Forest Development subcontractors shall carry fire tools during the months of June through October, and all chainsaws shall be equipped with approved spark arresters. "Fire tools" shall be defined as one shovel or other trenching tools for each member of the crew.
7. The subcontractor shall provide all necessary manpower, equipment and supplies to accomplish the awarded project. The Tribal Forest Administrator shall provide technical directions in the form of oral instructions and written guidelines.
8. All slash, posts, poles, firewood and other by-products of the contracted operation remains the property of the land owner and must not be removed by the subcontractor without an approved permit.
9. The subcontractors and all employees are bound by applicable federal and tribal regulations, relating to the conduct of the contracted operation and to responsibilities of the subcontractor.
10. Any heavy equipment used to accomplish forest development projects shall meet safety requirements specified for firefighting equipment, and be equipped with approved spark arresters.

## VI. DEFAULT

Any defaulted contract will result in the defaulting subcontractor being barred from bidding on any forest development contracts for one (1) full year, and the forfeiture of at least 30% of the total contract price. The amount forfeiture will be used to correct problems caused by the subcontractor, and to cover additional tribal administrative costs resulting from any default.

### Conditions of Default:

1. Failure to comply with contract specifications of the General Contract Provisions listed in Section V.
2. Failure to complete all contractual obligations within the specified contract period unless time extension has been requested in writing, and approved by the Tribal Natural Resource Director.
3. Determination that collusion between subcontractors has resulted in artificially high bids for forest development work.

4. Failure to start work on a contract prior to the effective date set forth in the contract document.
5. Failure to cooperate with the Tribal Forest Administrator in all phases of the contract and contracting procedures.

VII. CONTRACT PERIOD:

The subcontractor shall work at a rate that will result in the completion of all work within the time specified on the contract. It is estimated that some adverse weather and/or road conditions may prevent access to the work site or performance to specifications. When such conditions make work impossible and upon written request by the subcontractor, the Tribal Forest Administrator will authorize a total shut down, with no charge against contract time, until the Tribal Forest Administrator determines that work can resume.

VIII. CONTRACT PAYMENTS AND INSPECTIONS:

1. The Tribal Forestry Program will have five (5) working days to make preliminary inspections after receiving notice from the subcontractor that the contract work has been completed. The preliminary inspections will be made by a staff member of Tribal Forestry and must be made in the presence of the subcontractor.
2. No payments will be made unless all work is completed and 90% or more meets contract specifications as shown by the preliminary inspection. After passing the preliminary inspection, up to 70% of the total contract amount can be paid to the subcontractor. The remainder of the total contract price will be held until any necessary rework is finished to contract specifications, as spelled out in Section 5, below.
3. All contract payments through Tribal Forestry are by invoice, voucher and approved by the Tribal Forest Administrator, than submitted to the [REDACTED] Tribal Finance Office for payment.
4. All contract payments are made out and to be picked-up at the Tribal Forestry Office on Tuesday and Thursday only!
5. The Tribal Forestry Program shall hold a performance bond of at least 30% of the total contract price on all contract payments until the Tribal Forestry Program receives the final approved inspection report from the forest development forester. The subcontractor has the responsibility of notifying Tribal Forestry that all rework called for in the preliminary inspection has been completed to contract specifications. The forest development forester will have 10 days to make the final inspection and report the findings to the Tribal Forestry Program. To pass final inspection, all the work called for must be completed with at least 95% of the work up to contract

specifications. If a disapproved inspection comes back from the forest development forester, the subcontractor has 10 days to complete the work to contract specifications. The forest development forester will reinspect the block after the 10 day period has expired. If the subcontractor doesn't comply with contract specifications within this time limit, then the subcontractor forfeits the performance bond, with this performance bond going back toward rework completion by the Tribal Forestry Program.

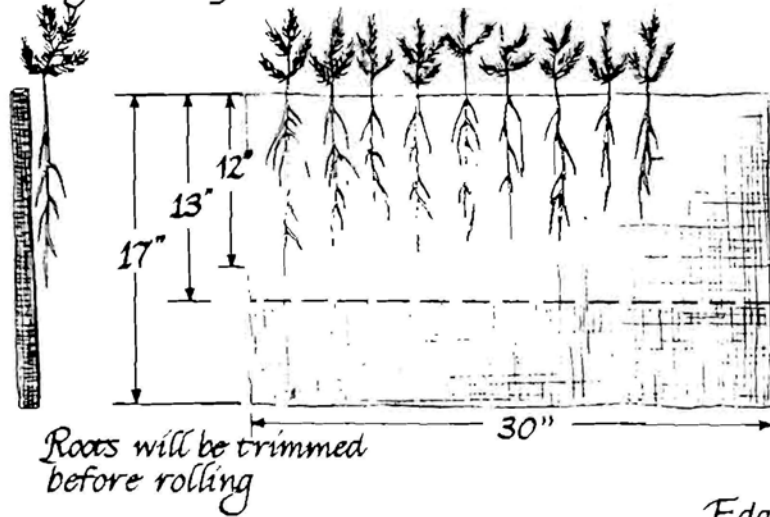
6. All income from contracts is taxable and at the end of each year subcontractors will receive a Internal Revenue Service Form 1099 from the [REDACTED] Tribe.
7. Tribal Forestry will be making periodic inspections on contracted projects. The subcontractor will be informed of all findings by inspection reports. If too many problems are being found, all further work will be shut down until the subcontractor has gone back and corrected the problem.

## Proper Steps for Wrapping Seedlings before Planting

### Step One (arrange trees)

Trees spread in thin layers,  
ground line slightly  
below edge of burlap

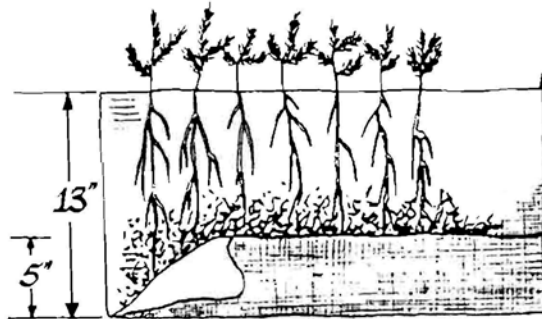
Keep the tangling of  
roots to a minimum



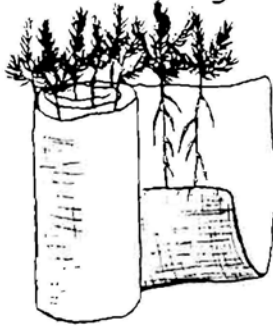
Maintain burlap as  
ravel free as possible  
to prevent entangle-  
ment of threads  
with roots

### Step Two (add moss, fold bottom over)

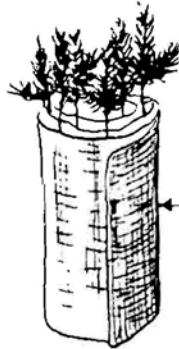
Edge of burlap left free  
of trees for covering  
outside trees in roll



### Step Three (roll up)

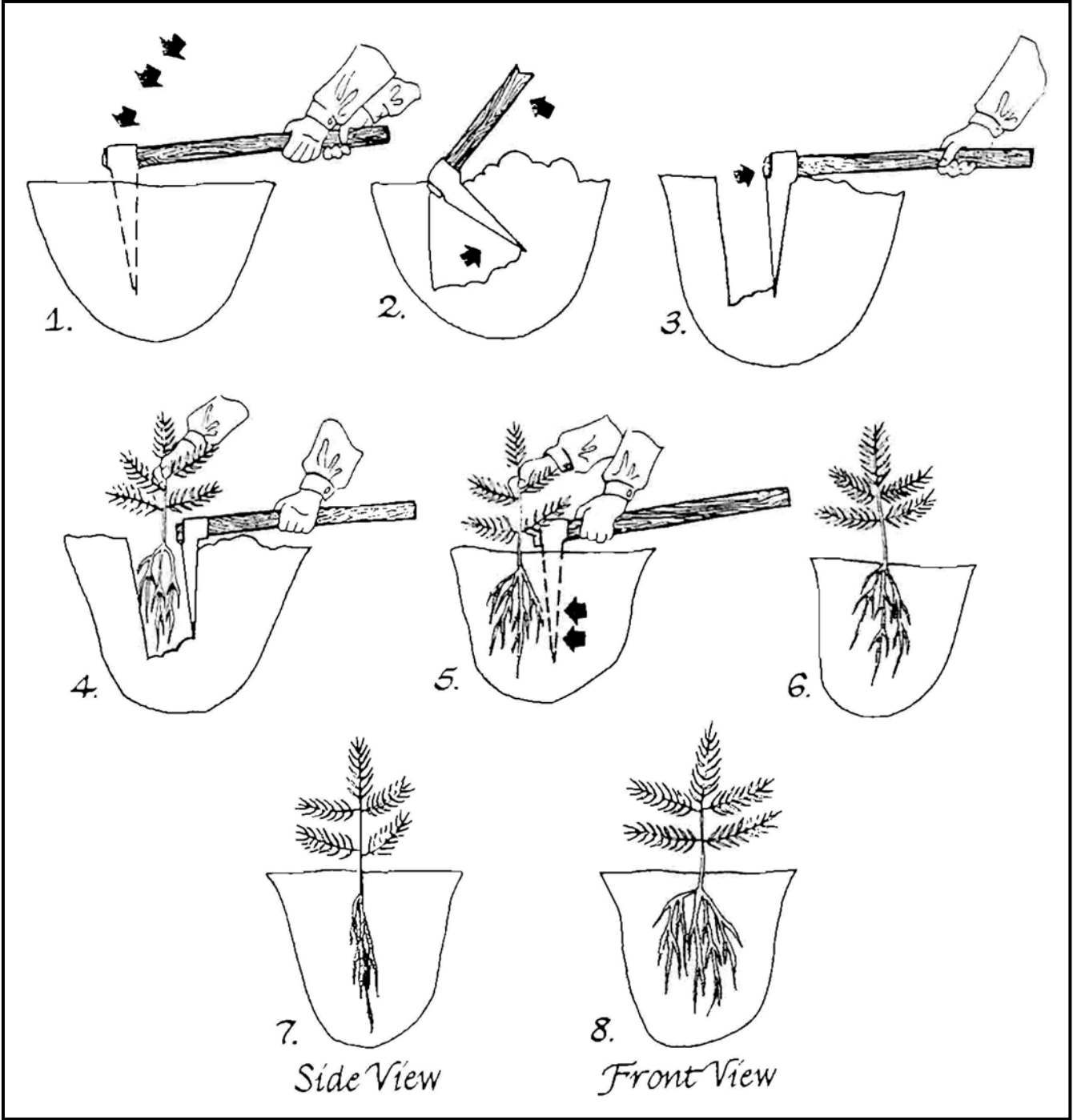


Roll firmly to  
insure that all  
roots remain in  
contact with  
wet burlap

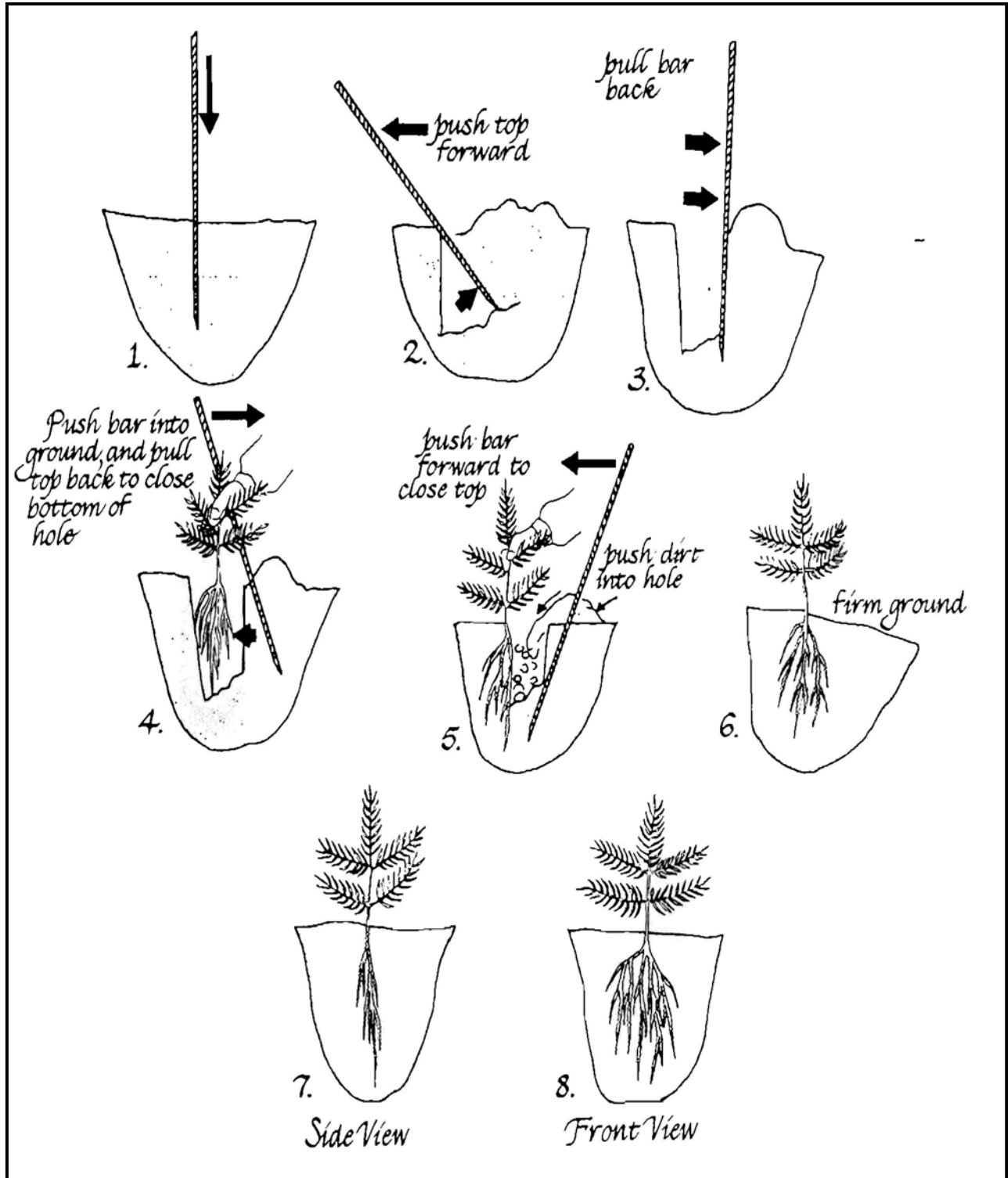


Use small nail  
to pin roll  
together

### Proper Hoedad Planting

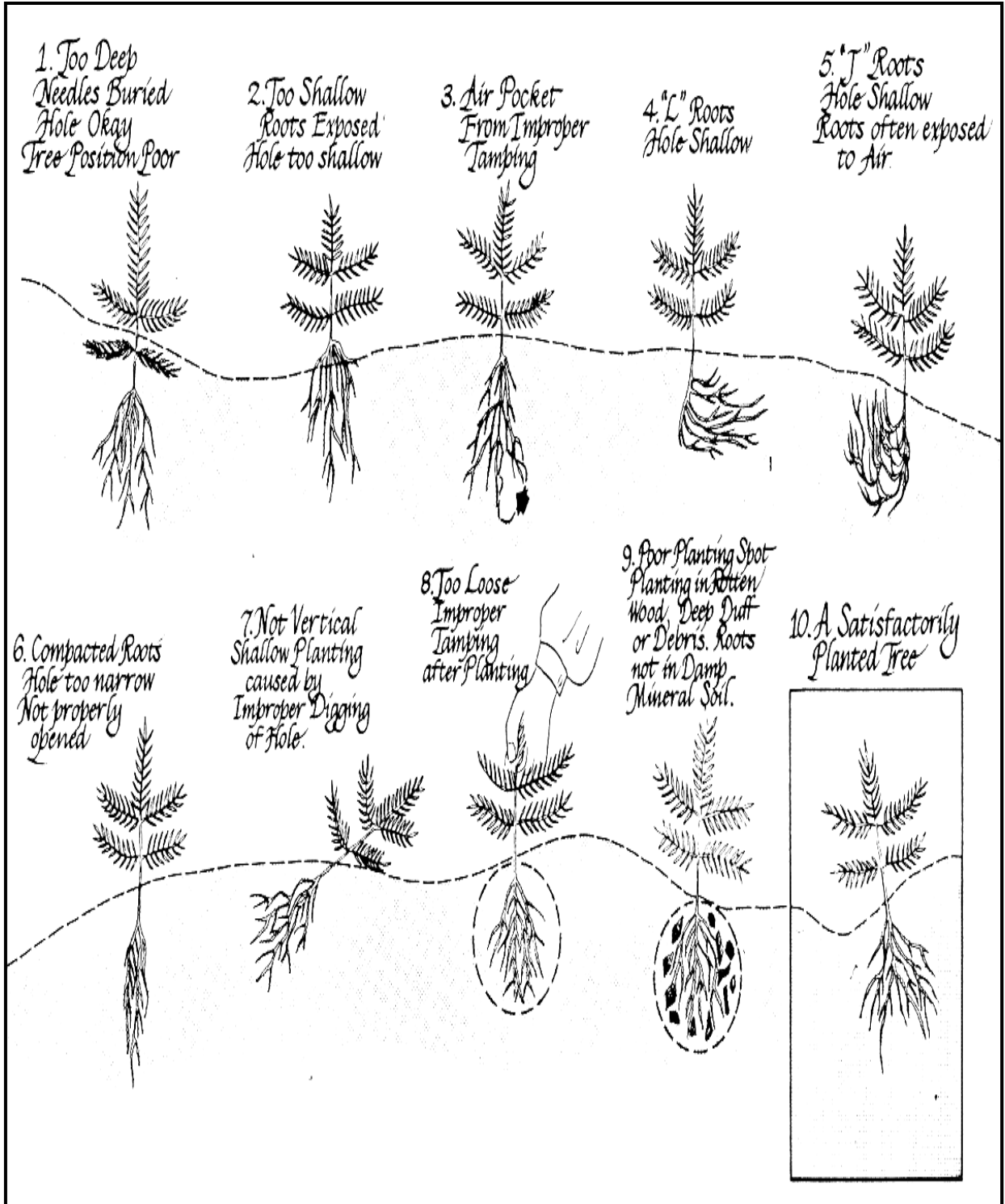


### Planting with a Planting Bar





### Proper Bare Root Planting



## WUI and Non-WUI Fuels Reduction Program Funding Use Criteria for Activity and Non-Activity Fuels

Activity and Non-Activity Fuels, and Fire Regime and Condition Class are those conditions that exist on site prior to the fuels treatment. Use the following table to determine which Funding Use table applies. Use the hyperlinks to assist you in navigating through each table and back.

Activity Table			
Fuel Category	Fire Regime <sup>1</sup>	Condition Class <sup>2</sup>	Table
<b>Activity Fuels<sup>3</sup></b>	I, III (excluding PJ, sagebrush & chaparral)	1	<a href="#">A</a>
		2, 3	<a href="#">B</a>
	IV, V	1	<a href="#">C</a>
		2,3	<a href="#">D</a>
<b>Non-Activity Fuels<sup>4</sup></b>	I, II, III	1	<a href="#">A</a>
		2, 3	<a href="#">E</a>
	IV, V	1	<a href="#">A</a>
		2,3	<a href="#">F</a>

Note: FR II includes southern rough ecosystems; FR III includes Pinyon and Juniper Habitat Types.

Use the following Funding Use tables to determine which Funding Category applies:

<sup>1</sup> Refer to definitions in the Wildland Fire Management 10-Year Implementation Plan Performance Measure Data Standards, January 28, 2003 and the Healthy Forest Restoration Act, PL 108-148, December 3, 2003.

<sup>2</sup> Refer to the Assistant Secretary's February 21, 2003 memorandum.

<sup>3</sup> Activity fuels are generated from silvicultural treatments i.e., regeneration cuts, intermediate cuts, sanitation, salvage, and stocking control. They result from commercial extraction of forest products and cultural treatments (such as thinning) to enhance site productivity for growing of commercial products. Regions may determine the period that activity fuels no longer present a hazard and the area on which they occur is eligible for Non-activity Fuel status. Ten years would be appropriate in most western states.

<sup>4</sup> Non-activity fuels are fuels not associated with activity listed above. They include natural fuels and fuels created from thinning exclusively for the purpose of ecosystem restoration or hazardous fuels reduction outside a timber sale or permit area.

Table A: Activity Fuels, FR I, FRCC 1; and Non-Activity Fuels, FR I, II, III, IV & V, FRCC 1	<i>If</i>	Go to
1.0 Treatment Type		
1.1	Treated with Rx Fire	<a href="#">Funding Category A</a>
1.2	Treated with Mechanical or Other Methods	<b>2.0</b>
2.0 Fuel Break		
2.1	Treatment is a <i>fuel break</i> <sup>5</sup> or <i>Home Ignition Zone (HIZ)</i> <sup>6</sup>	<a href="#">Funding Category A</a>
2.2	Treatment is not a fuel break or HIZ	<a href="#">Funding Category X</a>
<b>GO BACK TO ACTIVITY TABLE</b>		
<b>Assumptions: 1) activity fuels would not be generated from extraction of commercial forest products in FRI/CC1 and 2) no mechanical treatments are needed in FRI/CC1.</b>		

	<i>If</i>	Go to
1.0 Contract/Permit Sale		
1.1	Timber Contract or Permit used	<b>2.0</b>
1.2	Timber Contract or Permit not used	<b>3.0</b>
2.0 Stumpage		
2.1	Treatment results in positive stumpage	<a href="#">tegoroy X</a>
2.2	Treatment results in negative stumpage	<a href="#">Funding Category E</a>
3.0 Fuel Break		
3.1	Treatment is a fuel break or HIZ	<a href="#">tegoroy A</a>
3.2	Treatment is not a fuel break or HIZ	<b>4.0</b>
4.0 Treatment Type		
4.1	Treated with Rx Fire	<a href="#">tegoroy A</a>
4.2	Treated Mechanically	<a href="#">Funding Category B</a>

Table C: Activity Fuels, FR IV & V, FRCC 1	<i>If</i>	Go to
1.0 Contract/Permit Sale		
1.1	Timber Contract or Permit used	<b>2.0</b>

<sup>5</sup> Fuel Break is a natural or manmade change in fuel characteristics which affects fire behavior so that fires burning into them can be more readily controlled.

<sup>6</sup> The area surrounding a home---usually a 100' perimeter---in which fuels have been modified or removed to improve the home's chances of surviving a wildland fire.

1.2	Timber Contract or Permit not used	<b>3.0</b>
2.0 Stumpage		
2.1	Treatment results in positive stumpage	<a href="#">Funding Category X</a>
2.2	Treatment results in negative stumpage	<a href="#">Funding Category E</a>
3.0 Fuel Break		
3.1	Treatment is a fuel break or HIZ	<a href="#">Funding Category A</a>
3.1	Treatment is not a fuel break or HIZ	<a href="#">Funding Category X</a>
<b><a href="#">GO BACK TO ACTIVITY TABLE</a></b>		
Assumption: the fuels treatment is planned on commercially harvested, e.g., slashing or thinning.		

Table D: Activity Fuels, FR IV & V, FRCC 2 & 3	<i>If</i>	<b>Go to</b>
1.0 Contract/Permit Sale		
1.1	Timber Contract or Permit used	<b>2.0</b>
1.2	Timber Contract or Permit not used	<b>3.0</b>
2.0 Stumpage		
2.1	Treatment results in positive stumpage	<a href="#">Funding Category X</a>
2.2	Treatment results in negative stumpage	<a href="#">Funding Category E</a>
3.0 Fuel Break		
3.1	Treatment is a fuel break or HIZ	<a href="#">Funding Category A</a>
3.1	Treatment is not a fuel break or HIZ	<b>4.0</b>
4.0 Treatment Type		
4.1	Treated with Rx Fire	<a href="#">Funding Category C</a>
4.1	Treated with Mechanical or Other Methods	<a href="#">Funding Category D</a>
<b><a href="#">GO BACK TO ACTIVITY TABLE</a></b>		

Table E: Non-Activity Fuels, FR I, II & III, FRCC 2 & 3	<i>If</i>	<b>Go to</b>
1.0 Biomass Utilization		
1.1	Biomass utilization will occur	<b>2.0</b>
1.2	Biomass utilization will not occur	<a href="#">Funding Category A</a>
2.0 Stumpage		
2.1	Treatment results in positive return/stumpage	<a href="#">Funding Category X</a>
2.2	Treatment produces no or negative return/stumpage	<a href="#">Funding Category E</a>
<b><a href="#">GO BACK TO ACTIVITY TABLE</a></b>		

Table F: Non-Activity Fuels, FR IV & V, FRCC 2 & 3	<i>If</i>	<b>Go to</b>
<b>1.0 Biomass Utilization</b>		
1.1	Biomass utilization will occur	<b>2.0</b>
1.1	Biomass utilization will not occur	<b>3.0</b>
<b>2.0 Stumpage</b>		
2.1	Treatment results in positive stumpage	<a href="#">Funding Category X</a>
2.1	Treatment produces no or negative stumpage	<a href="#">Funding Category E</a>
<b>3.0 Fuel Break</b>		
3.1	Treatment is a fuel break or HIZ	<a href="#">Funding Category A</a>
3.1	Treatment is not a fuel break or HIZ	<b>4.0</b>
<b>4.0 Treatment Type</b>		
4.1	Treated with Rx Fire	<a href="#">Funding Category A</a>
4.1	Treated with Mechanical or Other Methods	<a href="#">Funding Negotiated</a>
<a href="#">GO BACK TO ACTIVITY TABLE</a>		

**Funding Table**

<b>Funding Category</b>	<b>Planning</b>	<b>Treatment</b>	<b>Monitoring</b>
<b>A</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>B</b>	<b>100</b>	<b>75</b>	<b>75</b>
<b>C</b>	<b>100</b>	<b>50</b>	<b>50</b>
<b>D</b>	<b>50</b>	<b>50</b>	<b>50</b>
<b>E</b>	Funding may be used to offset deficit sale or activity to a break-even point <sup>7</sup>		
<b>Negotiated</b>	Funding negotiated with Regional Offices <sup>8</sup>		
<b>X</b>	<b>None</b>	<b>None</b>	<b>None</b>
<a href="#">GO BACK TO ACTIVITY TABLE</a>			

The concept of partial funding applied in the table above is based on the potential mix of hazardous and activity fuel treatment objectives. Partial funding would apply to projects where forest development, forest management deductions, pest management, or other funds are available to meet other treatment objectives associated with commercial harvest activities. The percentage caps of 75 and 50 percent are based on intuition only. These percentages are used to encourage treatment in the more non-lethal fire regimes that are moderately to significantly altered from their natural state.

<sup>7</sup> Hazardous Fuels Funding may be used to offset “deficit sales” or treatment activity that produces a negative return. Only those funds required to bring the sale/activity to a break-even point will be approved. A valid timber cruise and appraisal that accounts for all products extracted by the contractor or permittee must be prepared.

<sup>8</sup> Negotiated Funding. Fuels Treatments in Fire Regimes IV and V outside the Activity Fuel Category are rare but do occur. The Regional Office will determine the appropriate level of funding based on circumstances surrounding the treatment.



Intertribal Nursery Council

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# Tribal Nursery Needs Assessment

Working Draft - Spring 2003

Tara Luna, Dawn Thomas, Thomas D Landis, Jeremy Pinto, compilers



USDA Forest Service  
State & Private Forestry: Reforestation, Nurseries, and Genetics Resources  
Southern Research Station



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### **Nursery Tribal Coordinator and Contact Person for Additional Information**

**Jeremy Pinto, Nursery Tribal Coordinator**, is a USDA Forest Service employee. His position is jointly funded through Cooperative Forestry and the Southern Research Station. He is currently working on his Master of Science degree at the University of Idaho in plant propagation. For more information about the Intertribal Nursery Council, upcoming meetings and plant propagation workshops, or to revise information in this assessment, please contact Jeremy.



## Executive Summary

Using funding provided by USDA Forest Service State and Private Forestry, Native Americans associated with the Intertribal Nursery Council were asked to provide information about their native plant production needs. The information was compiled into this needs assessment which forms the basis for some new and ongoing Forest Service outreach projects to Native Americans.

### Participation:

The Intertribal Nursery Council currently contains 138 listings, which comprise 77 different groups:

- 68 tribes,
- 7 tribal colleges,
- 2 non-profit native organizations.

The results of the Needs Assessment are summarized in the following table by Forest Service Region and the Northeastern Area. The following are some highlights:

### Training:

- 52 (86%) respondents have requested further nursery and restoration training.
- 30 (38%) expressed a desire for environmental education information and lesson plans for their schools.

### Nursery Status Or Desire for Native Plants Nurseries:

- 27 (35%) of the tribes and tribal colleges have existing nurseries. Only a few are large nurseries that focus on commercial conifer seedling production. The vast majority are small nurseries that vary from outdoor planting beds for basket materials to small prefabricated greenhouses. Many expressed a need for funds to improve their nurseries.
- 24 (31%) do not have a nursery and would like to start one. Most of the small, existing nurseries would like to expand the scope of their projects. Six tribes are awaiting approval from tribal council to start a nursery.

### Plant Propagation Protocols:

Most tribes requested native plant propagation literature for cultural, medicinal, or spiritual plants.



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 Index by USDA Forest Service Region/Area .....page 84

Tribe	Region /Area	State	Want Training		Nursery		Page
			Nursery	School	Have	Want	
Aleut Community of Saint Paul Island & Saint George	10	AK					4
Aroostook Band of Micmacs	9/NE	ME	●		●		5
Athabascan Nation Chickaloon Village	10	AK	●			●	6
Blackfeet Nation	1	MT	●	●	●+		7
Cabazon Indians of California	5	CA					8
Camp Verde Yavapai-Apache Tribe	3	AZ					9
CDK College	1	MT	●	●		●	10
Cherokee Nation of New Jersey	9/NE	NJ	●			●	11
Cheyenne-Arapaho	8	OK					12
Clifton - Choctaw Tribe, Inc.	8	LA			●		13
Coeur d'Alene Tribal Council	1	ID	●	●		●	14
Cold Springs Rancheria	5	CA	●	●		●	15
Colville Tribe	6	WA	●		●		16
Confederated Salish and Kootenai Tribes	1	MT	●		●+		17
Confederated Tribes of Siletz Indians	6	OR				●	18
Confederated Tribes of the Umatilla Indian Reservation	6	OR	●	●	●		19
Crownpoint Institute of Technology	3	NM	●	●		●	20
Duckwater Shoshone Tribe	4	NV	●		●+		21
Eklutna Native Village	10	AK	●			●	22
Fort Belknap Indian Reservation	1	MT	●	●	●+		23
Grand Traverse Band of Ottawa & Chippewa Indians	9/NE	MI	●			●	24
Haskell Indian College	2	KS	●	●		●	25
Hoopla Tribe	5	CA			●		26
Hopi Tribe	3	AZ	●	●		●	27
Huslia Village	10	AK	●				28
Iowa Tribe of Oklahoma	8	OK	●	●		●	29
Isleta Pueblo	3	NM					30
Jamestown S'Klallam Tribe	6	WA	●	●	●+		31
Kaibab Band of Paiute Indians	3	AZ					32
Kalispel Tribe	6	WA	●	●		●	33
Klamath Tribes	6	OR					34
Leech Lake Band of Ojibwe	9/NE	MN	●			●	35
Little Traverse Bay Bands of Odawa Indians	9/NE	MI	●			●	36
Makah Nation	6	WA	●	●	●+		37
Mechoopda Maidu Indian Tribe of Chico Rancheria	5	CA	●			●	38
Menominee Tribal Enterprises	9/NE	WI	●				39
Mescalero Apache Tribe	3	NM	●		●		40
Middletown Rancheria	5	CA	●	●		●	41
Morongo Band	5	CA					42
Native American Food Systems Project	6	WA	●				43
Navajo Nation	3	AZ/NM	●		●	●	44
Nez Perce Tribe	1	ID	●	●		●	45
Nisqually Tribe	6	WA	●	●		●	46
Nooksak Indian Tribe	6	WA	●				47

+ = Expressed need for funds to improve existing nursery



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Tribe	Region /Area	State	Want Training		Nursery		Page
			Nursery	School	Have	Want	
Ogallala Lakota College	2	SD	●	●	● +		48
Pechanga Band of Luiseno Indians	5	CA	●	●	● +		49
Pedro Bay Village	10	AK					50
Pee Dee Indian Tribe	8	SC					51
Pelathe Community Resource Center	2	KS					52
Prairie Band Potawatami Nation	2	KS	●	●	● +		53
Pueblo of San Juan	3	NM	●			●	54
Pyramid Lake Paiute Tribe	4	NV	●	●		●	55
Qagan Tayagungin Tribe	10	AK					56
Redlake Band of Chippewa	9/NE	MN	●		●		57
Redwood Valley Reservation	5	CA	●		● +		58
Robinson Rancheria	5	CA	●	●	● +		59
Round Valley Indian Tribes	5	CA	●	●		●	60
Santa Ana Pueblo	3	NM	●	●	● +		61
Scotts Valley Band of Pomo Indians	5	CA	●	●		●	62
Sherwood Valley Rancheria	5	CA	●	●		●	63
Si Tanka University	2	SD	●	●		●	64
Skokomish Tribe	6	WA					65
Southern Cherokee Nation	8	OK	●	●		●	66
Southern Ute Tribe	2	CO			●		67
Southwestern Indian Polytechnic Institute	3	NM			●		68
St. Regis Band of Mohawk Indians	9/NE	NY	●	●		●	69
Stillaguamish Tribe	6	WA			●		70
Susanville Indian Rancheria	5	CA					71
SW Community College	2	SD	●	●	● +		72
Table Bluff Reservation - Wiyot Tribe	5	CA	●	●		●	73
Temecula Band of Luiseno Indians	5	CA	●		● +		74
Timbisha Shoshone	5	CA					75
Tuolumne Me-Wuk Tribe	5	CA	●		● +		76
Turtle Mountain Band of Chippewa	2	ND					77
Upper Sioux Community	9/NE	MN	●				78
Washoe Tribe of Nevada and California	4	NV/CA					79
White Mountain and Cibecue Apache	3	AZ			●		80

+ = Expressed need for funds to improve existing nursery

**Index by State**

State	Tribe	Region /Area	Want Training		Nursery		Page
			Nursery	School	Have	Want	
AK	Aleut Community of Saint Paul Island & Saint George	10					4
	Athabascan Nation Chickaloon Village	10	●			●	6
	Eklutna Native Village	10	●			●	22
	Huslia Village	10	●				28
	Pedro Bay Village	10					50
	Qagan Tayagungin Tribe	10					56
AZ	Camp Verde Yavapai-Apache Tribe	3					9
	Hopi Tribe	3	●	●		●	27
	Kaibab Band of Paiute Indians	3					32
	White Mountain and Cibecue Apache	3			●		80
AZ/NM	Navajo Nation	3	●		●	●	44
CA	Cabazon Indians of California	5					8
	Cold Springs Rancheria	5	●	●		●	15
	Hoopa Tribe	5			●		26
	Mechoopda Maidu Indian Tribe of Chico Rancheria	5	●			●	38
	Middletown Rancheria	5	●	●		●	41
	Morongo Band	5					42
	Pechanga Band of Luiseno Indians	5	●	●	●+		49
	Redwood Valley Reservation	5	●		●+		58
	Robinson Rancheria	5	●	●	●+		59
	Round Valley Indian Tribes	5	●	●		●	60
	Scotts Valley Band of Pomo Indians	5	●	●		●	62
	Sherwood Valley Rancheria	5	●	●		●	63
	Susanville Indian Rancheria	5					71
	Table Bluff Reservation - Wiyot Tribe	5	●	●		●	73
	Temecula Band of Luiseno Indians	5	●		●+		74
	Timbisha Shoshone	5					75
	Tuolumne Me-Wuk Tribe	5	●		●+		76
	CO	Southern Ute Tribe	2			●	
ID	Coeur d'Alene Tribal Council	1	●	●		●	14
	Nez Perce Tribe	1	●	●		●	45
KS	Haskell Indian College	2	●	●		●	25
	Pelathe Community Resource Center	2					52
	Prairie Band Potawatami Nation	2	●	●	●+		53
LA	Clifton - Choctaw Tribe, Inc.	8			●		13
ME	Aroostook Band of Micmacs	9/NE	●		●		5
MI	Grand Traverse Band of Ottawa & Chippewa Indians	9/NE	●			●	24
	Little Traverse Bay Bands of Odawa Indians	9/NE	●			●	36
MN	Leech Lake Band of Ojibwe	9/NE	●			●	35
	Redlake Band of Chippewa	9/NE	●		●		57
	Upper Sioux Community	9/NE	●				78
MT	Blackfeet Nation	1	●	●	●+		7
	CDK College	1	●	●		●	10
	Confederated Salish and Kootenai Tribes	1	●		●+		17
	Fort Belknap Indian Reservation	1	●	●	●+		23

+ = Expressed need for funds to improve existing nursery





**Index by State**

State	Tribe	Region /Area	Want Training		Nursery		Page
			Nursery	School	Have	Want	
<b>ND</b>	Turtle Mountain Band of Chippewa	2					77
<b>NJ</b>	Cherokee Nation of New Jersey	9/NE	●			●	11
<b>NM</b>	Crownpoint Institute of Technology	3	●	●		●	20
	Isleta Pueblo	3					30
	Mescalero Apache Tribe	3	●		●		40
	Pueblo of San Juan	3	●			●	54
	Santa Ana Pueblo	3	●	●	●+		61
	Southwestern Indian Polytechnic Institute	3			●		68
<b>NV</b>	Duckwater Shoshone Tribe	4	●		●+		21
	Pyramid Lake Paiute Tribe	4	●	●		●	55
<b>NV/CA</b>	Washoe Tribe of Nevada and California	4					79
<b>NY</b>	St. Regis Band of Mohawk Indians	9/NE	●	●		●	69
<b>OK</b>	Cheyenne-Arapaho	8					12
	Iowa Tribe of Oklahoma	8	●	●		●	29
	Southern Cherokee Nation	8	●	●		●	66
<b>OR</b>	Confederated Tribes of Siletz Indians	6				●	18
	Confederated Tribes of the Umatilla Indian Reservation	6	●	●	●		19
	Klamath Tribes	6					34
<b>SC</b>	Pee Dee Indian Tribe	8					51
<b>SD</b>	Ogallala Lakota College	2	●	●	●+		48
	Si Tanka University	2	●	●		●	64
	SW Community College	2	●	●	●+		72
<b>WA</b>	Colville Tribe	6	●		●		16
	Jamestown S'Klallam Tribe	6	●	●	●+		31
	Kalispell Tribe	6	●	●		●	33
	Makah Nation	6	●	●	●+		37
	Native American Food Systems Project	6	●				43
	Nisqually Tribe	6	●	●		●	46
	Nooksak Indian Tribe	6	●				47
	Skokomish Tribe	6					65
	Stillaguamish Tribe	6			●		70
<b>WI</b>	Menominee Tribal Enterprises	9/NE	●				39

+ = Expressed need for funds to improve existing nursery

ECONOMIC GUIDES  
FOR  
MANAGING FOREST RESOURCES  
1991 Update

United States Department of the Interior  
Bureau of Indian Affairs  
Division of Forestry  
Washington, D.C.

Prepared by  
Branch of Forest Resources Planning  
Portland, Oregon  
October 1991

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Economic Guide No. 1: How to deal with inflation  
(in economic analysis of forest management activities)

When conducting economic analyses of proposed forest management activities, keep inflation out of the:

- 1) projected price
- 2) projected costs
- 3) discount rate

By following this approach, and using consistent assumptions with all of the proposed activities that are competing for funding, the economic analysis will be greatly simplified without a loss of credibility. This will be the case, since only real changes in value (those above inflation) will be included in the future costs and benefits, and of equal importance, the analysis will be conducted with a real discount rate (market rate minus annual inflation rate). Refer to “Economic Guide No. 2” for help on how to select an appropriate discount rate.

Economic Guide No. 2: How to select the proper discount rate

(If funds are “in the bank”, i.e. not borrowed)

Use a 4% real discount rate.

A real discount rate (market rate minus annual inflation rate) is used to exclude inflation from the analysis (refer to “Economic Guide No. 1”). A four percent real discount rate is appropriate for economic analysis of forest management activities, because it approximates the average real long-term return on corporate capital before taxes according to Paul Boltz, Senior Economist of the Federal Reserve Board. Refer to Clark Row, et al., June 1981, J. of Forestry article.

(If dollars are borrowed)

Use a real discount rate that is equivalent to the interest rate the bank would charge the landowner to borrow the money minus the current annual rate of inflation.



Economic Guide No. 3: How to estimate future stumpage prices

Numerous methods are available for estimating future stumpage prices. Each have some positive and negative aspects that depend on the circumstances in which they are used. None is universally recognized as “the best” method. Three are described here that are acceptable for use in benefit/cost analyses for ranking forest management alternatives. The availability of adequate local data will be a major determinant in which method is used.

METHOD NO. 1. Local 5 to 10 Year Average.

- 1) Obtain local stumpage price data (Agency or local market)
- 2) Express data in real dollars (see step 2 of next method)
- 3) Calculate a 5 or 10-year average
- 4) Project average price forward with a 0, 1, or 2-percent annual real rate of increase

METHOD NO. 2. Local Stumpage Value Trend Analysis..

1. Obtain (from Agency or local/regional market data) the annual average stumpage values (\$/MBF) for a major species (or group of similar species) for the period 1950 to present. Record (as shown for the Bureauwide sample data) in Column 2 of Table 3-1.
2. Convert these stumpage values from current (nominal) to constant (real) dollars to adjust for inflation, and record the constant-dollar values (as shown for the sample data in Column 3 of the Table 3-1). Use the implicit GNP price deflator index values<sup>1</sup> (listed in Table 3-2, Column 2)<sup>2</sup> and the following formula<sup>3</sup>, to calculate the constant dollar values.

$$\text{Real Dollar Value} = \frac{\text{Base Year Index Value}}{\text{Index Value for Year Converted}} \times \text{Dollar Value}$$

Column 3 of Table 3-2 shows the price conversion factor portion (base year index value divided by the index value for year converted) of the formula. When the stumpage price for a given year is multiplied by the price conversion factor for that year, the stumpage value is converted to constant (base year) dollars.

3. Conduct a linear regression analysis of the calendar year data (Column 1, Table 3-1) and the constant dollar (real) average Stumpage values (Column 3, Table 3-1), to determine the “A” and “B” values (slope and Y intercept) for the stumpage value trend equation:

$$\text{Stumpage value} = A (\text{calendar year of harvest}) + B.$$

The “A” and “B” values for the Bureauwide sample data (Table 3-1) are A: = 2.3455, and B = -4,513.56.

4. Estimate the stumpage value for a future year by inserting that calendar year in the equation with the “A” and “B” coefficients determined in step 3. Values obtained with this equation make up the real stumpage value trend line for the average annual stumpage prices for 1950 to present, expressed in constant dollars. Sample Bureauwide data from Table 3-1, and its associated trend line, calculated with the equation, stumpage value = 2.3455 (calendar year of harvest) – 4513.56, are shown on the graph on page 7 (the page following Table 3-2).

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1 Source: Economic Report to the President (published annually in January by the U. S. Government Printing Office).  
 2 Or use an alternative index, such as CPI (Consumer Price Index).  
 3 USDA Forest Service Economic and Social Analysis Handbook (FSH 1909.17), Section 13.5.

### METHOD NO. 3 Bureauwide Stumpage Value Trend Analysis

If data is lacking at the local level, methods No. 1 and 2 will not be applicable. One approach would be to substitute regional data for local data in either method 1 or 2. A simpler way would be to use the Bureauwide stumpage trend line and equation (that was calculated with the Bureauwide sample data in Method No. 2 above) to estimate future stumpage prices for your analysis. This is an acceptable approach when your objective is to rank forest management alternatives for funding at the local level.

Economic Guide No. 3

STUMPAGE VALUE TREND ANALYSIS PROCEDURE

Table 3-1. Bureauwide Average Stumpage Values (\$ per MBF)

(1) Year	(2) current	(3) 1990 \$
1950	8.81	48.46
1951	10.74	56.28
1952	12.71	65.58
1953	13.74	69.80
1954	14.11	70.55
1955	15.50	74.87
1956	19.50	91.26
1957	17.11	77.34
1958	17.89	79.25
1959	17.64	76.20
1960	17.40	74.12
1961	13.54	57.00
1962	13.23	54.51
1963	13.63	55.34
1964	14.70	58.80
1965	14.52	56.28
1966	17.53	65.91
1967	18.32	67.05
1968	24.93	87.01
1969	33.26	109.76
1970	33.17	103.82
1971	37.58	111.24
1972	47.39	134.11
1973	76.31	202.98
1974	78.93	192.59
1975	61.83	137.26
1976	84.60	175.97
1977	97.89	190.89
1978	114.86	209.05
1979	143.15	239.06
1980	120.97	185.08
1981	107.13	149.98
1982	75.98	99.53
1983	93.66	118.95
1984	88.69	108.20
1985	74.45	88.60
1986	86.65	100.51
1987	94.05	105.36
1988	101.56	109.68
1989	108.03	112.35
1990	119.95	119.95

## Economic Guide No. 3

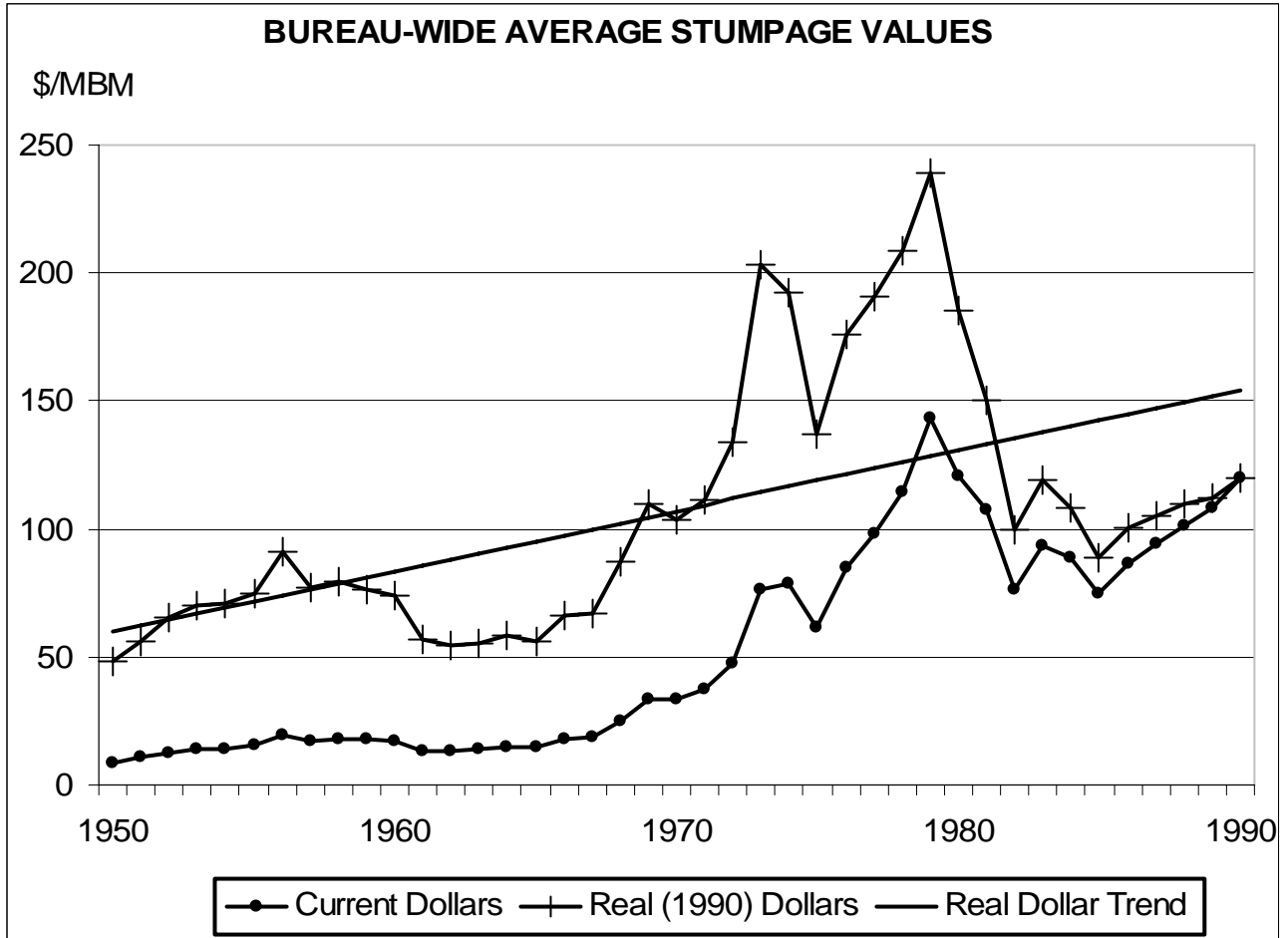
STUMPAGE VALUE TREND ANALYSIS PROCEDURE

Table 3-2. GNP Implicit Price Deflator Index and Price Conversion Factors

Year	GNP Implicit Price Deflator Index	Price Conversion Factors (Base Year Index/ Index for Year Converted)
1950	23.9	131.5 / 23.9 = 5.50
1951	25.1	131.5 / 25.1 = 5.24
1952	25.5	131.5 / 25.5 = 5.16
1953	25.9	131.5 / 25.9 = 5.08
1954	26.3	131.5 / 26.3 = 5.00
1955	27.2	131.5 / 27.2 = 4.83
1956	28.1	131.5 / 28.1 = 4.68
1957	29.1	131.5 / 29.1 = 4.52
1958	29.7	131.5 / 29.7 = 4.43
1959	30.4	131.5 / 30.4 = 4.32
1960	30.9	131.5 / 30.9 = 4.26
1961	31.2	131.5 / 31.2 = 4.21
1962	31.9	131.5 / 31.9 = 4.12
1963	32.4	131.5 / 32.4 = 4.06
1964	32.9	131.5 / 32.9 = 4.00
1965	33.8	131.5 / 33.8 = 3.89
1966	35.0	131.5 / 35.0 = 3.76
1967	35.9	131.5 / 35.9 = 3.66
1968	37.7	131.5 / 37.7 = 3.49
1969	39.8	131.5 / 39.8 = 3.30
1970	42.0	131.5 / 42.0 = 3.13
1971	44.4	131.5 / 44.4 = 2.96
1972	46.5	131.5 / 46.5 = 2.83
1973	49.5	131.5 / 49.5 = 2.66
1974	54.0	131.5 / 54.0 = 2.44
1975	59.3	131.5 / 59.3 = 2.22
1976	63.1	131.5 / 63.1 = 2.08
1977	67.3	131.5 / 67.3 = 1.95
1978	72.2	131.5 / 72.2 = 1.82
1979	78.6	131.5 / 78.6 = 1.67
1980	85.7	131.5 / 85.7 = 1.53
1981	94.0	131.5 / 94.0 = 1.40
1982	100.0	131.5 / 100.0 = 1.31
1983	103.9	131.5 / 103.9 = 1.27
1984	107.7	131.5 / 107.7 = 1.22
1985	110.9	131.5 / 110.9 = 1.19
1986	113.8	131.5 / 113.8 = 1.16
1987	117.4	131.5 / 117.4 = 1.12
1988	121.3	131.5 / 121.3 = 1.08
1989	126.3	131.5 / 126.3 = 1.04
1990	131.8	131.5 / 131.5 = 1.00

Economic Guide No. 3

STUMPAGE VALUE TREND ANALYSIS PROCEDURE



Real Dollar trend line values were calculated with the formula: Value = 2.3455 (calendar year of harvest) + (-4513.56)

#### Economic Guide No. 4: How to conduct a Benefit/Cost Analysis

A benefit/cost analysis is a marginal analysis. That means it deals with only the net benefits and costs associated with a proposed management activity.

Each benefit/cost analysis should include a measure of economic efficiency and equity. Efficiency may be calculated by the benefit/cost ratio. Equity refers to economic impacts, including the social effects and the nonmarket benefits, that are represented by changes in employment, income, and personal use benefits.

To promote consistency, benefit/cost analyses of forest management practices should use a format similar to the one outlined below.

- (1) Describe the untreated stand condition.
- (2) Describe the planned treatment and objective.
- (3) For both the untreated and treated stands:
  - (a) Estimate the timing of the harvest(s). If even-aged management is assumed, estimate the time of the final harvest and commercial thinnings. If uneven-aged management is assumed, estimate the timing and number of cutting cycles. This time period represents the investment period and should be approximately the same for all forest management projects that will compete for funding.
  - (b) Estimate the volume of the harvest(s). Use consistent data assumptions with the alternative projects.
  - (c) Estimate the value of the harvest by multiplying the estimated volumes by the estimated stumpage prices for the years of the planned harvests. Refer to “Economic Guide No. 3” for a description of three methods for estimating future stumpage prices. All are acceptable for use here, however, the availability of adequate local data will be a major factor in which method you use. Once a method is selected, be consistent, use it for all projects that are competing for funding.
  - (d) Calculate the present value of the projected harvests. Present value = future value divided by  $(1.0 + \text{discount rate})^n$  raised to the n power, where n = years between base and future year. Use a 4 percent real discount rate (except when funds are borrowed). Refer to “Economic Guide No. 2” for a discussion of discount rates.
- (4) Determine the present value of the benefits of the proposed project by deducting the present value of the untreated stand harvests from the present value of the treated stand harvests. The result is the numerator of the benefit/cost ratio.
- (5) Estimate the cost and timing of the treatment.
- (6) Calculate the present value of the treatment costs. Use the same discount rate used in (3)(d) above. The result is the denominator of the benefit/cost ratio.
- (7) Compute the benefit/cost ratio by dividing the present value of the project benefits, calculated in (4) above, by the present value of the project costs, calculated in (6) above.
- (8) Identify the important economic impacts (nonmarket benefits and social effects) of each project. Include the employment and wages of the treatment crew. Estimate the changes in future employment, income distribution and community welfare associated with the anticipated increase in future timber harvest (i.e. the “multiplier effect”, expressed in jobs and income per million board feet). And if an immediate increase in timber harvest is planned, based on expected increases in growth (i.e., the allowable cut effect), include the expected immediate increases in employment and income associated with it.
- (9) Rank the forest management projects by their benefit/cost ratios and their economic impacts identified in (8) above.
- (10) Assign funding priorities to the projects according to their rankings in (9).

Economic Guide No. 4A: Example of a Benefit/Cost Analysis – Even-aged Management

1. Present stand condition: Unstocked
2. Planned treatments:
  - plant 450 stems per acre of ponderosa pine in 1991.
  - Precommercial thin at age 15
3. Value estimate: Untreated stand
  - a. Timing: 80 years
  - b. Volume (harvested): 0 MBF
  - c. Value of harvest: \$0
  - d. Present value (PV) of harvest: \$0
4. Value estimate: Treated stand
  - a. Timing: one rotation (80 years)
  - b. Volume: 20 MBF/Acre (harvest in 2071)
  - c. Value: \$6,879/Acre (calculation below)

Stumpage price = A (calendar year of harvest) + B  
 = A (2071) + B  
 = 2.3455 (2071) + (-4513.56)  
 = \$343.97/MBF<sup>1</sup>  
 Value = Volume/acre X stumpage price  
 = 20 MBF/acre X \$343.97  
 = \$6,879.40/acre  
 PV of treated stand = \$6,879/(1.04)<sup>80</sup> = \$298.44/acre<sup>2</sup>
5. Treatment costs:
  - Planting cost at year 0: \$150.00/acre<sup>3</sup>
  - Stocking control at year 15: \$75.00/acre
  - PV of planting cost = \$150.00/acre
  - PV of stocking control - \$75.00/(1.04)<sup>15</sup> = \$41.64/acre
6. Benefit/cost ratio: 1.55 (calculation follows)
 
$$\text{B/C Ratio} = \frac{\text{PV of treated stand} - \text{PV of untreated stand}}{\text{PV of treatment costs}}$$

B/C Ratio = \$298.44/(\$150.00 + 41.64) = 1/55
7. Identify and estimate the economic impacts associated with the planned treatments. Impacts may include:
  - employment and wages of the tree planting and thinning crews
  - employment and income associated with any planned allowable cut effect ( an immediate increase in harvest due to an anticipated increase in growth).
  - future increases in employment and income tied to future increases in harvest.
  - Other.
8. Rank the forest management project/treatment, along with alternative projects, according to benefit/cost ratio and the identified economic impacts.
9. Assign funding priorities.

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1 A and B coefficients, calculated in “Economic Guide No. 3”, are based on data for all Indian lands.

2 A 4-percent real discount rate was used.

3 Expressed in constant 1991 dollars.

Economic Guide No. 4B: Example of a Benefit/Cost analysis – Uneven-aged Management

1. Present stand condition; Overstocked ponderosa pine.
2. Planned treatment: Precommercial thinning in 1991.
3. Value estimate: Untreated stand
  - a. Timing: 60 years (three, 20-year cutting cycles)
  - b. Harvest volume:
    - Cutting cycle 1: 3.0 MBF/acre in 2011
    - Cutting cycle 2: 3.0 MBF/acre in 2031
    - Cutting cycle 3: 3.0 MBF/acre in 2051
  - c. Harvest values: (Calculations follow)
    - Cutting cycle 1: \$609.72
    - Cutting cycle 2: \$750.45
    - Cutting cycle 3: \$891.18

Cutting Cycle 1:

$$\begin{aligned} \text{Stumpage price} &= A (\text{calendar year of harvest}) + B \\ &= \$2.3455 (2011) + (-4513.56)^1 \\ &= \$203.24/\text{MBF} \\ \text{Value} &= 3.0 \text{ MBF/acre} \times 203.24/\text{MBF} \\ &= \$609.72/\text{acre} \end{aligned}$$

Cutting Cycle 2:

$$\begin{aligned} \text{Stumpage price} &= \$2.3455 (2031) + (-4513.56)^1 \\ &= \$250.15/\text{MBF} \\ \text{Value} &= 3.0 \text{ MBF/acre} \times 250.15/\text{MBF} \\ &= \$750.45/\text{acre} \end{aligned}$$

Cutting Cycle 3:

$$\begin{aligned} \text{Stumpage price} &= \$2.3455 (2051) + (-4513.56)^1 \\ &= \$297.06/\text{MBF} \\ \text{Value} &= 3.0 \text{ MBF/acre} \times 297.06/\text{MBF} \\ &= \$891.18/\text{acre} \end{aligned}$$

4. Value estimate: Treated stand
  - a. Timing: 60 years (three, 20 year cutting cycles)
  - b. Harvest Volume :
    - Cutting Cycle 1: 4.0 MBF/acre in 2011
    - Cutting Cycle 2: 4.0 MBF/acre in 2031
    - Cutting Cycle 3: 4.0 MBF/acre in 2051
  - c. Harvest values: (calculations follow)
    - Cutting Cycle 1: \$ 812.96
    - Cutting Cycle 2: \$1,000.60
    - Cutting Cycle 3: \$1,188.24

Cutting Cycle 1:

$$\begin{aligned} \text{Stumpage price} &= \$2.3455 (2011) + (-4513.56)^1 \\ &= \$203.24/\text{MBF} \\ \text{Value} &= 4.0 \text{ MBF/acre} \times 203.24/\text{MBF} \\ &= \$812.96/\text{acre} \end{aligned}$$

Cutting Cycle 2:

$$\begin{aligned} \text{Stumpage price} &= \$2.3455 (2031) + (-4513.56)^1 \\ &= \$250.15/\text{MBF} \\ \text{Value} &= 4.0 \text{ MBF/acre} \times 250.15/\text{MBF} \\ &= \$1,000.6/\text{acre} \end{aligned}$$

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1. A and B coefficients, calculated in “Economic Guide No. 3”, are based on data for all Indian lands.



Cutting Cycle 3:

$$\begin{aligned} \text{Stumpage price} &= \$2.3455 (2051) + (-4513.56)^1 \\ &= \$297.06/\text{MBF} \\ \text{Value} &= 4.0 \text{ MBF/acre} \times 297.06/\text{MBF} \\ &= \$1,188.24/\text{acre} \end{aligned}$$

5. Treatment cost: \$125.00/ac. (precommercial thinning at year 0)
6. Benefit/cost ratio: 1.38 (calculation follows)

$$\text{B/C Ratio} = \frac{\text{PV of treated stand} - \text{PV of untreated stand}}{\text{PV of treatment costs}}$$

$$\text{PV of treated stand} = \frac{\$812.96}{(1.04)^{20}} + \frac{\$1,000.60}{(1.04)^{40}} + \frac{\$1,188.24}{(1.04)^{60}} = \$692.39$$

$$\text{PV of untreated stand} = \frac{\$609.72}{(1.04)^{20}} + \frac{\$750.45}{(1.04)^{40}} + \frac{\$891.18}{(1.04)^{60}} = \$519.29$$

PV of treatment cost = \$125.00/acre (see step 5 above)

$$\text{Benefit Cost Ratio} = \frac{\$692.39 - \$519.29}{\$125.00} = 1.38$$

7. Identify and estimate the economic impacts associated with the planned treatments. Impacts may include:
  - employment and wages of the tree planting and thinning crews.
  - employment and income associated with any planned allowable cut effect (an immediate increase in harvest due to an anticipated increase in growth).
  - future increases in employment and income tied to future increase in harvest.
  - other.
8. Rank the forest management project/treatment, along with alternative projects, according to the benefit/cost ratio and the identified economic impacts.
9. Assign funding priorities.

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1 A 4-percent real discount rate was used.

**IMPORTANT: Mark all packages and papers with contract and/or order numbers.**

1. DATE OF ORDER 04/22/2005	2. CONTRACT NO. (If any) O/M	6. SHIP TO: [REDACTED]		
3. ORDER NO. [REDACTED]	4. REQUISITION/REFERENCE NO. [REDACTED]	a. NAME OF CONSIGNEE BIA/[REDACTED]		
5. ISSUING OFFICE (Address correspondence to)  BIA-Southwest Acquisition Simplified Acquisition P.O. Box 26567  Albuquerque NM 87125-6567		b. STREET ADDRESS Forestry 1 Forestry Drive		
7. TO:		c. CITY [REDACTED]	d. STATE NM	e. ZIP CODE [REDACTED]
a. NAME OF CONTRACTOR		f. SHIP VIA		
b. COMPANY NAME [REDACTED]		8. TYPE OF ORDER		
c. STREET ADDRESS [REDACTED]		<input checked="" type="checkbox"/> a. PURCHASE REFERENCE YOUR: written quote w/ [REDACTED]  Please furnish the following on the terms and conditions specified on both sides of this order and on the attached sheet, if any, including delivery as indicated.		
d. CITY [REDACTED]	e. STATE NM	f. ZIP CODE [REDACTED]	<input type="checkbox"/> b. DELIVERY - Except for billing instructions on the reverse, this delivery order is subject to instructions contained on this side only of this form and is issued subject to the terms and conditions of the above-numbered contract.	
9. ACCOUNTING AND APPROPRIATION DATA [REDACTED]		10. REQUISITIONING OFFICE BIA/[REDACTED]		

11. BUSINESS CLASSIFICATION (Check appropriate box(es))			
<input checked="" type="checkbox"/> a. SMALL	<input type="checkbox"/> b. OTHER THAN SMALL	<input checked="" type="checkbox"/> c. DISADVANTAGED	<input type="checkbox"/> d. WOMEN-OWNED
12. F.O.B. POINT Destination	14. GOVERNMENT B/L NO.	15. DELIVER TO F.O.B. POINT ON OR BEFORE (Date) 09/30/2005	16. DISCOUNT TERMS 10 days % 20 days % 30 days % days %
13. PLACE OF			
a. INSPECTION	b. ACCEPTANCE		

17. SCHEDULE (See reverse for Rejections)

ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QUANTITY ACCEPTED (g)
	<b>SEE LINE ITEM DETAIL</b>					

SEE BILLING INSTRUCTIONS ON REVERSE	18. SHIPPING POINT	19. GROSS SHIPPING WEIGHT	20. INVOICE NO.		17(h) TOT. (Cont. pages)	
	21. MAIL INVOICE TO: [REDACTED]					
	a. NAME BIA/[REDACTED]		b. STREET ADDRESS (or P.O. Box) Forestry, 1 Forestry Drive			\$5,859.00
	c. CITY [REDACTED]	d. STATE NM	e. ZIP CODE [REDACTED]			

22. UNITED STATES OF AMERICA BY (Signature) [REDACTED]	23. NAME (Typed) [REDACTED] TITLE: CONTRACTING/ORDERING OFFICER
--	---





**ORDER FOR SUPPLIES OR SERVICES  
SCHEDULE - CONTINUATION**

**IMPORTANT: Mark all packages and papers with contract and/or order numbers.**

DATE OF ORDER 04/22/2005	CONTRACT NO. O/M	ORDER NO. [REDACTED]
-----------------------------	---------------------	-------------------------

ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QUANTITY ACCEPTED (g)						
0001	Conduct [REDACTED] Precommercial Tree Thinning and Slash Treatment Project Unit 1, established BIA, Branch of Forestry technical specifications (attached).  Primary Project Inspector- [REDACTED] Project Inspectors- [REDACTED]  BIA Agency Contact: [REDACTED], Agency Forest Development Officer, [REDACTED]  BIA, Southwest Contact: [REDACTED]  <table border="0"> <tr> <td><i>Delivery Date</i></td> <td><i>Start Date</i></td> <td><i>End Date</i></td> </tr> <tr> <td>09/30/2005</td> <td>05/23/2005</td> <td>09/30/2005</td> </tr> </table> Reference Requisition: [REDACTED]	<i>Delivery Date</i>	<i>Start Date</i>	<i>End Date</i>	09/30/2005	05/23/2005	09/30/2005	62.00	AC	94.500	5,859.00	
<i>Delivery Date</i>	<i>Start Date</i>	<i>End Date</i>										
09/30/2005	05/23/2005	09/30/2005										

**TOTAL CARRIED FORWARD TO 1ST PAGE (ITEM 17i) ⇒ \$5,859.00**

## 212-5 Contract Terms and Conditions Required to Implement Statutes or Executive Orders--Commercial Items.

CONTRACT TERMS AND CONDITIONS REQUIRED TO IMPLEMENT STATUTES  
OR EXECUTIVE ORDERS--COMMERCIAL ITEMS  
(OCT 1995)

a) The Contractor agrees to comply with the following FAR clauses, which are incorporated in this contract by reference, to implement provisions of law or executive orders applicable to acquisitions of commercial items:

- (1) 52.222-3, Convict Labor (E.O. 11755); and
- (2) 52.233-3, Protest After Award (31 U.S.C. 3553 and 40 U.S.C. 759).

b) The Contractor agrees to comply with the FAR and FIRMR clauses in this paragraph (b) which the contracting officer has indicated as being incorporated in this contract by reference to implement provisions of law or executive orders applicable to acquisitions of commercial items or components:

(Contracting Officer shall check as appropriate.)

- (1) 52.203-6, Restrictions on Subcontractor Sales to the Government, with Alternate I (41 U.S.C. 253g and 10 U.S.C. 2402).
- (2) 52.203-10, Price or Fee Adjustment for Illegal or Improper Activity (41 U.S.C. 423).
- (3) 52.219-8, Utilization of Small Business Concerns and Small Disadvantaged Business Concerns (15 U.S.C. 637 (d) (2) and (3)).
- (4) 52.219-9, Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan (15 U.S.C. 637 (d) (4)).
- (5) 52.219-14, Limitation on Subcontracting (15 U.S.C. 637(a) (14)).
- (6) 52.222-26, Equal Opportunity (E.O. 11246).
- (7) 52.222-35, Affirmative Action for Special Disabled and Vietnam Era Veterans (38 U.S.C. 4212).
- (8) 52.222-36, Affirmative Action for Handicapped Workers (29 U.S.C. 793).
- (9) 52.222-37, Employment Reports on Special Disabled Veterans and Veterans of the Vietnam Era (38 U.S.C. 4212).
- (10) 52.225-3, Buy American Act - Supplies (41 U.S.C. 10).
- (11) 52.225-9, Buy American Act - Trade Agreements Act - Balance of Payments Program (41 U.S.C. 10, 19 U.S.C. 2501-2582).
- (12) 52.225-17, Buy American Act - Supplies Under European Community Sanctions for End Products (E.O. 12849).
- (13) 52.225-18, European Community Sanctions for End Products (E.O. 12849).
- (14) 52.225-19, European Community Sanctions for Services (E.O. 12849).
- (15) 52.225-21, Buy American Act - North American Free Trade Agreement Implementation Act - Balance of Payments Program (41 U.S.C. 10, Pub. L. 103-187).
- (16) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (46 U.S.C. 1241).
- (17) 201-39.5202-3, Procurement Authority (FIRMR). (This acquisition is being conducted under \_\_\_\_\_ delegation of GSA's exclusive procurement authority for FIP resources. The specific GSA DPA case number is \_\_\_\_\_).



(c) The Contractor agrees to comply with the FAR clauses in this paragraph (c), applicable to commercial services, which the Contracting Officer has indicated as being incorporated in this contract by reference to implement provisions of law or executive orders applicable to acquisitions of commercial items or components:

(Contracting Officer check as appropriate.)

- (1) 52.222-41, Service Contract Act of 1965, As amended (41 U.S.C. 351, et seq.).
- (2) 52.222-42, Statement of Equivalent Rates for Federal Hires (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).
- (3) 52.222-43, Fair Labor Standards Act and Service Contract Act - Price Adjustment (Multiple Year and Option Contracts) (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).
- (4) 52.222-44, Fair Labor Standards Act and Service Contract Act - Price Adjustment (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).
- (5) 52.222-47, SCA Minimum Wages and Fringe Benefits Applicable to Successor Contract Pursuant to Predecessor Contractor Collective Bargaining Agreement (CBA) (41 U.S.C. 351, et seq.).

d) Comptroller General Examination of Record. The Contractor agrees to comply with the provisions of this paragraph (d) if this contract was awarded using other than sealed bid, is in excess of the simplified acquisition threshold, and does not contain the clause at 52.215-2, Audit and Records--Negotiation.

- (1) The Comptroller General of the United States, or an authorized representative of the Comptroller General, shall have access to and right to examine any of the Contractor's directly pertinent records involving transactions related to this contract.
- (2) The Contractor shall make available at its offices at all reasonable times the records, materials, and other evidence for examination, audit, or reproduction, until 3 years after final payment under this contract or for any shorter period specified in FAR Subpart 4.7, Contractor Records Retention, of the other clauses of this contract. If this contract is completely or partially terminated, the records relating to the work terminated shall be made available for 3 years after any resulting final termination settlement. Records relating to appeals under the disputes clause or to litigation or the settlement of claims arising under or relating to this contract shall be made available until such appeals, litigation, or claims are finally resolved.
- (3) As used in this clause, records include books, documents, accounting procedures and practices, and other data, regardless of type and regardless of form. This does not require the Contractor to create or maintain any record that the Contractor does not maintain in the ordinary course of business or pursuant to a provision of law.

e) Notwithstanding the requirements of the clauses in paragraphs (a), (b), (c) or (d) of this clause, the Contractor is not required to include any FAR clause, other than those listed below (and as may be required by an addenda to this paragraph to establish the reasonableness of prices under Part 15), in a subcontract for commercial items or commercial components--

- (1) 52.222-26, Equal Opportunity (E.O. 11246);
- (2) 52.222-35, Affirmative Action for Special Disabled and Vietnam Era Veterans (38 U.S.C. 2012 (a));
- (3) 52.222-36, Affirmative Action for Handicapped Workers (29 U.S.C. 793); and
- (4) 52.247-64, Preference for Privately-Owned U.S.-Flagged Commercial Vessels (46 U.S.C. 1241) (flow down not required for subcontracts awarded beginning May 1, 1996).

(End of clause)

BUREAU OF INDIAN AFFAIRS