

Chapter 2

Alternatives

Introduction

This chapter describes and compares the alternatives considered by the Forest Service for the Iyouktug project. It includes a discussion of how alternatives were developed, an overview of mitigation measures, monitoring and other features common to all alternatives, a description and map of each alternative considered in detail, and a comparison of these alternatives focusing on the significant issues. Alternative 3 is identified as the preferred alternative. Chapter 2 presents the alternatives in comparative form and is intended to sharply define the issues and provide a clear basis for choice among options by the decision maker (40 CFR 1502.14).

Some of the information used to compare alternatives at the end of Chapter 2 is summarized from Chapter 3, "Affected Environment and Environmental Consequences." Chapter 3 contains the detailed scientific basis for establishing baselines and measuring the potential environmental consequences of each alternative. For a full understanding of the effects of the alternatives, readers will need to consult Chapter 3.

Alternative Development Process

During the early stages of planning, a logging system and transportation analysis was completed for the project area. Based on this analysis, the suitable timber in the project area was divided into potential harvest areas, or units, and is based on all the commercial forest lands classified as suitable under the Forest Plan. This group of potential units is called the unit pool. Approximately 10,852 acres of suitable and available forest that met Forest Plan Standards and Guidelines could have been included in the potential unit pool. Approximately 36,090 acres of the project area were not included in any of the alternatives for the reasons described in the following paragraphs. The unit pool and the proposed road system were surveyed between 2002 and 2007.

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Development of the Proposed Action

Based on short- and long-term landscape or resource objectives (see Chapter 1), and on Forest and District direction and input from tribes and the public, the Interdisciplinary Team (IDT) used this unit pool to identify potential harvest areas for the Iyouktug Timber Sales project. These potential harvest areas, and the roads necessary to access them, were then evaluated in the field. From this pool of harvest areas, the responsible official identified a “Proposed Action”, which served as the basis for scoping. The Proposed Action for this FEIS, as described in Chapter 1 and considered in detail as Alternative 2, has changed slightly from the one described during scoping as a result of further field analysis.

Discussions with local tribes identified areas of important tribal value early in the process; harvest in those areas was deferred from the Proposed Action based on their input.

All units were included in the Proposed Action if they were expected to meet Forest Plan Standards and Guidelines (when all Best Management Practices [BMPs], project design and mitigations are included). Large areas were identified as not suitable for harvest according to the Forest Plan due to steep slopes and slope stability, sensitive soils, goshawk nest buffers, riparian areas and buffers, or active alluvial fan areas through IDT discussions and by using GIS analysis and preliminary field data. Some units were dropped to provide wildlife corridors. In addition, the District Ranger provided direction to avoid harvest in some units along the northwest border of the Iyouktug project area to provide a visual buffer between National Forest System lands and lands owned by others.

In developing the Proposed Action, the IDT attempted to limit the amount of road building – both to improve the economic viability of the sale and to reduce the impacts of roads.

The Proposed Action was partially designed to meet the needs of local timber operators for smaller sales over a long period of time. The Iyouktug IDT tried to identify as many places as possible with gentle slopes that could provide opportunities for shovel yarding. Shovel yarding is the least costly yarding method, requiring less large equipment than other methods and, therefore, is favored by small timber operators. Partial harvest of up to 50% of the basal area is proposed in shovel units to make them more economical for operators while also providing benefits to wildlife and other resources through leave trees. Partial harvest allows operators to remove the higher value trees, while leaving trees that are hollow, small, or too large for the equipment standing. Access roads to units were proposed where they were considered feasible and where roads were economical because they would be on gentle slopes and have few and/or small stream crossings. Roads were proposed in short segments for one unit, or longer segments that accessed multiple units or areas that could provide future timber.

The Proposed Action was also designed to meet the needs of large operators for large sales and helicopter harvest. Many units in the Iyouktug project area would be difficult, or impossible, to access with roads, but could be helicopter yarded. Providing large sales and/or small sales over time meets the goals and objectives of the Tongass Forest Plan. Partial harvest of 25% or less, or 40% or less, of the basal area is proposed in helicopter units.

The IDT also identified locations for cable yarding. Clearcutting was prescribed to minimize potentially adverse impacts from windthrow in moderate high and high wind risk areas, and preclude or minimize the occurrence of potentially adverse impacts from hemlock dwarf mistletoe infections, and logging damage; these cable yarding areas are too steep or wet for shovel yarding, but close enough to roads to use a ground-based yarding system. Many units originally considered for shovel-yarding were changed to cable-yarding to accommodate steeper slopes and reduce impacts to soil. Clearcutting is normally prescribed with cable yarding because of the infeasibility of leaving standing trees in cable units and the safety requirements related to cable harvest.

Some low volume units were dropped from consideration because their economic value was low and dropping the units provided for protection of other resource values. Some remote units (units far from existing roads and far from other units) were dropped from the unit pool to limit roadbuilding and because of their inaccessibility to helicopter yarding due to the high cost of long-distance yarding.

The Proposed Action meets Forest Plan Scenery Standards and Guidelines along National Forest System (NFS) Road 8530, a visual priority route, while still meeting timber operators' needs. Harvest of 25 to 50% of the basal area in a unit through single tree selection allows timber operators to remove high-value trees while leaving large, hollow or defective trees, and mid-sized and smaller trees for wildlife, seed sources, and reducing the visual impact of cutting units. Partial harvest also allows sensitive areas in those units to be avoided.

The condition, quantity, and quality of old growth were considered for the Iyouktug proposal from the early stages of analysis. Small old growth reserves (OGRs) were evaluated to assess if the size, spacing, location and habitat composition meet Forest Plan standards and guidelines. An interagency review by biologists from the Forest Service, Alaska Department of Fish and Game, Department of Natural Resources and the United States Fish and Wildlife Service determined that the mapped small OGRs in VCUs 2080 and 2090 did not meet the acre requirements for size and composition of productive old growth habitat. The review team recommended that the boundaries of the two small OGRs and the adjacent large OGR in VCU 2100 be adjusted to increase acres, improve connectivity and to follow recognizable features. These recommendations are part of the Proposed Action.

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Potential harvest units were validated, modified, dropped and/or deferred based on findings of field investigations. Modifications were made as needed to meet Forest Plan Standards and Guidelines. For instance, if previously unknown streams were discovered, the Riparian Forest-wide Standards and Guidelines would be applied. Some units were adjusted to have more logical boundaries or to improve logging system feasibility. This effort led to the current unit pool from which the action alternatives were developed. Site-specific descriptions and resource considerations for each unit are shown on "Unit Cards" included as Appendix B of the DEIS. Proposed access methods are described on "Road Cards" in Appendix C of the DEIS and Appendix C of the FEIS.

Development of Alternatives

The IDT used information from public scoping, in conjunction with the field-verified unit pool and related resource information, to formulate the significant issues (Chapter 1) and alternatives to the Proposed Action. The Proposed Action and each action alternative presented in this FEIS provide a different response to the significant issues. Each action alternative is also designed to meet the stated Purpose and Need for the Iyoutkug project and the project-specific desired conditions.

Each action alternative represents a site-specific proposal developed through intensive interdisciplinary evaluation and field verification. Within the range of options they provide, the decision maker can consider various combinations of alternatives in determining the Selected Alternative.

Alternatives Considered but Eliminated from Detailed Study

Several alternatives were considered during the planning process, but have not been included in the EIS for detailed study. These are described briefly below, along with the reasons for not considering them further.

Alternative A – Harvest timber using only existing roads (build no new permanent or temporary roads, reconstruct no closed roads, and do not helicopter yard).

This alternative was not considered in detail because past harvest along the existing road system has removed most of the available timber along these roads; therefore, the amount of timber accessible from existing roads is extremely limited. While all the alternatives were developed to maximize the removal of harvest from existing roads (it provides the most economic harvest with the least environmental effects), the volume of timber available from existing roads, less than 5 million board feet (MMBF), would not meet the needs of this project. This alternative would not meet Forest Plan goals and would raise costs of future projects.

Alternative B – Harvest timber using only existing roads and helicopter yarding (build no new roads, reconstruct no closed roads).

This alternative was considered to address concerns over adverse environmental effects of new road construction.

As explained in Alternative A, the amount of timber accessible from existing roads is extremely limited. The timber accessible by helicopter yarding, while substantial, about 29 MMBF, has the highest timber removal cost. The combined volume of timber available from existing roads and from helicopter yarding, 34 MMBF, could meet some of the needs of this project (provide a stable supply of timber from the Tongass National Forest) but would not meet the need for a long-term, stable supply of timber for local sawmills and timber operators because these operators currently do not have the ability to do helicopter yarding. This alternative would not meet Forest Plan transportation goals and would raise costs of future projects due to the disproportionate increase of transportation costs.

Alternative C – Build no new permanent roads (Harvest timber using existing roads and temporary roads).

The IDT proposed new NFS roads where there was potential for more than one entry or for future timber production. Roads designated as NFS road are long-term investments and are considered needed and valuable for future development. Additionally, this alternative is not substantially different from Alternative 5, which has only 2.4 miles of NFS road construction. The Responsible Official could decide in the Record of Decision to choose Alternative 5 without NFS road construction, effectively creating an alternative with only temporary road building.

Alternative D – Harvest timber using only ground-based harvest systems and avoid all harvest and road construction in inventoried roadless areas (no helicopter yarding anywhere and no harvest or roads in inventoried roadless).

This alternative was similar enough to three of the alternatives that were developed and analyzed in detail (Alternatives 2, 4, and 5), that another alternative was not needed to provide a range of alternatives. In the Record of Decision, the Responsible Official could decide to remove or defer units from an alternative, thus making a decision on Alternatives 2, 4, or 5 similar to this alternative.

Alternative E – Harvest timber using helicopter yarding in the inventoried roadless area, and harvest timber throughout the roaded portion of the project area using a combination of ground-based and helicopter yarding.

This alternative was similar enough to three of the alternatives that were developed and analyzed in detail (Alternatives 2, 4, and 5), that another alternative was not needed to provide a range of alternatives. In the Record of Decision, the Responsible Official could decide to remove or defer units

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from an alternative, thus making a decision on Alternatives 2, 4, or 5 similar to this alternative. Additionally, while this alternative would limit effects in inventoried roadless areas, it does not respond to Issue #2 as well as Alternative 4 which does no harvest in inventoried roadless areas.

Alternative F – Harvest timber only through small-volume sales for local mill operators.

This alternative was not considered in further detail because this recommendation is not substantially different from Alternative 5, which is being analyzed in detail. All of the alternatives being considered in the Iyouktug analysis propose harvest intended to meet the need for a long-term, stable supply of timber for local sawmills and timber operators.

Alternative G – Build temporary roads to access timber, but leave temporary roads open until they close naturally (do not make contractors close temporary roads)

This alternative was not considered in detail because leaving temporary roads open until grown over naturally would not meet Forest Service direction (FSM 7705 and 7711.1 Temporary Road and Forest Road Atlas definitions).

Alternative H – Build roads in the middle of units to keep yarding distances shorter than 250'

In some cases, having a road in the middle of the unit may not reduce cable yarding costs because of issues with topography. Where cable yarding is to be used, distances of 250 feet or less would be extremely short; the cost of additional roads for this short yarding distance would not be warranted.

Alternative I – Helicopter log using other marine access facility (MAF) location/s to reduce cost (use False Bay or Whitestone Harbor)

Developing facilities that meet current environmental standards at Whitestone Harbor and False Bay would be cost-prohibitive.

Alternative J – Include an alternative or alternatives that do only restoration activities such as close roads, obliterate roads, ends erosion and restores fish passage

Restoration activities such as road closures, decommissioning, and fish passage restoration do not fall within the purpose and needs of this proposal. Alternative 3 addresses this issue; in Alternative 3 new roads would be placed into storage, thereby reducing the impacts of new roads.

Alternative K – Stands should be harvested in areas naturally regenerated by windthrow because these areas are not old growth and act as naturally created second growth

In the Iyouktug project area, not all wind-generated stands are of a commercial size and most wind-generated stands are small isolated patches; harvesting only wind-generated forest would not meet the purpose and need of the Iyouktug project because the amount of timber would be very limited (see Alternative A for further discussion).

Alternative L – Avoid harvesting units with cedar characteristics (generally stands with older cedar trees, such as in Units 198 and 199)

Prescriptions would be written to ensure maintenance of the cedar component in all stands where there is cedar prior to harvest. Additionally, not all stands with cedar characteristics (including Units 198 and 199) are proposed for harvest, consequently, retaining the cedar components in the study area.

Alternatives Considered in Detail

Alternative 1 as well as the Proposed Action (Alternative 2) and three other action alternatives are considered in detail. Alternative 1 is the No-action Alternative, under which the project area would have no timber harvest or road construction at this time and would remain subject to natural or ongoing changes only. The other action alternatives represent different options of satisfying the Purpose and Need than does the Proposed Action by responding with different emphases to the significant issues discussed in Chapter 1. Maps of all alternatives considered in detail are provided at the end of Chapter 2. Because of the large size of the area and the need for detail, the maps for Alternatives 2, 3, 4, and 5 were split into two sections (A and B); see Figure 2-2 for an overview of how these map views should be laid out. The map for Alternative 1, the No-action Alternative, represents the current condition of the project area (Figure 2-1). Larger-scale maps of the alternatives are contained in the project record.

Alternative 1 (No Action)

Alternative 1 proposes no new timber harvest or road construction from the Iyouktug project area at this time. It does not preclude timber harvest from other areas or from the Iyouktug project area at some time in the future. The Council on Environmental Quality (CEQ) regulations (40 CFR 1502.14d) requires that a "No Action" alternative be analyzed in every EIS. This alternative represents the existing condition against which the other alternatives are compared. The map for Alternative 1 shows Forest Plan LUDs along with streams, existing roads, previously harvested areas, and the location of inventoried roadless areas.

This alternative would address concerns about effects to deer habitat and roadless character (Issues 1 and 2), by having no effects on deer winter habitat or habitat connectivity and no effects on wildlife and fish and their habitat or ecological, cultural, and geological values in inventoried roadless areas. Alternative 1 would not provide for an economic timber supply

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(Issue 3, see Chapter 1). This alternative would not change old growth reserves (OGRs).

Alternative 1 would defer moving the project area toward the desired future condition described in the Forest Plan. The existing condition would continue to be influenced by natural disturbance processes, ongoing actions such as recreation and fish pass maintenance and activities on other ownerships. Road maintenance of existing open roads, including bridge replacements and/or brushing on all or parts of NFS Roads 8535, 8534, 85341, 853412, would occur as ongoing activities under Alternative 1. Road closures of existing open roads (NFS Roads 85307, 85309) would occur as ongoing activities covered by the 2002 Access Travel Management decision (USDA Forest Service 2002b) under Alternative 1. Approximately 36.2 miles NFS road would remain open in the project area after a decision to choose Alternative 1, and 34.9 miles NFS road would remain open after ongoing road closure activities.

Alternative 2 (Proposed Action)

Alternative 2 is the Proposed Action. Alternative 2 is essentially what was presented to the public in August 2006 scoping with further refinements based on field verification to meet the needs of the resources and correct inaccuracies in early data.

Objectives

The emphasis of Alternative 2 is to maximize the timber harvest in the Iyouktug project area while meeting Forest Plan direction. The development and design of Alternative 2 is described above under Alternative Development Process, Proposed Action.

Actions

Alternative 2 would provide up to 58.1 million board feet (MMBF) of timber from approximately 4,185 acres using shovel yarding, cable-logging, and helicopter yarding systems (see Figures 2-3A and 2-3B).

Approximately 1,253 acres would be clearcut, and 2,932 acres would be partial harvest of up to 50% of the basal area. Alternative 2 would harvest approximately 1,871 acres in inventoried roadless areas.

Timber in Alternative 2 would be offered through various small sales and one or more large sales over an extended period of time following the Record of Decision (ROD). It is anticipated that part of the timber would be offered annually in small sales (1 to 5 MMBF/yr) and part of the timber would be offered in large sales. The larger timber sale(s) would be offered concurrently with small sales.

This alternative would construct a total of about 13.4 miles of temporary roads and 4.2 miles of National Forest System (NFS) road. All new temporary roads would be decommissioned after timber sale harvest (the roads would be closed to all motorized vehicles, access blocked, and all stream crossing structures removed - see Glossary in Chapter 4 of this FEIS). All newly constructed NFS roads would remain open for future

timber harvest and silvicultural needs. The NFS road construction mileage includes reclassifying approximately 0.4 mile of existing, unauthorized roads (that access rock pits) to NFS roads (unauthorized roads are defined as “roads or trails that are not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas.” – see Transportation in Chapter 3 and the Glossary in Chapter 4 of this FEIS). Alternative 2 would include reconstruction of about 6.9 miles of existing NFS roads that are currently closed; these roads would be closed and placed into storage after timber sale harvest. About 4.2 miles of currently open road (NFS Roads 85307, 85309, and the furthest portion of 8534) would be used in this alternative, but would be closed and placed into storage after timber sale harvest as part of the Access Travel Management decision (USDA Forest Service 2002b); bridge replacement (and removal upon timber sale completion) would occur at three locations on Roads 85307, 85309, and 8534. Road maintenance of other existing open roads would be part of ongoing activities and would occur no matter which Iyouktug alternative was chosen. Approximately 40.4 miles of NFS road would remain open after timber sale completion. After implementation of the 2002 Access Travel Management decision, 36.2 miles of NFS road would remain open.

About 5.4 miles of temporary road and 2.7 miles of NFS road would be constructed in inventoried roadless areas; all miles of temporary road would be decommissioned and all miles of NFS road in inventoried roadless areas would remain open in inventoried roadless areas for future silvicultural activities.

Alternative 2 would modify the project area old growth reserves (OGRs) to meet Forest Plan standards and guidelines. This alternative would implement the interagency biologists’ recommendations to increase acres, improve connectivity, and adjust boundaries to follow recognizable features (see Figures 2-3A, 2-3B, and Figure 3-1 in Chapter 3). The proposed changes to OGRs in this EIS are the same as those proposed for the Forest Plan Amendment:

- Acres would be added to the western side of the small OGR in VCU 2080 to meet acre criteria for this OGR.
- The small OGR in VCU 2090 would be moved to the west to provide connectivity between the OGRs in VCUs 2080 and 2100, and acres would be added to meet acre criteria for this OGR.
- The size classification of the small OGR in VCU 2100 would be changed to large and the western boundary would be modified to follow recognizable features.

Alternative 3

Objectives

Alternative 3 was developed to minimize impacts to deer habitat and connectivity while providing for an economic timber supply. This alternative includes ground-based units found in Alternative 5 and proposes

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most of the helicopter-yarded timber volume in Alternative 2. Some units proposed in Alternatives 2 and 5 were modified in Alternative 3 to maintain deer winter habitat and habitat connectivity. All new roads would be closed in Alternative 3 to help minimize the effects of this alternative on deer habitat capability. Alternative 3 was developed in response to public concerns about the effects of harvest on deer habitat (Issue 1) as well as some concerns about economics (Issue 3). By closing all roads in inventoried roadless areas, Alternative 3 also minimizes effects to roadless characteristics (Issue 2).

Actions

Alternative 3 would provide up to 41.7 MMBF of timber from approximately 3,332 acres using shovel yarding, cable-logging, and helicopter yarding systems (see Figures 2-4A and 2-4B). Approximately 574 acres would be clearcut, and 2,758 acres would be partial harvest of up to 50% of the basal area. Alternative 3 would harvest approximately 1,416 acres in inventoried roadless areas.

The timber in Alternative 3 would be offered through various small sales and one or more large sales over an extended period of time following the ROD. It is anticipated that part of the timber would be offered annually in small sales (less than 3 MMBF/yr) and part of the timber would be offered in large sales.

This alternative would construct about 3.9 miles of temporary roads and 2.8 miles of NFS road. All new temporary roads would be decommissioned after timber sale harvest (as described above and in the Glossary in Chapter 4 of this FEIS). The NFS road construction mileage includes reclassifying approximately 0.4 mile of existing, unauthorized roads (that access rock pits) to NFS roads; these roads to rock pits would remain open. All other newly constructed NFS roads would be closed to motorized vehicles and placed in storage after timber sale harvest. Alternative 3 would include reconstruction of about 6.3 miles of existing NFS roads that are currently closed; these roads would be closed to all motorized vehicles and placed into storage after timber sale harvest. About 4.2 miles of currently open road (NFS Roads 85307, 85309, and the furthest portion of 8534) would be used in this alternative, but would be closed and placed into storage after timber sale harvest as part of the Access Travel Management decision (USDA Forest Service 2002b); bridge replacement (and removal upon timber sale completion) would occur at three locations on Roads 85307, 85309, and 8534. Road maintenance of existing open roads would be part of ongoing activities. Approximately 36.6 miles of NFS road would remain open after timber sale completion. After implementation of the 2002 Access Travel Management decision, 32.4 miles of NFS road would remain open.

About 0.5 miles of temporary road and 1.6 miles of NFS road would be constructed in inventoried roadless areas; all miles of temporary road would

be decommissioned and all miles of NFS road in inventoried roadless areas would be closed and placed into storage after timber sale harvest.

Alternative 3 would modify the project area OGRs to implement the interagency biologists' recommendations as described in Alternative 2 (see Alternative 2 description, above).

Alternative 4

Objectives

Alternative 4 was developed to minimize impacts to the roadless character of Iyouktug's three inventoried roadless areas (IRAs) by avoiding timber harvest and road construction in Whitestone, Point Augusta, and Freshwater Bay Inventoried Roadless Areas. This alternative is based primarily on Alternative 2 with all units in inventoried roadless area removed.

Alternative 4 was developed in response to public concerns about the impacts of harvest and road building on roadless area characteristics (Issue 2), but it also partially responds to concerns about economic viability (Issue 3).

Actions

Alternative 4 would provide up to 33.8 MMBF of timber from approximately 2,584 acres using shovel yarding, cable-logging, and helicopter yarding systems (see Figures 2-5A and 2-5B). Approximately 636 acres would be clearcut, and 1,948 acres would be partial harvest of up to 50% of the basal area. Alternative 4 would not harvest in inventoried roadless areas.

The timber in Alternative 4 would be offered through various small sales and one or more large sales over an extended period of time following the ROD. It is anticipated that part of the timber would be offered annually in small sales (1 to 3 MMBF/yr) and part of the timber would be offered in large sales.

This alternative would construct about 7.8 miles of temporary roads and 1.4 miles of NFS road. All new temporary roads would be decommissioned after timber sale harvest (as described above and in the Glossary in Chapter 4 of this FEIS). All newly constructed NFS roads would remain open for future timber harvest and silvicultural needs. The NFS road construction mileage includes reclassifying approximately 0.4 mile of existing, unauthorized roads (that access rock pits) to NFS roads. Alternative 4 would include reconstruction of about 7 miles of existing NFS roads that are currently closed; these roads would be closed and placed into storage after timber sale harvest. About 4.2 miles of currently open road (NFS Roads 85307, 85309, and the furthest portion of 8534) would be used in this alternative, but would be closed and placed into storage after timber sale harvest as part of the Access Travel Management decision (USDA Forest Service 2002b); bridge replacement (and removal upon timber sale completion) would occur at three locations on Roads 85307, 85309, and 8534. Road maintenance of other existing open roads would be part of

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ongoing activities. Approximately 37.7 miles of NFS road would remain open after timber sale completion. After implementation of the 2002 Access Travel Management decision, 33.5 miles of NFS road would remain open.

No road would be constructed in inventoried roadless areas.

Alternative 4 would modify the project area OGRs to implement the interagency biologists' recommendations as described in Alternative 2 (see Alternative 2 description, above).

Alternative 5

Objectives

Alternative 5 was developed to maximize the economic return of timber harvest in the Iyouktug project area. Alternative 5 proposes to harvest the most productive sites with a short length of road construction and proposes only ground-based yarding systems. This alternative is based primarily on Alternative 2 with modification for economics; it concentrates on areas with few resource concerns. Alternative 5 was developed in response to public concerns about the economic viability of timber sales (Issue 3), but also partially addresses concerns about effects on roadless area characteristics (Issue 2).

Actions

Alternative 5 would provide up to 16.5 MMBF of timber from approximately 883 acres using shovel yarding and cable-logging yarding systems (see Figures 2-6A and 2-6B). Approximately 646 acres would be clearcut, and 237 acres would be partial harvest of up to 50% of the basal area. Alternative 5 would harvest approximately 229 acres in inventoried roadless areas.

The timber in Alternative 5 would be offered through various small sales over an extended period of time following the ROD. It is anticipated that less than 3 MMBF of timber harvested by ground-based logging systems would be offered annually as small sales.

This alternative would construct a total of about 4.4 miles of temporary roads and 2.8 miles of NFS road. All new temporary roads would be decommissioned after timber sale harvest (as described above and in the Glossary in Chapter 4 of this FEIS). All newly constructed NFS roads would remain open for future timber harvest and silvicultural needs. The NFS road construction mileage includes reclassifying approximately 0.4 mile of existing, unauthorized roads (that access rock pits) to NFS roads. Alternative 5 would include reconstruction of about 1.4 miles of existing NFS roads that are currently closed; these roads would be closed and placed into storage after timber sale harvest. About 3.0 miles of currently open road (NFS Roads 85309, and the furthest portion of 8534) would be used in this alternative, but would be closed and placed into storage after timber sale harvest as part of the Access Travel Management decision (USDA Forest Service 2002b); bridge replacement (and removal upon timber sale completion) would occur at two locations on Roads 85309 and 8534. Road

maintenance of other existing open roads would be part of ongoing activities. Approximately 39.0 miles of NFS road would remain open after timber sale completion. After implementation of the 2002 Access Travel Management decision, 34.8 miles of NFS road would remain open.

About 0.5 miles of temporary road and 1.6 miles of NFS road would be constructed in inventoried roadless areas; all miles of temporary road would be decommissioned and all miles of NFS road in inventoried roadless areas would remain open in inventoried roadless areas for future silvicultural activities.

Alternative 5 would modify the project area OGRs to implement the interagency biologists' recommendations as described in Alternative 2 (see Alternative 2 description, above).

Activities and Design Elements Common to All Action Alternatives

All action alternatives (Alternatives 2, 3, 4, and 5) including the Proposed Action are consistent with the 1997 Forest Plan, as amended. All applicable Forest-wide and land use designation standards and guidelines have been incorporated. The Forest Service uses many mitigation and preventive measures in the planning and implementation of land management activities. The application of these measures begins during the planning and design phases of a project. Additional direction comes from applicable Forest Service manuals and handbooks. The following items are listed to highlight some of the key direction from the Forest Plan (primarily from Chapter 4, "Forest-wide Standards and Guidelines"). See also the next section, Project-specific Mitigation, and the unit cards and road cards in Appendices B and C of the DEIS and Appendix C of the FEIS.

In addition, several elements of the project design and connected activities are common to all the action alternatives; those elements are described here. They apply to Alternatives 2, 3, 4, and 5.

Some connected activities fairly common to timber sales on the Tongass National Forest will not be necessary for the Iyouktug Timber Sales. No camp will be necessary because the town of Hoonah is in close proximity to the sale and facilities in Hoonah could fulfill those needs. Existing rock pits will be expanded for road building; since there are many existing rock pits, no new rock pits are expected to be developed. The Forest Service has a cooperative agreement to use an existing, permitted marine access facility (MAF) on private land in Hoonah, so no new MAFs would be necessary.

Beach and Estuary Fringe

Beach and estuary fringe extend 1,000 feet inland from mean high tide along all marine coastlines. The Forest Plan classifies the beach and estuary fringe

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as unsuitable for planned commercial timber harvest (Forest Plan pages 4-5). No timber harvest or new roads are proposed in beach or estuary fringe.

Biodiversity and Old Growth

Each alternative complies with the Forest Plan conservation strategy designed to ensure well-distributed viable populations of wildlife.

The small old growth habitat reserves in VCUs 2080, 2090, and 2100 (Old-growth Habitat LUD) mapped in the Forest Plan FEIS have been evaluated for size, spacing, and habitat composition and would be modified in all the action alternatives as described under Alternative 2. The proposed changes to old growth habitat reserves in this EIS are the same as those proposed for the Forest Plan Amendment.

Cedar Component

Where possible given safety requirements, logging feasibility and potential for windthrow, larger older trees with high amounts of defect would be left standing. Some mid-sized (16 to 20-inch DBH) and larger (greater than 30-inch DBH) yellow-cedar with high vigor and good seed producing potential would also be left standing individually and/or in clumps to assure regeneration and maintain stand structure, species diversity, and future stand productivity. Specific details are in the unit cards and prescriptions in the project record.

Natural regeneration is expected to be similar to the current species mix in all stands. If necessary, inter-planting of yellow-cedar or spruce would be scheduled to maintain pre-harvest composition.

However, to accelerate yellow-cedar establishment, to provide a competitive advantage, and to increase overall composition, inter-planting of yellow-cedar would be scheduled in specific partial harvest shovel units (Units 105, 108, 111, 178, 1773).

Based on scientific recommendations (Hennon 2007 and 2006) and in response to the public's concern about cedar decline, planting of yellow-cedar would be prescribed in Units 114, 121, 192, 194, 197, 202 in an effort to increase yellow-cedar composition and establish yellow-cedar in areas judged to be suitable for long-term yellow-cedar survival (i.e. not prone to future yellow-cedar decline). Currently yellow-cedar is not present or is a minor component in these units, but these units are considered to have favorable site characteristics for promoting yellow-cedar establishment and long-term growth.

Fish and Marine Habitats

Forest Plan Standards and Guidelines for riparian areas are applied to all fish streams (Class I and II) within the project area and to non-fish-bearing Class III streams.

Hydrologic and fisheries resource analysis for the project has included landscape, watershed, and site-level considerations. No opportunities were identified for adjusting Riparian Management Area boundaries.

Unit cards and road cards in Appendices B and C of the DEIS indicate which streams are likely to need special attention during implementation, such as applying timing restrictions for in-stream activities, or using larger-than-normal culverts or bridges.

All applicable Best Management Practices (BMPs) would be incorporated during sale design and harvest administration. A National Pollutant Discharge Elimination System permit, while expired in 2005, is still valid and has been administratively extended for the Long Island MAF. This permit provides for protection of water quality by eliminating discharge of surface water directly from the working area to the environment through the use of settling ponds and a drainage system.

Heritage Resources

Areas considered as having a high probability of containing heritage resources (cultural sites) have been intensively surveyed by heritage resource specialists. All identified heritage sites have been avoided. A detailed Heritage Resource Report was prepared and will be submitted to the Alaska SHPO as per the R10 Programmatic Agreement with the Alaska State Historic Preservation Office and the Advisory Council on Historic Preservation. If heritage resources or items protected by the Native American Graves Protection and Repatriation Act are discovered during implementation, work should cease in the immediate vicinity. The sales administrator should be contacted, who will contact the appropriate archaeologist. Hoonah Ranger District in consultation with the appropriate Native organization and the State Historic Preservation Office will determine a course of action.

Invasive Species

On October 19, 2007, the Tongass National Forest implemented a supplement to the Forest Service Manual 2080 concerning invasive plant species (Supplement No.: R10 TNF – 2000-2007-1). The following design elements would be used to address invasive species in the Iyouktug project area.

- For oxeye daisy, creeping buttercup, and anise, which have very limited distribution, instigate manual control measures (as described in the Sitka and Hoonah Ranger Districts Weed Eradication Decision Memo) in rock quarries prior to new road construction.
- Inspect rock quarries for reed canary grass infestation prior to use and designate preferred clean areas for rock extraction. Paint or otherwise designate portions of quarries that are heavily infested with reed canary grass. Stockpile or use rock infested with reed canary grass close to the rock source, preferably on existing roads,

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for reconstruction, or at the intersection of new roads. Use uninfested rock on new roads wherever possible.

- Where feasible and where safety will not be compromised, for new road construction, limit the clearing of road-side trees to maintain a 100-yard long forested buffer at or near the starting junction. This will maintain forest canopy cover over the road and road cutbanks to create a shaded corridor that will suppress weed species. Sufficient shade over a road effectively serves as a barrier to the spread of some weed species. Limited clearing would not apply to harvest units.
- Road brushing and other road maintenance associated with the project should be designed to reduce the risk of spreading weed species (see FSM 2080 Supplement No.: R10 TNF – 2000-2007-1).

Karst Resources

All activities have been designed to avoid high-vulnerability karst and to meet Forest Plan Standards and Guidelines for low and moderate vulnerability karst areas.

Marine Access Facility (MAF, formerly called log transfer facility or LTF)

The existing permitted Long Island MAF near Hoonah may be used to transport logs by saltwater to a processing facility. The Forest Service has a cooperative agreement to use this MAF.

Roads

Temporary (or NFS) roads were proposed in all units where shovel-yarding distances exceeded 500 feet to provide a surface for log hauling. Temporary road locations on the maps are estimated. Temporary road locations may change based on agreements between the Forest Service and the purchaser. Temporary road decommissioning will be part of the timber sale contract.

Road closure, storage, and decommissioning are described in the Glossary in Chapter 4 of this FEIS

Some shovel units, or shovel ground in other units will be accessed by shovel-yarding corridors instead of by roads; these corridors do not require gravel to be placed in the bed, but must use a mat of vegetation or puncheon to allow shovel yarders to make several passes over the area to minimize damage to the soil (because soils lack adequate bearing strength; FSH 2509.22).

There are sixteen existing rock pits in the Iyouktug project area, as identified on the GIS layer, that would supply rock for road construction or reconstruction needs. Seven of the pits are on or along NFS roads; nine of the rock pits are on existing, open, unauthorized roads totaling approximately 0.4 mile. Because of the need for rock pits for this project, as well as for future road maintenance, all action alternatives propose

reclassifying these existing, “unauthorized” roads to NFS roads (using today’s road vocabulary, this reclassification is called construction). As described in Alternatives 2, 3, 4, and 5, rock pit access roads would be managed as NFS roads. Engineers estimate that an average of 9,600 cubic yards of rock is needed per mile of road (a cubic yard is about the size of a large bathtub). All roads, landings and rock pits will be designed and constructed in accordance with FSH 2509.22 and 33 CFR 323.4(a).

Scenery

Potential harvest units within the viewshed of a Visual Priority Travel Route and Use Area were evaluated for consistency with the Visual Quality Objectives as required in the Forest Plan. Where needed, unit boundaries and silvicultural prescriptions were designed to be consistent with the Forest Plan.

Soils, Water Quality and Wetlands

Potential harvest units with slopes greater than 72 percent have received an on-site analysis of slope and class IV channel stability and an assessment of potential down stream effects. At the project planning level, the Forest Supervisor may approve timber harvest on slopes of 72 percent or more on a case-by-case basis, based on the results of an on-site analysis of slope and class IV channel stability and on an assessment of potential impacts of accelerated erosion on downslope and downstream fish habitat, other beneficial uses of water, and other resources. Areas with moderate risk are included in the proposed units where the potential for downstream effects is low.

Road locations generally avoid slopes greater than 67 percent, unstable areas, and slide-prone areas where it is feasible to do so. Roads on slopes in excess of 67% or on unstable soils require geotechnical investigation and appropriate designs.

All roads would be located to avoid wetlands to the extent practicable. Where wetlands cannot be avoided, 33CFR 323.4 baseline provisions and State approved BMPs are followed to minimize impacts to wetlands (see road cards and unit cards, Appendices B and C in the DEIS).

Subsistence

All alternatives have been evaluated in compliance with ANILCA, Title VIII, Section 810. All action alternatives may result in a significant possibility of a significant restriction on subsistence uses of deer in the project area. Subsistence hearings were held as required.

Threatened, Endangered and Sensitive Species

A biological evaluation/assessment was completed and concurrences were obtained from the responsible Federal agencies for threatened or endangered species potentially affected by the project activities. Standards and guidelines have been applied as needed to ensure that any listed threatened or endangered species or its habitat will not be adversely affected. The

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Forest Plan contains standards and guidelines for each designated sensitive species, and these are incorporated into the project as applicable.

Timber Harvesting/Helicopter Logging

Service/staging areas for helicopter logging operations would be needed in Alternatives 2, 3, and 4, and potentially Alternative 5 (see previous paragraph). About 45 sites of 1-4 acres would be needed for helicopter maintenance, for log storage/helicopter log dropping and associated limbing and/or bucking, sorting (in preparation for haul) and truck loading operations, and for helicopter fueling operations. These service areas would be existing openings like rock pits, older landings, less traveled roads, or open areas in old cut units. These areas may require the removal of existing vegetation or, in the case of a rock pit, may require minor expansion for safety or the movement of existing material to level the pit floor and clear obstacles. In some cases, an area may be constructed and/or an existing area may be enlarged. All sites would be located in pre-existing developed sites or in areas that are proposed for development such as temporary roads.

Wildlife Habitat

The Forest Plan conservation strategy, including all species-specific standards and guidelines, is considered sufficient to maintain habitat for viable populations for all species potentially within the project area. Additional protections to maintain brown bear denning habitat are prescribed in all alternatives. Known bear dens and newly found bear dens will be buffered with a 200-foot no harvest buffer, where feasible. Forest Plan Standards and Guidelines will be applied.

The Forest Plan Standards and Guidelines were applied around the two goshawk nest sites. The Forest Plan requires that we maintain 100 acres of productive old growth around confirmed and probable nest sites whether or not they are occupied. There is also a requirement to permit no continuous disturbance likely to result in nest abandonment within 600 feet of the active nest from March 15-August 15.

Proposed harvest units that meet the criteria for application of the Forest Plan Standards and Guidelines for marten habitat would require leaving 10 to 20 percent crown cover within units.

Windthrow

Risks of windthrow have been evaluated for the project area and for each unit and addressed through unit design and in the silvicultural prescriptions. Stand edges created by past timber harvest have been evaluated for windthrow and protection measures have been incorporated into the silvicultural prescriptions and included on unit cards in Appendix B of the DEIS. Units with edges at risk of windthrow will receive further evaluation during layout.

Project-specific Mitigation

The analysis documented in this FEIS discloses the possible adverse impacts that may occur from implementing the actions proposed under each alternative. Measures have been formulated to mitigate or reduce these impacts. These measures were guided by direction from the Forest Plan previously described in this chapter and in Chapter 1.

IDT specialists use on-the-ground inventories, computer (GIS) data, and aerial photographs to prepare unit cards for each harvest unit in the proposed alternatives for the project. Similar cards are also prepared for each segment of NFS road. Resource specialists include their concerns on the cards and then describe how the concerns can be mitigated (if not completely avoided) in the design of each unit and road segment. These cards may be found in Appendices B and C of the DEIS and C of the FEIS. Resource concerns and mitigation measures may be refined further during final layout, when specialists have another opportunity to revise their unit and road card recommendations.

The following mitigation measure related to temporary road is necessary in Alternative 2. Alternative 2 proposes a temporary road on slopes greater than 67 percent gradient on unstable terrain. This is the only section of temporary road which needs a geotechnical survey. The section of road between Units 123 and 124 in Alternative 2 must be designed with the aid of a soil scientist or geotechnical engineer to reduce effects from the road on the streams.

Applicable Forest Plan Standards and Guidelines, the "Best Management Practices" (BMPs) used to meet the requirements of the Clean Water Act, and site-specific mitigation measures are identified on the harvest unit and road cards. Appendix B in the DEIS includes a complete list of the project-specific measures and a table linking each measure to the applicable harvest units.

Monitoring

Routine Implementation Monitoring

Routine implementation monitoring assesses whether the project was implemented as designed and whether or not it complies with the Forest Plan. Planning for routine implementation monitoring began with the preliminary design of harvest units and roads (see previous discussion of mitigation). The unit and road cards (Appendices B and C of the DEIS and Appendix C of the FEIS) and unit silvicultural prescriptions will be the basis for determining whether recommendations were implemented for various aspects of the Iyouktug project.

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Routine implementation monitoring is part of the administration of a timber sale contract. The sale administrators and road inspectors ensure that the prescriptions contained on the unit and road cards, and the unit silvicultural prescriptions, are incorporated into contract documents; they then monitor performance relative to contract requirements. Input by resource staff specialists, such as fisheries biologists, soil scientists, hydrologists and engineers, is regularly requested during this implementation monitoring process. These specialists provide technical advice when questions arise during project implementation.

Tongass National Forest staff annually conduct a review of BMP implementation. The results of this, effectiveness monitoring, and other monitoring are summarized in a Tongass National Forest Annual Monitoring and Evaluation Report. This report provides information about how well the management direction of the Forest is being carried out and measures the accomplishment of anticipated outputs, activities and effects.

Project-specific Monitoring

Normal silviculture monitoring includes third year regeneration and first and third year seedling survival surveys. Extended monitoring of planted yellow-cedar growth and survival is recommended every five years for a 20-year period to evaluate long-term success of planting.

Goshawk nest sites will be monitored to assess status of occupancy and activity and to locate active nest sites. Monitoring should occur no later than the year before harvest activities begin and during project activities that occur adjacent to nest sites.

The invasive species coordinator or their representative will monitor roads that are to be closed/stored two to three years after closure and manually treatment occurring as identified in the Sitka and Hoonah Ranger Districts Weed Eradication Decision Memo. The invasive species coordinator or their representative will monitor other constructed roads, active quarries, and other parts of the project area two to three years after project completion for new weed introductions and manually treat weeds as identified in the Sitka and Hoonah Ranger Districts Weed Eradication Decision Memo. Because this project may last for an extended period, monitoring should occur at least every other year in areas of ground-disturbance during the project.

Comparison of Alternatives

This section compares outputs, objectives and effects of the alternatives in terms of the significant issues for the Iyouktug Timber Sales project. The discussions of effects are summarized from Chapter 3, which should be consulted for a full understanding of these and other environmental consequences. The tables below provide an overview comparison of

information from the alternative descriptions and Chapter 3 relevant to the issues. This information will be used in the discussions that follow.

Table 2-1: Comparison of Alternatives - Harvest and Road Activities¹

Proposed Activity	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Acres of Timber Harvest by Yarding System (Harvest Treatment²)					
Shovel (ST50)	0	247	169	194	169
Shovel (ST25)	0	68	33	68	68
Cable (Clearcut)	0	1,253	574	636	646
Helicopter (ST40)	0	1,392	1,331	627	0
Helicopter (ST25)	0	1,225	1,225	1,059	0
Total Unit Acres	0	4,185	3,332	2,584	883
Timber Harvest Volume (MMBF)³	0	58.1	41.7	33.8	16.5
Road Activities					
Miles of new temporary road construction ⁴	0	13.4	3.9	7.8	4.4
Miles of new National Forest System (NFS) road construction ⁴	0	4.2	2.8	1.4	2.8
Miles of existing NFS road to be reconstructed	0	6.9	6.3	7.0	1.4
Miles of open NFS road after timber sale completion ⁵	36.2	40.4	36.6	37.7	39.0

¹Definitions of terms used in this table are explained in Chapter 4 under the Glossary section. Numbers in this table may not sum to totals shown elsewhere in the EIS due to rounding.

²ST25, ST40, or ST50 = partial cut through single tree selection harvesting up to 25%, 40%, or 50% of the basal area in the stand, respectively.

³Volume includes utility and sawlog volume.

⁴All temporary roads will be decommissioned; NFS roads may be left open or may be closed and put into storage. NFS road construction includes reclassifying 0.4 mile of existing, unauthorized open roads to NFS road.

⁵Ongoing road closure/storage activities will cumulatively reduce these open road miles to 34.9, 36.2, 32.4, 33.5, 34.8 for Alternatives 1 through 5, respectively in the project area after implementation of the 2002 Access Travel Management (USDA Forest Service 2002b) decision. An additional 0.4 mile of open, unauthorized road would remain unauthorized in Alternative 1.

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Table 2-2: Comparison of Alternatives by Significant Issue

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Issue 1: Deer Habitat Connectivity					
Percent reduction in productive old growth below 800 feet elevation in the Wildlife Analysis Area (WAA)	0	6.1	3.8	4.2	2.7
Acres of productive old growth (POG) remaining in the WAA ¹	31,768	28,657	29,467	30,144	30,928
Degree of influence on deer habitat connectivity ²	Negligible	Moderate	Moderate	Moderate	Moderate
Acres of Small Old Growth Reserve (OGR)/Acres of POG in OGR	2,691/ 1,740	3,436/ 2,232	3,436/ 2,232	3,436/ 2,232	3,436/ 2,232
Issue 2: Inventoried Roadless Areas					
Acres of timber harvest proposed in inventoried roadless areas	0	1,871	1,416	0	229
Miles of new road construction proposed in inventoried roadless areas (includes temporary and NFS road)	0	8.1	2.2	0	2.1
Acres of inventoried roadless area retaining roadless characteristics in the project area ³	25,591	20,378	21,592	24,211	24,688
Whitestone Inventoried Roadless Area					
Degree of influence on high value fish and wildlife habitat ²	Negligible	Negligible to Minor	Negligible to Minor	Negligible to Minor	Negligible to Minor
Degree of influence on ecological, cultural, and geological special values ²	Negligible	Minor	Minor	Minor	Minor
Point Augusta Inventoried Roadless Area					
Degree of influence on high value fish and wildlife habitat ²	Negligible	Moderate	Minor to Moderate	Negligible to Minor	Minor to Moderate
Degree of influence on ecological, cultural, and geological special values ²	Negligible	Moderate	Moderate	Minor	Moderate
Freshwater Bay Inventoried Roadless Area					
Degree of influence on high value fish and wildlife habitat ²	Negligible	Minor	Minor	Negligible	Negligible
Degree of influence on ecological, cultural, and geological special values ²	Negligible	Minor	Moderate	Negligible	Minor
Issue 3: Timber Sale Economics					
Total volume in million board feet (MMBF)	0	58.1	41.7	33.8	16.5
Logging costs per thousand board feet (MBF)	0	\$377	\$385	\$380	\$333
Indicated bid - dollars per MBF; () indicates negative value	0	\$(177.75)	\$(151.28)	\$(175.07)	\$(176.79)
Employment in number of total job years	0	199-282	144-204	116-165	56-79
Direct income based on projected employment (in millions)	0	\$7.7 - 10.6	\$5.6 - 7.7	\$4.5 - 6.2	\$2.2 - 3.0

¹ Acres of Helicopter ST25 were not included because it was assumed that this harvest method will not result in a change to the classification of productive old growth forest.

² Impacts increase from negligible (which includes no effect) to minor to moderate to major; definitions of effects are located in Chapter 3 in the Habitat Connectivity and Old Growth and Roadless Resources sections

³ Includes direct and indirect effects

Table 2-3: Comparison of Alternatives by Resource

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
<u>Botany</u>					
Determination of impacts on sensitive plants	No impact	MIIH ¹	MIIH ¹	MIIH ¹	MIIH ¹
Likelihood of adverse effects to rare plants	None	Low	Low	Low	Low
Consequences to rare plants	None	Moderate	Low	Low	Low
<u>Geology and Karst</u>					
Proposed harvest of high and low vulnerability karst (acres)	0	0	0	0	0
Proposed harvest of moderate vulnerability karst (acres)	0	325	316	142	0
<u>Heritage</u>					
Effects to heritage resources	None	None	None	None	None
<u>Management Indicator Species and Other Wildlife</u>					
Effects to MIS and other species ²	None	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate
<u>Recreation</u>					
Effects to ROS ²	No Effect	Moderate	Moderate	Moderate	Moderate
<u>Scenery</u>					
Effects to scenery	No Effect	Meets FP S & Gs			
<u>Silviculture and Vegetation</u>					
Proposed harvest in high and moderate-high wind risk areas (acres)	0	2,115	1,392	1,110	647
<u>Percent Species by volume harvested</u>					
Yellow-cedar	3.4% ³	4.7%	4.9%	4.7%	3.7%
Spruce	36% ³	58%	64%	61%	46%
Hemlock	61% ³	37%	31%	34%	50%
<u>Soil</u>					
Harvest in areas over 72% slope (acres)	0	121	114	87	3
Cumulative detrimental soil disturbance (acres)	271	495	405	405	337
<u>Subsistence</u>					
Effects to subsistence	Following the Forest Plan predictions we expect a significant possibility of a significant restriction on subsistence deer resources; there will not be a restriction on other subsistence resources				
Hunter demand as a percentage of deer habitat capability	22.6	23.7	23.4	23.3	23.0
<u>Threatened, Endangered, and Sensitive Species</u>					
Determination of impacts on humpback whale, Steller sea lion, and salmonids	Negligible	NLAA ¹	NLAA ¹	NLAA ¹	NLAA ¹
Determination of impacts on goshawk	Negligible	MIIH ¹	MIIH ¹	MIIH ¹	MIIH ¹
Impacts to other TES species	Negligible	Negligible	Negligible	Negligible	Negligible

¹ MIIH = May impact individuals or habitat but not likely to cause a trend to Federal listing or loss of viability, NLAA = Not likely to adversely affect individuals.

² Impacts increase from negligible (which includes no effect) to minor to moderate to major; definitions of effects are located in Chapter 3 in the Habitat Connectivity and Management Indicator Species sections

³ Existing species mix

Source: Chapter 3 of this FEIS

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Table 2-3: Comparison of Alternatives by Resource (cont.)

Transportation (see Table 2-1)					
Watershed					
Cumulative percent canopy removal by watershed within 30 years⁴					
Alpha Spasski Creek	10%	15%	15%	13%	12%
Iyouktug Creek	9%	19%	15%	13%	13%
Suntaheen Creek	14%	20%	19%	19%	15%
Whitestone Head Creek	9%	13%	11%	13%	10%
Fish					
Number of new fish stream crossings in the project area	0	4	1	3	1
Cumulative number of stream crossings in affected watersheds	243	319	269	265	271
Effects to Fish ²	Negligible	Minor	Minor	Minor	Minor
Wetlands					
Effects to wetlands ²	Negligible	Minor	Minor	Minor	Minor
Proposed harvest on forested wetlands (acres)	0	1,097	822	586	371
Proposed road construction on wetlands (acres)	0	86	31	44	34

¹ MIIH = May impact individuals or habitat but not likely to cause a trend to Federal listing or loss of viability, NLAA = Not likely to adversely affect individuals.

² Impacts increase from negligible (which includes no effect) to minor to moderate to major; definitions of effects are located in Chapter 3 in the Habitat Connectivity, Management Indicator Species Recreation, Watershed and Fish, and Wetlands sections

³ Existing species mix

⁴ Water yield in the project area may be affected where over 20% of the canopy is removed from a watershed in less than 30 years. Cumulative canopy removal has been normalized to reflect partial harvest prescriptions in many units.

Source: Chapter 3 of this FEIS

Issue Comparison

Issue 1: Proposed harvest and associated road construction would reduce habitat connectivity for Sitka black-tailed deer by removing additional low elevation forest and travel corridors connecting low and high elevation habitat

Alternative 1 would have negligible effects to connectivity because productive old growth forest (POG), coarse canopy forest, and corridors would not be further reduced.

Alternatives 2, 3, 4, and 5 have a moderate direct, indirect, and cumulative effect to connectivity because POG and coarse canopy forest would be reduced in riparian and elevational corridors. Reduction of POG forest and corridors will reduce forage availability and will likely impact seasonal deer migration from low elevation winter ranges to high elevation summer ranges. Effects are considered moderate because activities are expected to reduce the number of deer but sufficient habitat would remain functional to maintain the species.

Although harvest of POG would reduce available habitat and connectivity, Alternative 3 was designed to be economic while maintaining more connectivity than in Alternatives 2, 4 and 5. Where connectivity was considered a factor, some units were dropped from Alternative 3 to eliminate or reduce effects. Alternative 3 would reduce POG by 10 percent and result in a 5 percent reduction of POG below 800 feet in elevation. Alternative 2 would have the largest reduction of POG forest (14 percent) and result in a 9 percent reduction of POG below 800 feet. Alternative 4 would have less of an effect on connectivity than Alternative 2 because fewer acres of POG would be harvested. Alternative 4 would result in a 7 percent reduction in POG and 6 percent reduction of POG below 800 feet in elevation. Alternative 5 proposes to harvest the least amount of POG (4 percent) and would result in a 4 percent reduction of POG below 800 feet in elevation.

In Alternatives 2, 4, and 5, open road access would increase, increasing vehicle access to deer hunters and leading to a further reduction in the deer population. All new roads in Alternative 3 would be closed after completion of the sale to allow deer to use roads as corridors without the influence of vehicles and to exclude vehicle access to hunters. The existing roads that access rock pits will remain open. This action aids to mitigate the harvest effects to deer populations from the reduction in habitat connectivity, habitat capability and deer winter range.

Issue 2: Timber harvest and road construction may affect the roadless character of Iyouktug's three inventoried roadless areas

No changes to the roadless character would occur as a result of Alternative 1.

Alternatives 3, 4, and 5 respond to the inventoried roadless character issue to different degrees, with Alternative 4 having the least impact to Iyouktug's IRAs. Alternatives 2, 3, and 5 propose harvest and/or roads in the Point Augusta and Freshwater Bay IRAs. The Whitestone IRA does not have harvest or roads proposed in any alternative. IRAs would be indirectly affected and some acres of roadless characteristics lost in all of the action alternatives because of nearby roads and units.

Alternative 2 has the most acres of harvest (1,871 acres) and miles (8.1) of road proposed in IRAs and the fewest acres of IRAs retaining roadless characteristics. Alternative 3 has far fewer roads proposed in IRAs (2.2 miles) than Alternative 2, but still a large amount of harvest proposed in IRAs (1,416 acres). With the reduction in helicopter harvest related to Alternative 5, the amount of harvest in IRAs in this alternative drops to 229 acres, with 2.1 miles of road construction in IRAs. Alternative 4 has no harvest and no road building in IRAs. However due to buffering of units and roads along/near the IRA boundaries, about 743 acres loses roadless characteristics in Alternative 4.

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Alternative 2 has the greatest potential to affect fish and wildlife habitat and other special values in IRAs; the effects are moderate in Point Augusta IRA and minor in the other IRAs. Alternatives 3 and 5 have a lesser potential to affect fish and wildlife habitat and other special values in IRAs. Alternative 4 has a negligible or minor affect to fish and wildlife habitat and other special values in IRAs. Under all alternatives, all IRAs would still have unaffected areas over 5,000 acres and qualify for wilderness consideration.

Issue 3: Proposed helicopter yarding and road-building may reduce the economic viability of timber sales

Alternative 1 proposes no timber harvest. Timber needed to meet the estimated demand would have to be harvested from other areas on the Tongass National Forest. Jobs that directly result from timber harvest and manufacturing would not be provided.

Alternatives 2, 3, 4, and 5 respond to the economic viability issue at varying levels. At the time Alternative 5 was developed, only units that could be logged with ground-based systems were chosen since they are the least expensive systems to operate.

While this is still true, recently helicopter costs have decreased (by about \$30 to \$50/MBF), cable logging costs have increased (by about \$50 to \$60/MBF), and operation costs for ground-based systems have increased (by over \$30/MBF). Currently, the average costs for each system are: short-span cable: \$223/MBF; shovel \$205/MBF; and helicopter \$340/MBF.

Because of this shift, Alternative 5 which was originally designed to maximize the economic return of timber harvest in the Iyouktug project area now has the second to lowest indicated bid at -\$176.79 per MBF. Even though the reduction in the helicopter logging costs is relatively minor, much of their volume in Alternatives 2, 3, and 4 will be logged by helicopter offsetting the lower costs of the ground-based systems. Currently, the alternatives only vary within \$26 per MBF. Alternative 3 has the highest indicated bid of -\$151.28 per MBF. Direct jobs and income vary from a low of 56-79 total job years and \$2.2-3.0 million in Alternative 5 to 199-282 total job years and \$7.7-10.6 million in Alternative 2. Alternatives 3 and 4 fall between those values.

Because of the harvest of this timber is planned to be in multiple sales over an extended period of time, the markets may fluctuate considerably. Economic sales will be designed depending on the market. And consistent with current direction (2008 Appropriations Bill), no Tongass timber sales can be offered if they appraise deficit using the residual value appraisal system.

All of the action alternatives require road construction to access the units. Alternative 3, with 6.7 miles of road construction (including temporary and NFS road), proposes the least road construction, followed by Alternative 5 and Alternative 4 with 7.2 and 9.2 miles, respectively. Alternative 2

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proposes 17.6 miles of road construction, substantially more than the other alternatives. The miles of road construction affect the transportation costs and indicated bid rates.

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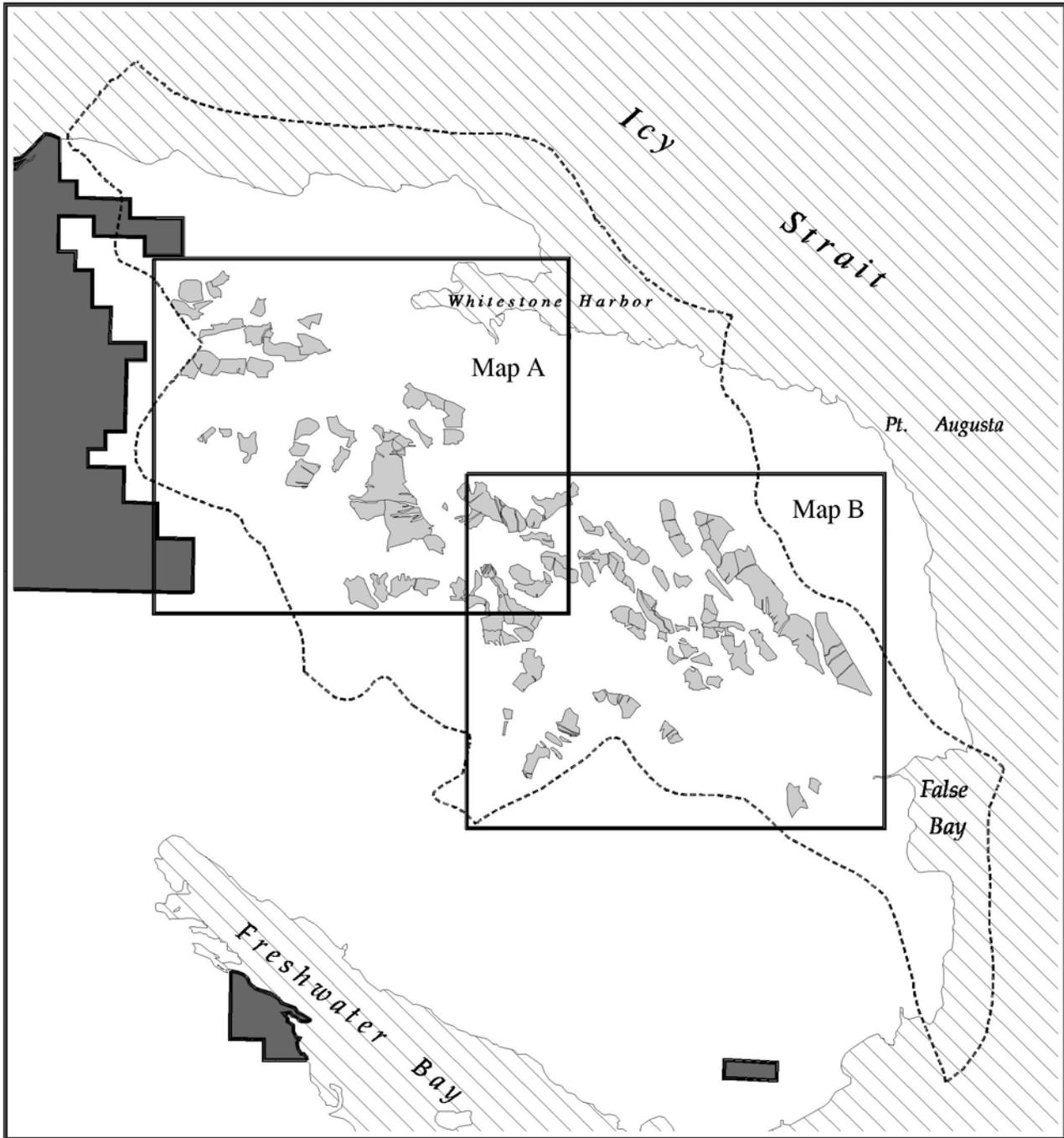
Figure 2-1: Alternative 1, Existing Condition

11x17" color map

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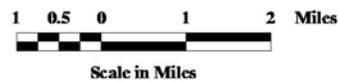
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Figure 2 - 2
 Alternatives 2, 3, 4 and 5 Overview Map



-  Proposed Timber Sale Unit Pool
-  Non-National Forest Land
-  Map Views
-  Project Area Boundary

Map views correspond to the more detailed alternative maps that follow.



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Figure 2-3A: Alternative 2, Map A, Proposed Action

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Figure 2-3B: Alternative 2, Map B, Proposed Action

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Figure 2-4A: Alternative 3, Map A

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Figure 2-4B: Alternative 3, Map B

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Figure 2-5A: Alternative 4, Map A

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Figure 2-5B: Alternative 4, Map B

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Figure 2-6A: Alternative 5, Map A

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Figure 2-6B: Alternative 5, Map B

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