Appendix A
Photographs

Photographs:

Photograph 1: View toward project area from Hot Springs

Photograph 2: Western side of Bradner Reservoir (Priority 2 stand)

Photograph 3: Eastern side of Bradner Reservoir (Priority 1 stand)

Photograph 4: Doghair thicket near Bradner Reservoir

Photograph 5: Southern end of Peterson Reservoir (Priority 2 stand)

Photograph 6: Existing road at Peterson Reservoir to be potentially used as a skid trail

Photograph 7: Looking north from Peterson Reservoir to United World College

Photograph 8: Gallinas River, looking southwest

Photograph 9: North-facing slope along Gallinas River, looking downstream

Photograph 10: Willows growing along Gallinas River

Photograph 11: Looking south at project area from State Highway 65

Photograph 12: Village of Montezuma

Photograph 13: City of Las Vegas Water Treatment Plant. Area to be thinned can be seen in background.

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Photograph 12: Village of Montezuma

Photograph 13: City of Las Vegas Water Treatment Plant. Thinning area can be seen in background.

Appendix B
Agency Correspondence

URS Corresponded with:

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State of New Mexico Environmental Department
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State of New Mexico
Department of Fish & Game
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State of New Mexico Environmental Department
Air Quality Bureau – Harold Runnels Building
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United States Department of the Army
Albuquerque District, Corps of Engineers
4101 Jefferson Plaza NE
Albuquerque, NM 87109-3435

U.S. Fish and Wildlife Service
New Mexico Ecological Field Office
2105 Osuna NE
Albuquerque, NM 87113

U.S. Forest Service
Pecos-Las Vegas Ranger District
Pecos, NM 87552

Bureau of Land Management
Albuquerque Field Office
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Albuquerque, NM 87101-4935

Office of Emergency Management
Emergency Management Center
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Santa Fe, NM 87504-1628

State of New Mexico Environment Department
Surface Water Quality Bureau – Harold S. Runnels Building
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EPA Region 6
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Office of Planning and Coordination
1445 Ross AVE.
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State of New Mexico Environment Department
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City of Las Vegas
Community Development Department
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Appendix C
EO 11988 and EO 11990
Eight-Step Planning Process

Executive Order 11988 Floodplain Management
Executive Order 11990 Wetland Protection
Eight-Step Planning Process Summary

Step 1: Determine whether the Proposed Action is located in a wetland and/or the 100-year floodplain, or whether it has the potential to affect or be affected by a floodplain or wetland.	**Project Analysis:** The Gallinas River runs through the project area and the City of Las Vegas' two water supply reservoirs (Bradner and Peterson) are located within the project area. Thinning activities would take place around the wetland areas, and a minimum 50-foot buffer would be implemented to avoid equipment entering the wetland zones.
Step 2: Notify public at earliest possible time of the intent to carry out an action in a floodplain or wetland, and involve the affected and interested public in the decision-making process.	**Project Analysis:** An initial public notice was posted by FEMA as part of the original disaster declaration (see page C4). The notice indicated that actions would be potentially taken that would have an effect on the floodplain and/or wetlands.
Step 3: Identify and evaluate practicable alternatives to locating the Proposed Action in a floodplain or wetland.	**Project Analysis:** The following alternatives were evaluated: Alternative 1: No Action Alternative 2: Proposed Action. Manual and mechanical thinning of specified trees. Slash would be piled and burned, lopped and scattered, or removed from the site. No thinning would occur in riparian zones or wetlands. Alternative 3: Manual and mechanical thinning of specified trees. Slash would be scattered across ground and broadcast burned. No thinning would occur in riparian zones or wetlands.

Step 4: Identify the full range of potential direct or indirect impacts associated with the occupancy or modification of floodplains and wetlands and the potential direct and indirect support of floodplain and wetland development that could result from the Proposed Action.	**Project Analysis:** Under the No Action Alternative, severe stormwater runoff could lead to increased flooding of the area within the floodplain and potentially outside floodplain zones. This condition would persist for several years until vegetation and soil is reestablished to pre-fire conditions. Sediment runoff may eventually be carried into drainage ways and rivers, and potentially into wetland areas, thus altering or destroying habitat. Because there would be no federal funding under this alternative, there is no requirement to comply with EO 11988. Alternative 2, the Proposed Action, would not expand the 100-year floodplain. There would be a risk of increased erosion from vegetation removal activities and a potential increase of runoff into the wetland areas. This impact would not be substantial because thinning would be selective to control adverse effects and erosion measures would be implemented. Reseeding and lop and scatter of some slash would be conducted in areas disturbed by project activities. Alternative 3, would not impact the 100-year floodplain. There would be a risk of increased erosion from vegetation removal activities and a potential increase of runoff into the wetland areas. This impact would not be substantial because thinning would be selective to control adverse effects. Slash would be scattered and broadcast burned. A slight and temporary increase in ash runoff would be expected into wetland areas. Erosion control measures and reseeding would be conducted in areas disturbed by project activities to effectively mitigate for increases in runoff..
Step 5: Minimize the potential adverse impacts to work within floodplains and wetlands to be identified under Step 4, restore and preserve the natural and beneficial values served by wetlands.	**Project Analysis:** Mitigation measures described in Step 4, the use of erosion control measures and reseeding, would reduce potential adverse effects to wetlands near the proposed project area. Additionally, a 50-foot minimum buffer zone would be established around wetland and riparian areas, further reducing potential impacts.

Step 6: Re-evaluate the Proposed Action to determine 1) if it is still practicable in light of its exposure to flood hazards; 2) the extent to which it will aggravate the hazards to others; and 3) its potential to disrupt floodplain and wetland values.	**Project Analysis:** The Proposed Action remains practicable based on the objective to protect the citizens and water supply of the City of Las Vegas area. The action is not anticipated to increase flood elevations or flood velocities upstream or downstream. Floodplain and wetland values would remain viable.
Step 7: If the agency decides to take an action in a floodplain or wetland, prepare and provide the public with a finding and explanation of any final decision that the floodplain or wetland is the only practicable alternative. The explanation should include any relevant factors considered in the decision-making process.	**Project Analysis:** A public notice would be made based on the decision to proceed with the Proposed Action. At a minimum, this notice shall state a reason for locating the Proposed Action in the floodplain; a description of all significant facts considered in making determination; a list of the alternatives considered; a statement indicating whether the action conforms to state and local floodplain protection standards; and a statement indicating how the action affects the wetlands and how mitigation would be achieved.
Step 8: Review the implementation and post-implementation phases of the Proposed Action to ensure that the requirements of the EOs are fully implemented. Oversight responsibility shall be integrated into existing processes.	**Project Analysis:** This step is integrated into the NEPA process and FEMA project management and oversight functions.

Appendix D
New Mexico Forest Practice Guidelines

New Mexico
Energy, Minerals and
Natural Resources
Department

OCTOBER, 1990

New Mexico Forest Practices Guidelines

Prepared by Forestry and Resources Conversation Division

in cooperation with the United States Department of Agriculture, Forest Service

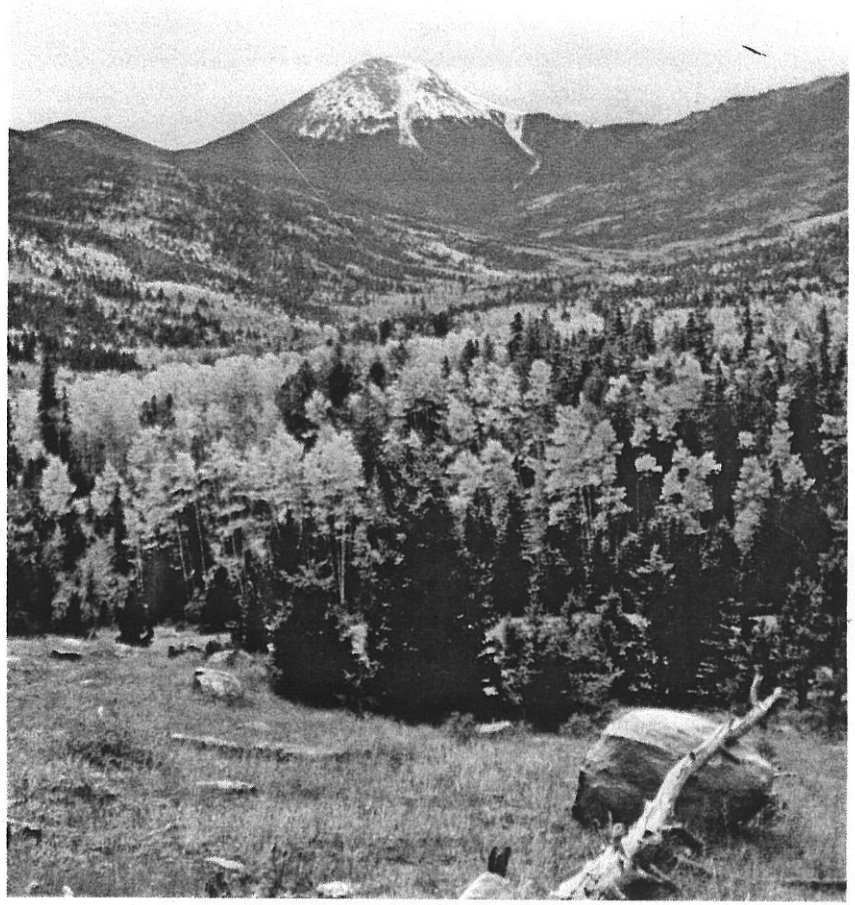


Table of Contents

Purpose v

Acknowledgements vi

Introduction 1

Forest Practice Laws and Regulations 2

Voluntary Forest Practice Guidelines 8
- Reforestation 8
- Site Preparation 8
- Planting 10
- Thinning 15
- Pruning 18

Timber Harvesting 19
- General Guidelines 19
- Harvesting Systems 20
  - Patch Cutting System 20
  - Seed Tree System 23
  - Selection System 24

Skid Trails, Landings and Logging Roads 26
- Skid Trails 26
- Landings 27
- Logging Roads 27
- Slash Treatments 33

Wildlife Considerations 36

Recreation and Aesthetics 37

Grazing 38

Forest Protection 39
- Fire 39
- Insects and Disease 41

Timber Harvest Contract Preparation 42

Appendix 47
- Sample Contracts 47
- Agency Directory 50

Glossary of Terms 51

Literature Cited 55

6.0 TREATMENT OF SLASH

6.1 GENERAL: Within the time limits of Section 6.2, all slash and damaged trees in any cutting unit shall be treated so that none stands higher than three (3) feet above ground level.

6.2 TIME LIMIT: Slash shall be reduced as described in 6.1 not later than the shortest of the following limits;

6.2.1 Thirty calendar days from the movement of commercial operators out of the subject cutting unit into another cutting unit under a multiple unit permit; or

6.2.2 Thirty calendar days following the cessation of major harvesting activites within the cutting unit; or

6.2.3 In no event shall the time exceed three hundred and sixty five calendar days from the start of harvesting activities within the cutting unit.

6.3 MAIN HAUL ROADS: For the purpose of creating a fuel break and unless specifically waived in writing by the District Office, all slash greater than 24 inches in length and/or larger than 1 inch in diameter at the large end and within fifty (50) feet of either side of the center line of a designated main haul road shall be eliminated by chipping, burning, burying, removal, or equivalent means within 365 calendar days of cessation of harvest activities within the cutting unit in which the road lies.

7.0 REDUCTION OF EROSION

7.1 WATER BARS

7.1.1 Time limit — All water bars required by this section shall be installed within thirty (30) days of the cessation of harvest activities within the cutting unit except that this limit shall not be applied to roads providing access to other cutting units under a multiple unit permit until harvesting in all of those accessed units is complete.

7.1.2 Placement — Water bars shall be placed on all haul roads and skid trails and at such places or intervals necessary to prevent erosion considering grade, sidehill drainage, soil texture and character, vegetation, and other pertinent factors, but at a minimum as described below:

PERCENT GRADE	MINIMUM INTERVAL
0.0% - 4.9%	150 feet
5.0% - 9.9%	130 feet
10.0% - 14.9%	75 feet
15.0% - 24.9%	50 feet
25.0% - 40%	25 feet

The Division may require additional water bars if it appears erosion will not be controlled by the minimum intervals.

7.2 RESEEDING

7.2.1 Time Limit — After construction of water bars per 7.1, and at such time as best calculated to produce maximum germination, but in no event longer than 180 calendar days following the cessation of harvesting activities within any cutting unit, all haul roads, skid trails and other areas of exposed mineral soil shall be reseeded unless waived by the District Office.

7.2.2 Seed Mix — Any seed mix used in reseeding must have the prior approval of the Division.

8.0 TREE UTILIZATION — STANDARDS

8.1 All commercial forest species shall be utilized to a minimum six (6) inch top diameter (inside bark) except that:

8.1.1 Harvest for other than lumber production shall utilize trees to a minimum four (4) inch top (outside bark).

8.2 The main stem of the tree shall be utilized as stated in 8.1, when the net scale of the severed log or section of the main stem is more than fifty (50) percent of its gross scale, using the "National Forest Log Scaling Handbook" — FSH 2409.11.

8.3 LONG BUTTING — long butting is prohibited except when resulting from removal of defects up to the limit of 8.2.

8.4 STUMP HEIGHT — stump height shall not exceed 12 inch height in the uphill side except where immovable objects (i.e., rocks, other trees) prevent operation of felling equipment.

9.0 REVOCATION OF PERMIT

9.1 NOTICE OF DEFICIENT CONDITION — written notice of deficient condition may be provided by the District Office. It will specify the deficiency and allow a set time to remedy the deficiency.

9.2 If a deficient condition exists past the time set for correction the Division may issue a revocation of permit. The permit is revoked upon the earliest of the following: receipt of the revocation by the applicant or landowner or on the third day after mailing by registered mail.

9.3 Upon correction of any noted deficiency, the Division may reinstate the permit by written notification.

9.4 The decision of the Division to follow this procedure in no way limits its ability or authority to issue citations or otherwise enforce the possible criminal penalties for violating these regulations.

10.0 FIRE RESTRICTIONS

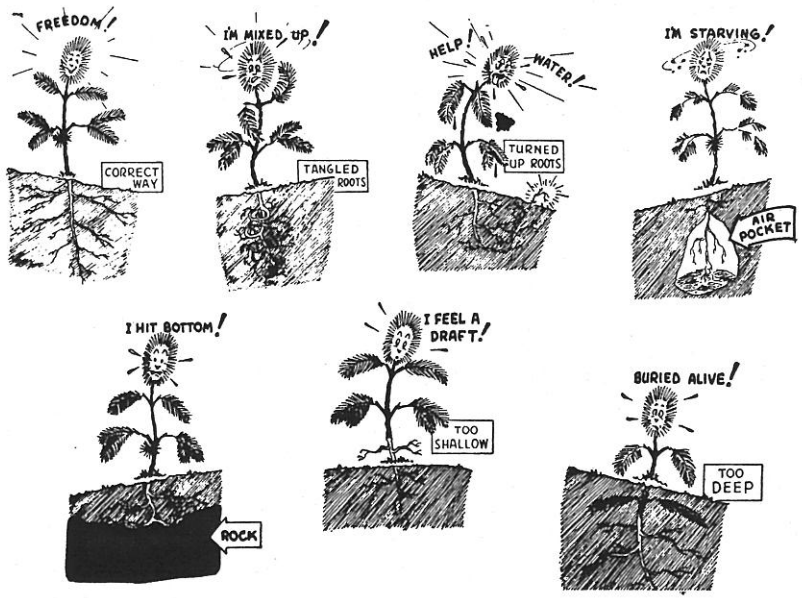
Whenever the State Forester declares restrictions on use of lands or use of fire within a permitted area based on Regulation NMFRCD 89-2, such restrictions shall apply to harvesting activities. If the restrictions require that harvest activities stop, then such stoppage for the term of the restriction is not a cessation of harvesting activities.

Prepare the planting hole before removing the seedling from the carrying bag.

The seedling should not be planted too high, where the roots are exposed, or too low where part of the twigs are buried beneath the ground level. Do not plant on top of a rock, where root growth will be hampered. If a seedling is planted in too shallow a hole, the roots become twisted or turned up (J-root) which results in seedling death. The seedlings should be planted straight up and down so that irregular growth of the stem will not occur. The fill material should be free from rocks and debris to eliminate the possibility of air pockets. See the illustration.

A mulch of straw, cut grass, twigs, soil, old sawdust, etc., will give the seedling some protection from moisture deficiency.

Survival After Planting The seedlings should be checked a few times a year for the first three or four years after planting. Are the trees surviving? Seedling mortality can be caused by many different things. The usual cause is poor handling and planting of the seedlings. However, environmental factors can also cause heavy losses. It pays to notice unhealthy and dying seedlings early. Prompt treatment may reduce mortality. However, in cases where reforestation will be inadequate due to the death of many seedlings, additional trees may need to be planted.



Avoid these errors in planting or the trees will die.

The following may contribute to seedling mortality:

Frost heaving can occur with both bareroot and containerized seedlings during the first winter after planting. However, as mentioned before, the trees planted in the fall are the most susceptible. It will look like something has pulled the tree seedlings out of the ground.

Insects and disease can attack the seedlings. It may take a trained eye to determine the cause of mortality in cases like these.

Moisture deficiency is the biggest cause for seedling death in the Southwest. This is something that sometimes cannot be avoided. If little or no rain comes after a spring planting and the months following, the seedlings will die, no matter how much care was taken during planting. The only remedy for severe moisture stress is to water the trees. However, this is usually not feasible. Mulching the seedling and placing it in the shade of some larger object, such as a bush, stump, rock or a shingle, gives it some protection against moisture deficiency.

Birds, rodents, deer and other wildlife periodically like to eat the seedlings. Rodents may be chemically controlled. For deer, it may be necessary to place protective screens around the seedlings.

Domestic animals can destroy new seedlings by grazing or trampling. Livestock should be kept out of a newly planted area for two or three years after the planting.

Thinning

Thinning is a silvicultural practice whereby some of the trees in an immature stand are removed in order to stimulate the growth of the remaining trees. Thinning redistributes the growth of the stand by providing more moisture and sunlight to the remaining trees.

There are many economic reasons why thinning should be used as a forest management tool.

At harvest time, there is an increase in yield from greater tree growth.

Also, some income can be realized at the time of thinning from the sale of the material that has been removed from the stand. This material can be used for posts, corrals, cabins, vigas, etc.

Inferior species and "weed" trees can be removed which greatly enhances the stand composition.

Thinning opens up the overstory, and with proper management, can result in the beneficial development of the understory where

brush and grasses can grow to make good forage for domestic animals, and provide habitat and food for wildlife.

Methods There is an optimum stocking level for your land. The better your land, the more trees you can leave. Also, the number of leave trees depends on the size of the trees in your stand. Your district forester can assist you in determining the space to use. Below is a table which gives the approximate spacing you should use between trees when thinning.

Leave Tree Considerations Before the cutting begins, the trees to be left should be marked. Proper spacing is important, but you should not leave a poor tree and take out a good one, just for the sake of spacing. Spacing should be adjusted to accommodate a quality tree. Your district forester can assist or train you in marking the trees to be left. Several factors should be considered when determining which trees to leave. (See illustration, page 17.)

The first of these is the relative position of the tree and condition

How to use table: If your trees are about 8" in diameter, at breast height, and you want to stock your land at 60 square feet of basal area per acre, then your spacing would be 16' x 16'.

BASAL AREA SPACING GUIDE*

Residual DBH (Diameter at Breast Height) Inches	Square Feet of Basal Area Per Acre Desired									
	40	50	60	70	80	90	100	110	120	140
	Square Spacing to Nearest Foot									
2	5	4	4	4	3	3	3	3	3	3
3	7	7	6	6	5	5	5	4	4	4
4	10	9	8	7	7	6	6	6	6	5
5	12	11	10	9	9	8	8	7	7	7
6	15	13	12	11	10	10	9	9	8	8
7	17	15	14	13	12	11	11	10	10	9
8	19	17	16	15	14	13	12	12	11	10
9	22	20	18	17	16	15	14	13	13	12
10	24	22	20	18	17	16	15	15	14	13
12	29	26	24	22	21	19	18	18	17	16
14	34	31	28	26	24	23	22	21	20	18
16	39	35	32	29	28	26	25	24	23	21
18	44	39	36	33	31	29	28	26	25	23

**Basal Area:* The cross-sectional area of the tree at breast height, i.e., a square tree 1' x 1' would have a basal area of 1 square foot. Sixty such trees on an acre would constitute a stocking of 60 square feet of basal area per acre.

of its crown. The tree should have a well developed crown and healthy looking foliage. It should not have a broken top. Also, it should be one of the taller trees in the stand.

The "leave" tree should be free from insects and disease.

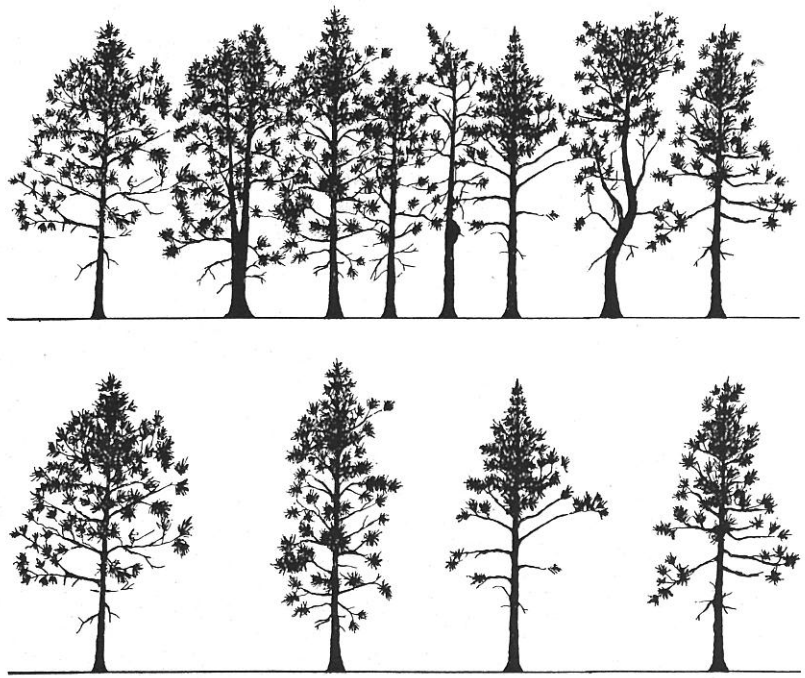
The bole (trunk) on the "leave" trees should be straight, free from excess taper, free from large bushy limbs, and have no evidence of biotic or mechanical damage.

"Leave" tree crowns should not be touching adjoining leave trees after the thinning.

Considerations If you would rather have someone else do the thinning job, there are probably people available in your area whom you can contract to do the work. Your district forester can assist you in locating thinning contractors. If you do the job yourself, there are some things to keep in mind.

You will probably use a chainsaw. However, a bow saw or an axe can also be used.

Be careful not to damage the "leave" trees while felling those trees that are being cut.



A young stand of ponderosa pine before and after thinning. Defective and suppressed trees should be removed to make room for the more vigorous trees.

Keep your stumps low, preferably around 6 inches high.

Large slash should be moved away from the base of the tree, as it is a breeding ground for harmful insects, and is potential fuel for a fire.

Slash should be spread out, with the maximum height not to exceed 24 inches. In high fire danger areas it may be necessary to remove the slash completely. (See Slash Treatments.)

If slash is placed in piles to be disposed of by burning, the piles should be located in large openings. This will prevent damage to the leave trees from excessive heat. Slash piles should not be larger than 4 feet high and 6 feet in diameter.

To prevent erosion, do not thin as heavily on steep slopes. Also, do not thin within 30 feet of a waterway or runoff ditch.

Pruning

Pruning in a pre-commercial (immature stand) of timber removes the lower limbs of the trees for the purpose of obtaining knot free wood at harvest. The reasons are primarily economic. Knot free wood commands a higher price in the market. However, recent research indicates that pruning in the Southwest may not be worth the cost and effort. Pruned trees may lose vigor and may not be able to compete with more vigorous unpruned trees if live limbs are removed. They therefore may lose their place of dominance in the stand. Diameter and height growth of the tree is slower when the live limbs are pruned. This can almost counteract the increase in profit from the knot free wood. Removal of dead limbs will not slow the growth; however, disease can be introduced in the tree from the wounds inflicted while pruning.

In the Southwest, pruning is not recommended except in special cases. It may be desirable to prune trees where the forest is used primarily for recreational purposes. People or animals can walk through the forest without the impediment from branches. The forest assumes a park-like quality. Also, the lower limbs can be pruned near fire breaks or in high fire danger areas to prevent the spread of fire into the crowns of the trees.

Timber Harvesting

Timber harvesting is a necessary and beneficial component of forest management and is the means by which valuable forest products are obtained from the forest. In some timber types, harvesting activities stimulate the natural re-establishment of the species. Through harvesting, profit is realized from the sale of the timber, and generally a young and vigorous stand of trees can be established artificially or naturally in years following the harvest.

Careful and conscientious harvesting results in an environment which is optimum for the regeneration of a new stand. Thoughtless harvesting can cause excess erosion, retard the reproduction of timber, reduce water quality and wildlife on a piece of land for many years.

Harvesting involves moving large volumes of logs to the mill, generally over rough terrain. This means heavy equipment, hard labor, and a lot of skill is needed. Before harvesting, consult your district forester or a private consulting forester for technical assistance. If you decide to do the work yourself, safety should be the prime concern; a broken back or the loss of a life is not worth the money that can be made from the sale of timber.

General Guidelines and Considerations for Harvesting

Choose harvesting practices that are suitable to the type of timber being cut, the method of regeneration desired, and the topographic characteristics of the land.

Felling and bucking timber is dangerous and should be performed by experienced personnel.

Require optimum utilization of all merchantable wood.

Keep stumps as low as possible. This will add dollars to the profits by increasing the volume of wood cut, and reduce obstacles while skidding and felling.

Where conditions permit, fell trees in line with the skidding directions. Generally, limb and top trees where felled.

When skidding, whenever possible suspend the head end of the log to minimize soil gouging.

Fell and skid trees away from streams to minimize damage to the channel or stream bank. Trees that cannot otherwise be practically and safely felled outside the stream channel should be promptly removed, along with any slash created.

Skid Trails, Landings and Logging Roads

The construction of roads, skid trails, and landings or the reconstruction of those already in existence is necessary to bring the logs out of the forest and to the mill. Disturbance to the environment, particularly to the soil, is going to occur. However, it can be kept to a minimum through proper planning and construction techniques. The route that means the least amount of construction and excavation that gets the job done most effectively and economically will usually mean the least disturbance to the environment. Erosion, rutting, soil compaction, and soil movement into streams are generally a problem during and after construction. The guidelines which follow should give the landowner or harvester some idea of what is involved in skid trail, landing and logging road construction, and the need for constructing environmental protection devices where necessary. Professional services should be considered for on the ground layout of the logging road systems. Refer to the 208 publication, New Mexico Statewide Water Quality Management Plan, for more specific information on erosion and sedimentation control.

Skid Trails

Logs or entire trees are moved from where they are felled to the road or landing via skid trails. These trails are usually only a few feet wide and are created by dragging the log or tree over the forest floor. It is important that the logs or trees are skidded over trails that have been carefully laid out. If all the logs were skidded from where they lie, directly to the road or landing, instead of over a common skid trail, the entire forest floor would be torn up. Depending on the terrain and timber type, erosion could be serious and reforestation difficult. However, a concentration of skid trails can be as bad as spreading them throughout the area. A compromise should be sought that will minimize soil disturbance and yet be economical.

The planning of skid trails should be incorporated into the entire road design for the harvesting unit, since skidding costs are directly determined by road spacing and layout.

Keep the skid trails as narrow as possible.

Skid trails on steep slopes should be aligned up and down to minimize erosion.

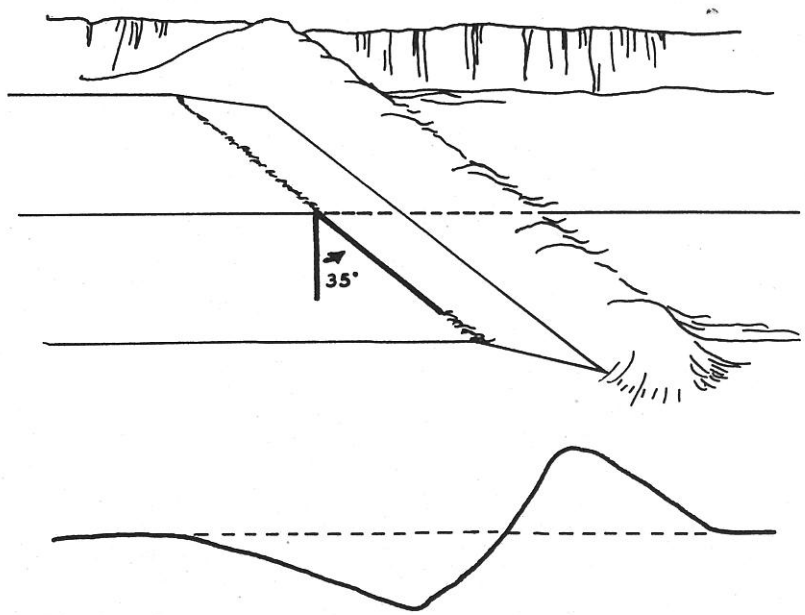
When the use of skid trails and roads is finished, construct water bars to divert water runoff. This will reduce rutting and erosion. (See sketch, page 27.) Seeding of closed trails should be carried out before the next growing season. (See Regulations.)

Landings

A landing is a large flat area to which the logs are skidded for loading on a truck. It is usually located where the least amount of excavation is needed such as on a ridgetop or wide canyon bottom. The landing should be placed in a location where the skidding distance is at a minimum. It should be big enough to accompany a truck, a loader, a skidder, and have room for some log storage. With all the heavy machinery that will be working on the landing, it is important that it does not get muddy and boggy. Choosing a good landing location that drains adequately can prevent lost time and money while operating heavy equipment during the rainy season. Surface drainage from landings should not be allowed to directly enter stream channels. Upon completion of the logging job, the landing should be returned to productive status by breaking up the compacted soil and planting it with trees or seeding it with grass.

Logging Roads

Roads provide access and transportation for most forest management operations. These roads must be able to handle a



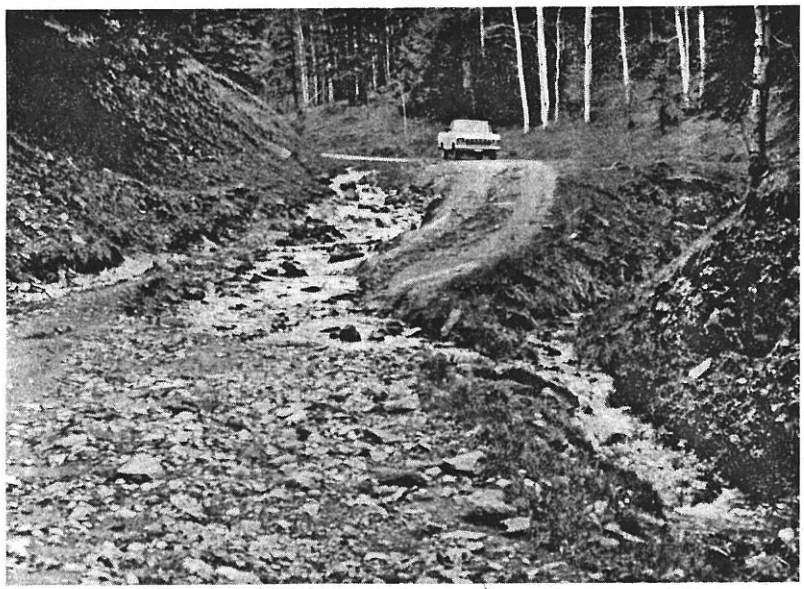
Water bar construction for forest roads or skid trails. Bar height should be one to two feet high and angled at 35 degrees from the perpendicular to the road or trail centerline.

loaded log truck and other heavy machinery, yet should cause as little impact to the environment as possible. There is always the potential for creating excess erosion when roads are constructed. Mud, silt, and debris can be carried off the exposed land and deposited into streams. When this happens, it is referred to as sedimentation. Erosion and sedimentation can ruin the timber producing ability of a site by carrying off valuable top soil which contains nutrients used by plants. Further erosion can wear channels into the hillside, ruining the productivity and aesthetics of the land. Sedimentation can muddy streams, pollute downstream water, and harm the fish and other aquatic species that live there.

The construction guidelines given here are designed to get the job done the most effective way, at the least cost, and still reduce erosion and sedimentation to a minimum. The elements to consider in road construction are: planning, location, construction, maintenance, and closure.

Planning Planning should always be done before starting any road construction. It is important to know approximately where the road will go, what materials are needed, and what the cost will be before any construction begins. Without proper planning, money can be wasted, logging costs can go up, and erosion and environmental impact can be extreme.

Minimize the number of roads constructed through comprehensive road planning.



Obtain topographic maps of the working area from the United States Geological Survey, or one of several other agencies to which they can refer you. Aerial photographs should be secured, if possible.

What is the intended use of the road? Do not try to save money on construction costs and end up with a road that is too cheap and ineffective. Do not spend too much money on it if it is not necessary.

AVOID PRACTICES THAT CAUSE EROSION. Obtain soil survey maps and information to determine stable and unstable soils in the working area.

Minimize stream crossings. If a stream crossing is necessary, plan to cross at a right angle to the stream.

Make sure road curves are large enough to handle loaded log trucks. There should be adequate sight distance, so the users of the road can see ahead. The road should be wide enough to handle the largest piece of machinery to be used. Do not make the road too steep.

Locate and evaluate the road building materials that are needed. Compare prices and quality of the materials.

Prepare contracts for the work that is to be done.

Road Location Several locations should be considered when deciding where to put a road. Each possible location will have its advantages and disadvantages, and should be compared to other possible locations. The road should be located where the cost will be the least, the ease of conducting the logging operation will be the greatest, and erosion potential will be minimal.

Some procedures in locating a logging road and some factors to consider:

Check your topographic maps. Mark aerial photographs with preferred and alternate road locations.

Check all possible road locations on the ground. Look for springs, bogs, ledges or rock outcroppings, and other possible hazards that cannot be seen on photographs or maps.

Try to avoid uphill climbs. When climbs are unavoidable, try to maintain a uniform grade over the entire climb. This is so the logging truck does not have to change gears often.

Avoid high road cuts and fills by following the contour of the land and varying the road grade.

Each road location is unique, however, certain similarities exist from one type of location to another. Below are some factors to know

Appendix E
Summary of Threatened, Endangered, and Species of Concern

Table 1: Protected and Sensitive Species					
SPECIES	**FEDERAL STATUS**	**HABITAT NEEDS**	**POSSIBILITY OF OCCURRENCE IN PROJECT AREA**	**POTENTIAL IMPACT**	**MITIGATION MEASURES**
Black-footed Ferret *(Mustela nigripes)*	Endangered	• Prairie grasslands • Found in prairie dog towns • Not known to occur in NM	No	No	None required
Black-tailed Prairie Dog *(Cynomys ludovicianus)*	Candidate	• Shortgrass or midgrass prairies • Grassy areas associated with alluvial fans at the mouths of draws • Grasslands where no brush is present or is sparse	No	No	None required
Fringed Myotis *(Myotis thysanodes)*	Species of Concern	• Mixed conifer • Oak woodlands • Nursery colonies found in caves, mines and Ponderosa Pine snags	Yes	Yes	• Minimum number of snags to be left in place and not removed • No large diameter tress would be cut
Long-eared Myotis *(Myotis evoris)*	Species of Concern	• Coniferous forests • Day roosts in tree cavities under loose bark, caves, mines, large diameter snags	Yes	Yes	• Minimum number of snags to be left in place • No large diameter trees would be cut
New Mexican Meadow Jumping Mouse *(Zapus hudsonius luteus)*	Species of Concern	• Permanent streams • Dense diverse streamside vegetation: grasses, sedges, forbs • Willows, montane meadows	Yes	Yes	• No thinning in riparian zone
Occult Little Brown Bat *(Myotis lucifugus occultus)*	Species of Concern	• Most specimens taken near large water sources, otherwise vegetation zone unimportant for determination • Found in caves, cliffs, conifer snags greater than 20 inches DBH	Yes	Yes	• Minimum number of snags to be left in place • No large diameter trees would be cut
Townsend's Big-eared Bat *(Plecotus townsendii)*	Species of Concern	• Habitat is geomorphically determined in rocky situations with caves and mines	Yes	Yes	• No thinning would be conducted around cliff areas • Thinning would be conducted during fall and winter months

Table 1: Protected and Sensitive Species					
SPECIES	**FEDERAL STATUS**	**HABITAT NEEDS**	**POSSIBILITY OF OCCURRENCE IN PROJECT AREA**	**POTENTIAL IMPACT**	**MITIGATION MEASURES**
Pecos River Muskrat *(Ondatra zibethicus ripensis)*	Species of Concern	• Riparian areas: rivers, drainage ditches, lakes, springs	Yes	Yes	• No thinning in riparian areas
Spotted Bat *(Euderma maculatum)*	Species of Concern	• Rocky cliffs near riparian situation • Summers in Ponderosa Pine, Pinyon-Juniper, spruce-fir	Yes	Yes	• Thinning would be conducted during fall and winter months • No thinning would be conducted around cliff areas
Swift Fox *(Vulpes velox)*	Candidate	• Arid prairie lands • Plains-mesa sandscrub	No	No	None required
American Peregrine Falcon *(Falco peregrinus anatum)*	Species of Concern	• Mixed conifer • Nests in high cliffs	Yes	Yes	• Other habitat available in surrounding area. • Thinning would be conducted in fall and winter months
Arctic Peregrine Falcon *(Falco peregrinus tundrius)*	Species of Concern	• Mixed conifer • Pinyon-juniper • Rare in NM, only known occurrence in Roswell and White Sands Missile Range	May occur only as migrant	No	None required
Baird's Sparrow *(Ammodramus bairdii)*	Species of Concern	• Grasslands, lowland prairies • Forest edges	May occur as migrant or as occasional on far eastern edge of project area	No	None required
Bald Eagle *(Haliaeetus leucocephalus)*	Threatened, Proposed delisting	• Coasts, rivers, large lakes • Mountains, open country • Common in fall and winter in San Miguel County	Yes	Yes	• Other habitat available in surrounding area. • Snags would be left in place around City reservoirs.
Black Tern *(Chlidonias niger)*	Species of Concern	• Prairie wetlands • Bogs, marshes • Open water, stands of cattails, rushes	Yes	No	None required

Table 1: Protected and Sensitive Species					
SPECIES	**FEDERAL STATUS**	**HABITAT NEEDS**	**POSSIBILITY OF OCCURRENCE IN PROJECT AREA**	**POTENTIAL IMPACT**	**MITIGATION MEASURES**
Ferruginous Hawk *(Buteo regalis)*	Species of Concern	• Open plains • Desert scrub	No	No	None required
Loggerhead Shrike *(Lanius ludovicianus)*	Species of Concern	• Agricultural lands • Prairies, shrub • Forest edges	May occur only as migrant	No	None required
Mexican Spotted Owl *(Strix occidentalis lucida)*	Threatened	• Mixed conifer • Broad-leaved forests such as Gambel Oak, Box Elder • Canyons with steep sides	Yes	Yes	• No thinning on slopes greater than 40% • Minimum numbers of snags to be left in place. • No large diameter trees would be cut. • Other habitat available in surrounding area. • Thinning would be conducted during fall and winter months
Mountain Plover *(Charadrius montanus)*	Proposed Threatened	• Open plains • Shortgrass prairie • Sod farms • Common in plains areas	No	No	None required
Northern Goshawk *(Accipiter gentilis)*	Species of Concern	• Montane forests: mixed-conifer, Ponderosa Pine, subalpine fir, old-growth • Snags and downed timber important for prey base	Yes	Yes	• Other habitat available in surrounding area. • Minimum number of snags and downed timber would be left in project area. • No large diameter trees would be cut. • Thinning would be conducted during fall and winter months

Table 1: Protected and Sensitive Species					
SPECIES	**FEDERAL STATUS**	**HABITAT NEEDS**	**POSSIBILITY OF OCCURRENCE IN PROJECT AREA**	**POTENTIAL IMPACT**	**MITIGATION MEASURES**
Southwestern Willow Flycatcher *(Empidonax traillii extimus)*	Endangered	• Willows, dense vegetation generally near still waters	Yes	Yes	• No thinning would be conducted in riparian zone and minimum 50-foot buffer would be implemented between equipment and streamside. • Thinning would be conducted during fall and winter months
Western Burrowing Owl *(Athene cunicularia hypugaea)*	Species of Concern	• Open grasslands, prairies • Associated with prairie dog towns • Some mountain, alpine meadow use	No	No	None required
White-faced Ibis *(Plegadis chihi)*	Species of Concern	• Subalpine marshes • Irrigated agricultural land	No	No	None required
Whooping Crane *(Grus Americana)*	Experimental Population, Non-essential	• Major river courses	No	No	None required
Yellow-billed Cuckoo *(Coccyzus americanus)*	Species of Concern	• Lowland riparian forest (2800 feet to 7500 feet) • Riparian thickets	May occur as summer transient	Yes	• No thinning would be conducted in riparian zone and minimum 50-foot buffer would be implemented between equipment and streamside. • Thinning would be conducted during fall and winter months
Flathead Chub *(Platygobio gracilis)*	Species of Concern	• Canadian and Pecos Rivers	No	No	None required
Plains Minnow *(Hybognathus placitus)*	Species of Concern	• Canadian River headwaters • Turbid rivers and creeks, main channels of major streams • Short distance upstream in tributaries of major rivers	No	No	None required
Texas Horned Lizard *(Phrynosoma cornutum)*	Species of Concern	• Flat, open, generally dry land with sparse vegetation	No	No	None required

Table 1: Protected and Sensitive Species					
SPECIES	**FEDERAL STATUS**	**HABITAT NEEDS**	**POSSIBILITY OF OCCURRENCE IN PROJECT AREA**	**POTENTIAL IMPACT**	**MITIGATION MEASURES**
New Mexico Silverspot Butterfly *(Speyeria nokomis nitocris)*	Species of Concern	• Alpine and streamside meadows	Yes	Yes	• No thinning in riparian zones • Thinning would be conducted during fall and winter months
Chiricahua Dock *(Rumex orthoneurus)*	Species of Concern	• Mid- to high-elevation wetland habitats in Arizona and Southwestern New Mexico	No	No	None required
Dwarf Milkweed *(Asclepias uncialis)*	Species of Concern	• Shortgrass prairie	No	No	None required
Holy Ghost Ipomopsis *(Ipomopsis sancti-spiritus)*	Endangered	• Found in only one canyon in the upper Pecos River drainage of the southern Sangre de Cristo Mountains	No	No	None required

Appendix F
Public Notice

PUBLIC NOTICE

Environmental Assessment for Fuels Modification and Management in the City of Las Vegas, San Miguel County, New Mexico. FEMA-1329-DR-NM

Interested persons are hereby notified that the Federal Emergency Management Agency (FEMA) is proposing to assist in the funding of fuels management activities in the City of Las Vegas in San Miguel County, New Mexico. In accordance with the National Environmental Policy Act of 1969, the National Historic Preservation Act and the implementing regulations of FEMA, an Environmental Assessment (EA) is being prepared to assess the potential impacts of the proposed action on the human and natural environment.

The EA evaluates alternatives that provide for compliance with applicable environmental laws. The alternatives to be evaluated include (1) No Action Alternative; (2) Manual and mechanical fuels management (Alternative 2- Proposed Action); and (3) Manual and mechanical fuels management followed by a broadcast burn (Alternative 3). Fuels management activities would occur on approximately 478 acres of the 991 acres of City-owned land located roughly 5 miles from downtown Las Vegas. This land serves as a forested buffer for the City's drinking water supply.

The draft EA is available for review between August 28, 2003 and September 26, 2003, at the City of Las Vegas building, 905 12th Street, Las Vegas, New Mexico 87701, or by contacting Robert Tafoya at 505-454-3832 between the hours of 8 A.M. and 5 P.M. The EA is also available for review online at the FEMA website: http://www.fema.gov/ehp/docs.shtm.

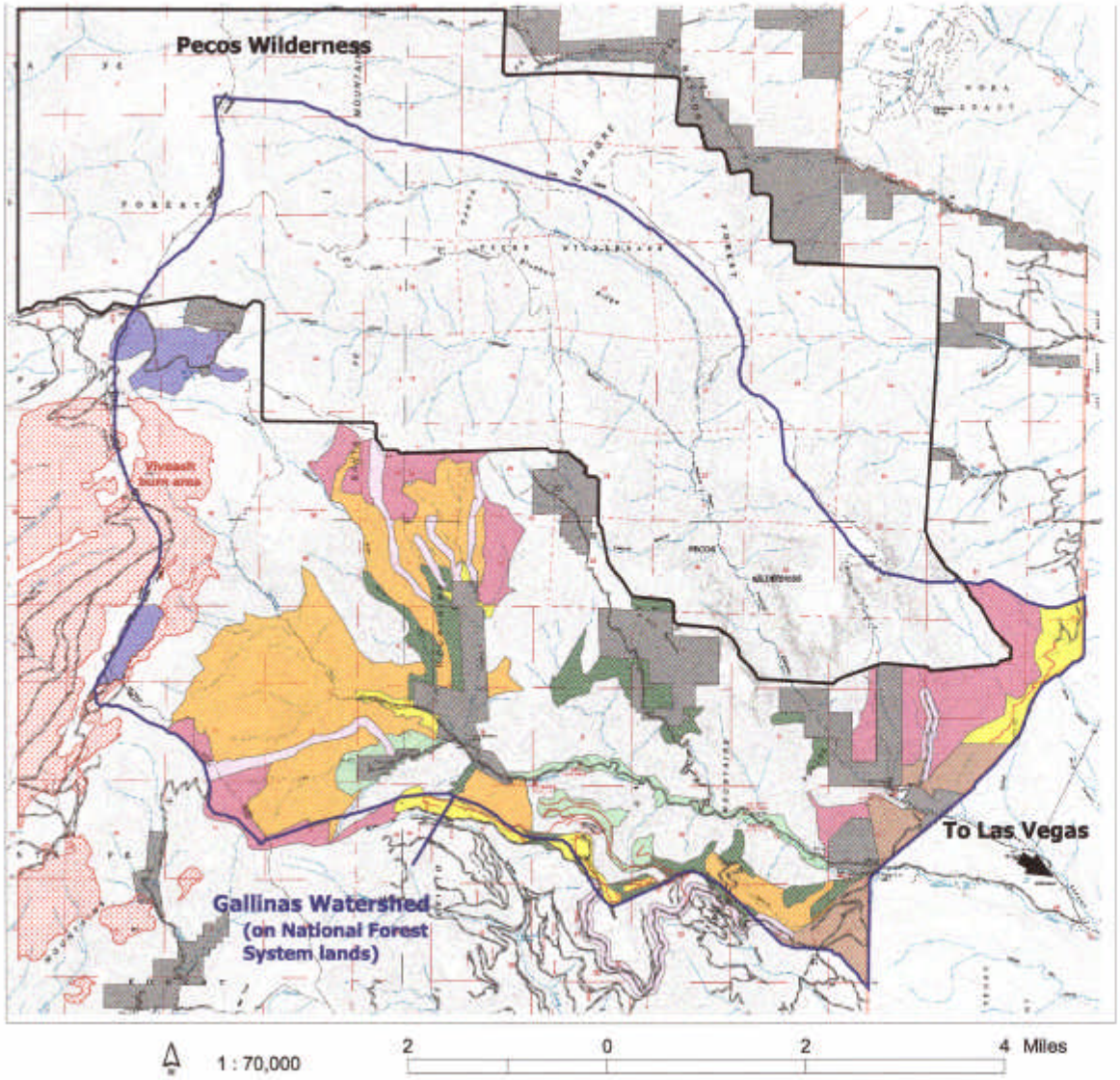
Written comments regarding this action should be directed to Janet Frey, Project Manager, URS Group, 200 Orchard Ridge Drive, Suite 101, Gaithersburg, MD 20878. Comments should be directed no later than 5 P.M. on September 26, 2003.

Appendix G
Public Comments

Public comments will be included in the final report.

Appendix H

Map of Proposed USFS Gallinas Watershed Thinning Project



Proposed Action

1 — Thin from below to 30 - 40% canopy cover, open for forest products, broadcast burn (~ 665 acres)

2 — Thin from below to 30 - 40% canopy cover, open for forest products, chip slash or build piles of slash, burn piles (~ 550 acres)

3 — Thin to open up natural meadows, open for forest products, build piles of slash, burn piles (~ 520 acres)

4 — Thin from below to 30 - 40% canopy cover, build piles of slash, burn piles, broadcast burn (~ 900 acres)

5 — Thin from below, leave 50 - 100 large trees per acre, lop and scatter slash, broadcast burn (~ 1,875 acres)

6 — Shaded fuelbreak - leave 20 - 30 of the largest trees per acre with 40 - 50 feet between stems, pile and burn slash (~ 745 acres)

7 — Broadcast burn only (~ 3,280 acres)

Improve existing roads (11.4 miles) of which 9.6 miles would be decommissioned at the end of the project

Existing Roads

319(h) Grant area (being treated by thinning & burning)

Private property

CLIENT	FEMA			
PROJ	Gallinas Watershed			
REVISION NO		DES BY		
SCALE	NOT TO SCALE	DR BY	LAL	X
FILE	MAPS.PPT	CHK BY	X	X

TITLE **PROPOSED ACTION FOR USFS VEGETATION MANAGEMENT PROJECT**

URS

PROJ NO 89-FEMA4136.00