

State of Alaska
Department of Natural Resources
Division of Forestry
Coastal Region
Kenai / Kodiak Area

**Forest Land Use Plan Final Finding for the
Dome View Timber Sale
SC-3090 K
August 2012**



Dome View Timber Sale
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 Final Finding—Forest Land Use Plan

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I. INTRODUCTION

A. Purpose

This Forest Land Use Plan (FLUP) outlines that the best interest of the state will be served by the Department of Natural Resources, Division of Forestry (DOF), Kenai-Kodiak Area, offering timber for sale approximately on approximately 388 acres. The sale contains an estimated 3.5 million board feet (MMBF) or 6000 cords of spruce to be sold by sealed competitive bid in one or more competitive sales. This sale will salvage spruce that are dead or infested by spruce beetles, *Dendroctonus rufipennis* (Kirby); accelerate reforestation, increase habitat diversity, and decrease potential of catastrophic fire by reducing fuel loading from dead trees.

A preliminary Forest Land Use Plan for the Dome View Timber Sale was written and reviewed by the public as well as by Federal, State, and local government agencies in September 2011.

The six units are to be harvested by removing dead or infested spruce and leaving live spruce larger than nine inches diameter at breast height (DBH). Based on site visits, it appears that over 90 percent of the mature spruce trees in the sale area have died from infestation. At least half of the dead spruce have fallen over. Birch trees over 12 inches DBH will be harvested, leaving an adequate future seed source consisting of the smaller birch trees

The Dome View Sale is located approximately 7 miles southeast of Ninilchik. Proposed sale area access is via Tim Avenue, which extends east from the Sterling Highway near Mile 142.6. Current access into the sale area requires use of ATV or walking.

B. Objectives

The primary objectives of this timber sale are to:

1. To accelerate reforestation: harvesting timber is a means of preparing the area for new trees to establish. This proposal helps meet the Division's statutory responsibility to provide "...sound forest practices necessary to ensure the continuous growing and harvesting of commercial forest species on ...state land."
2. Reduce the wildfire risk and wildfire intensity by salvaging timber affected by bark beetles.
3. To follow DNR's constitutional mandate to encourage the development of the state's renewable resources, making these resources available for maximum use consistent with the public interest. Firewood is the primary product of this sale, and therefore parallels the public's increasing firewood demand.

C. Five Year Schedule:

The Dome View Timber Sale is currently listed in the last edition of the Five Year Timber Sale Schedule 2011 - 2015.

D. Location:

The legal description of this proposed action is as follows: Section 31, Township 2 South Range 13 West, and Sections 6 and 7, Township 3 South Range 13 West, Seward Meridian.

Cook Inlet Region, Inc. (CIRI), and the Kenai Peninsula Borough are other large-scale neighboring landowners. The nearest village corporation ownership is Ninilchik Native Association. This sale can be located on the United States Geological Survey 1:63360 Quadrangle map titled Seldovia D-5.

E. Title, Classification and Other Active or Pending Interests:

This sale is located in an area covered by the Kenai Area Plan (adopted in January 2000). The Kenai Area Plan unit number is 277 and the designated use is forestry and wildlife habitat management. This proposed sale complies with the guidelines and specific policies contained in the area plan. The management intent for this unit of the plan specifically identifies this proposed sale. Additionally, the plan provides for a “Bear Habitat Management Zone” adjacent to anadromous streams (Clam Creek and unnamed tributary) from the mouth up to the upper limits of anadromous fish spawning. This zone extends landward 375 feet from ordinary high water.

F. Planning Framework

The decision to offer the Dome View Timber Sale was based on a long series of planning decisions, made with public and agency input every step of the way. This document, the Forest Land Use Plan (FLUP) for the timber sale, is one of the final steps in this long planning process. The planning for where timber harvest is appropriate, and where it is not appropriate, is done at a much broader scale than the FLUP. The framework for how management decisions are made for timber sales on the Kenai Peninsula is as follows:

1. Area plans, management plans, and land use plans (in this case, the *Kenai Area Plan*) determine where timber harvesting is allowed.
2. The Forest Resources & Practices Act and Regulations, and the Alaska Forest Management Statutes & Regulations determine how timber will be managed within areas where harvesting is allowed by the area plan.
3. The Five-Year Schedule of Timber Sales proposes when timber sales will be offered, and approximately where and how big each sale will be.
4. Next, a Forest Land Use Plan is written for each individual sale, which contains more detailed decisions about each sale.

Both the area plan and the management plan processes were the means to openly review resource information and public concerns prior to making long-range decisions about public land management. The planning processes determined how the complete range of uses would be accommodated in the proposed sale area, including opportunities for forestry, as well as protecting fish and wildlife habitat, opportunities for recreation, and the whole range of other

uses. The decision to allow timber harvest in the area is based on the fact that the Kenai Area Plan's designation for this particular area allows for timber harvest.

Next, the Division of Forestry prepares a Five-Year Schedule of Timber Sales (FYSTS) every other year. The FYSTS gives the public, timber industry, and other agencies an overview of the division's plans for timber sales. They summarize information on proposed timber harvest areas, timber sale access, and reforestation plans. Five-Year Schedules are subject to public and agency review. The review helps identify issues that must be addressed in detailed timber sale planning. After review and revision, DNR uses the schedules to decide how and where to proceed with timber sale planning.

The Dome View Timber Sale was included in the DOF's Mat-Su Area and Kenai-Kodiak Area Five Year Schedule of Timber Sales, 2011 - 2015. The notice was posted in all Kenai/Kodiak post offices and on the State of Alaska Public Notice and the DOF web sites. The notice was also sent to agencies, Kenai/Kodiak community councils, tribal councils, Native corporations, planning commissions, Legislative offices, conservation groups, small mill operators, timber industry representatives, and private citizens. These public comments were used to identify issues that would be addressed in the Forest Land Use Plans.

Finally, this Forest Land Use Plan (FLUP) was prepared. The FLUP presents detailed information on the location, access, harvest methods, duration, and proposed reforestation for each sale. The public is asked to comment at this stage, as well. By getting the best available data, combined with a series of public processes that helps us gather information from the public and other agencies, we make well-informed decisions about uses of resources on state land.

II. LEGAL AUTHORITY

The department is taking this action under the authority of AS 38.05.035(e) (Best Interest Finding); AS 38.05.110-120; 11 AAC 71 (timber sale statutes and regulations); AS 41.17.010-.950 and 11 AAC 95 (Forest Resources & Practices statutes and regulations).

III. ADMINISTRATIVE RECORD

The division will maintain an administrative record regarding the decision of whether or not to offer timber within the Dome View Timber Sale. This record will be maintained at the Kenai-Kodiak Area Office and filed as SC-3090 K.

IV. DESCRIPTION OF SALE AREA

A. Physical characteristics of the sale area

Topography and Soils

The Dome View timber sale is situated within a geographical area that is characterized by level to gently rolling glacial outwash terrain. The elevation ranges from 500 - 550 feet above sea level and has a relatively flat aspect.

The Natural Resource Conservation Service Soil Survey indicates the predominant soil type of the harvest units in the sale area is of the Cohoe Series. The Cohoe Series is a deep, well-drained silt loam occurring on nearly flat to strongly sloping terrain. The soil's susceptibility to erosion is rated as slight to moderate. The Cohoe series is also one of the more productive soils on the Kenai. Other upland soils include Spenard silt loam, which is a somewhat poorly drained soil. Muskeg areas are dominated by Doroshin and Starichkof peat soils and the bogs are Salamatof peat soils (NRCS, 2011).

The most likely potential source of soil erosion would be from road construction, and will be mitigated by constructing and utilizing winter roads, as well as winter logging. Timber harvest, road construction, and maintenance will be subject per the timber sale contract to adhere to requirements of the Alaska Forest Resources & Practices Regulations. Due to predominate rolling terrain with slopes less than 20 percent grade, and the fact that roads will be utilized only in the winter, slope failure is unlikely.

Waterbodies

Clam Creek flows northeast of the sale area and is listed in the ADF&G Anadromous Stream Catalog as Stream No. 244-20-10100-2010. Clam Creek and its tributaries provide habitat for spawning and rearing King and Coho salmon, as well as resident Dolly Varden. This stream has the characteristics to be classified as a Type II C stream pursuant to AS 41.17.950 (37) of the Alaska Forest Resources & Practices Act. Timber may not be taken within 100 feet of ordinary high water mark of streams with this classification, pursuant to AS 41.17.118 (2) (C) of the Alaska Forest Resources & Practices Act.

Two unnamed tributaries of Stariski Creek flow across the southern half of the sale area in a westerly direction. Stariski Creek is listed in the ADF&G Anadromous Stream Catalog as Stream No. 244-10-10500 and is spawning and rearing habitat for King and Coho salmon, as well as resident Dolly Varden. There have been no observed or reported physical blockages to fish passage in these tributaries between the sale area and Stariski Creek. The Department of Fish & Game captured juvenile Coho salmon in these tributaries in September 2011 (DF&G, 2011). Therefore, these streams are consistent with the Type II C classification under AS 41.17.950 (38) of the Alaska Forest Resources & Practices Act. Timber harvest is prohibited within 50 feet of ordinary high water mark of these streams pursuant to AS 41.17.118 (2) (D). The closest southern stream will need to be crossed for access, which will occur during the winter when there are adequate freezing conditions to construct an ice bridge that meets the requirements of the Alaska Forest Resources & Practices Regulations, 11 AAC 95.300 (e). The purchaser of this timber sale will also be required to obtain necessary permits from the Department of Fish & Game for constructing an ice bridge, (DF&G, 2011).

The Kenai Area Plan states that a sufficient cover must be maintained along salmon streams for brown bear corridors, (KAP, 2000). Therefore, as recommended by the Kenai Area Plan, the harvest units are located more than 375 feet from Clam Creek, and the unnamed tributaries of Stariski Creek. This will exceed the above-mentioned anadromous fish protection requirements stated above.

Timber Stand Conditions

The stand composition within the sale area is approximately 75 percent Lutz Spruce (*Picea X lutzii* Little) and the remaining species mix consisting of Paper Birch (*Betula papyrifera*) and Balsam Poplar (*Populus balsamifera*). On the Kenai Peninsula, there are natural hybrids between white spruce and Sitka spruce (*Picea glauca X sitchensis*). This hybrid is called Lutz spruce (*Picea X lutzii* Little). Researchers believe that this hybridization occurs at varying degrees with some trees showing strong white spruce characteristics, while others will show strong Sitka spruce characteristics. Due to the extensive beetle mortality, stem breakage is occurring, resulting in opening up of the stands. The site index for spruce in the sale area is 60 feet within 100 years, (NRCS Web Soil Survey—Alaska 2009.) Basal area of spruce, prior to the infestation, averaged 150 square feet per acre. Average age of the overstory spruce was 160+ years. Spruce larger than 8 inches diameter in breast height (DBH) ranged from 170 to 250 trees per acre. Most of these trees are dead. In the late 1990's, the stocking level of young spruce seedlings was estimated to be 150 trees per acre. Most of the immature spruce less than 24 inches tall appear to be overtopped by grass.

Birch trees are widely scattered. Most of the mature birch trees show poor vigor with numerous broken limbs. Birch regeneration has been heavily browsed by moose.

There have been considerable changes to the living forest stand structure on the Kenai due to the beetle infestation including: reduction in average age of surviving trees, lower average DBH, lower average tree height, and decline in stand density. At least eighty percent all spruce 9 inches DBH and greater are dead from spruce beetles. Although the area came under attack by beetles in the mid 90's, many larger spruce trees have lost significant amounts of bark. Wood decay is advancing as evident by increasing wind-snap and fungus conks (*Fomitopsis pinicola*) commonly seen on standing trees. As the dominant and codominant spruce trees fall over, the residual stand consists of intermediate and suppressed trees. This results in decreased canopy cover (Schmid and Frye 1977). Also, stand species composition may be altered.

There are a number of successional pathways that may occur. Natural spruce regeneration occurs when there is an adequate supply of viable seed and an appropriate seedbed (INFEST #9). Often what has occurred in unmanaged stands is a significant influx of grass and a lack of an appropriate seedbed for tree regeneration. Due to the degree of spruce mortality, the amount of viable local seed is questionable.

Light levels of bluejoint reedgrass (*Calamagrostis canadensis*) are present throughout the area and increasing in locations receiving additional sunlight from the loss of canopy cover. Grass competition with regeneration is expected to be high. Bluejoint reedgrass quickly establishes itself in stands killed by spruce beetle. Because this grass lowers the soil temperature and is such an aggressive competitor, it inhibits the regeneration of both tree seedlings and browse species (Liefers, et al 1993). One study indicates that even after 11 years, no natural tree or browse regeneration had occurred (Holsten, et al 1995). Species diversity is declining in the forested stands and bluejoint reedgrass is becoming

more dominant. Within two to four years following mortality, beetle killed trees begin to wind-snap and fall to the ground. The time-span between mortality and having the tree break-off and fall to the ground appears to be a function of the level of decay in the base of the tree at the time of mortality. Recent research has shown that 50 percent of the beetle killed trees break off and fall to the ground within 10 years (Holsten, et al 1995). These downed trees fall across each other or jackstraw and limit access and mobility of both human and wildlife use of the area (Thomas 1979).

In addition to *Calamagrostis*, other understory species in the area include rusty menziesia, twisted stalk, equisetum, Beauverd spirea, Labrador tea, prickly rose, crowberry, oak fern, feather mosses and club moss.

Wood decay fungi decompose roots, branches, and tree boles of dead trees and therefore play an important role in recycling wood in forests. However, sap rot decay also commonly and rapidly develops in spruce trees attacked by spruce beetles. Substantial amounts of potentially recoverable timber are lost annually due to heart and sap rot on the Kenai Peninsula. It is evident throughout the proposed sale area. Several species of sap rot fungi are associated with spruce beetle-caused mortality with *Fomitopsis pinicola* being the most common (USDA 1997). *Inonotus tomentosus*, a root disease, may also be present in the stand.

Wildfire Potential and Fuels Mitigation

The spruce beetle infestation during the 1990's resulted in the most significant ecological impact of any natural agent of change in Alaska (USDA 1996). The changes occurring in forests on the Kenai Peninsula are significant.

Dead spruce trees undergo changes in physical characteristics over time. The moisture content of the dead tree declines significantly. As needles and fine branches fall off, the forest floor is less shaded and more conducive to grass propagation. The boles of dead spruce trees are subject to natural decay processes such as "sap rot". The wood fiber structure changes so that tree boles lose elasticity and are not as flexible during windy conditions. A study of vegetative survey plots on the Kenai Peninsula (Holsten et. al. 1995) indicates that tree stem breakage begins to accelerate between 5-10 years after bark beetles attack forest stands.

As time progresses, standing trees begin to break off and fall into one another becoming jackstrawed. This enables surface fires to spread into the canopy. Surface fuels comprised of grass and downed trees enable wildfires to spread quickly and with greater intensity. Fires in this fuel type burn 20 times faster and 6 times more intensely than the fuel type associated with healthy white spruce stands, particularly in the spring and early fall (See 1997). Fires in downed spruce trees in grass fuels exhibit a high resistance to control by firefighters. This downed timber impedes access into a fire area by firefighters and will severely limit the use of tactical ground forces such as engines, dozers and hand crews (See 1998). Even when suppressing fires during moderate environmental conditions, placing crews in this type of fuel poses a significant personal safety risk should winds begin to rapidly increase, change direction, or if sudden slope changes are encountered.

Large-scale spruce mortality significantly influenced wildlife habitat by changing the structure and function of the forest (INFEST #11). The loss of the mature spruce and the potential loss of the younger spruce component will result in the loss of hiding and thermal cover (DF&G 1994).

The remaining live forest component will be composed primarily of young spruce seedling/saplings and scattered birch. Grass, in locations where residual tree density is minimal, will become the predominant ground cover and will inhibit the development of suckering and sprouting plants which reduces the availability of browse (Holsten, et. al. 1995). Therefore, as the stand structure changes, the population dynamics between wildlife species within the proposed sale area will vary.

B. Wildlife Habitat

The effects of the harvest activity will vary depending on species. Wildlife species that prefer mature and over-mature spruce stands will either be displaced or decline in numbers. Species better adapted to the grass-forbs successional stage will likely increase in abundance (DF&G 1994).

The primary measures for minimizing impacts to wildlife habitat are the previously-mentioned fringes of timber that will be retained to provide wildlife cover. Only temporary ice roads will be used to access the sale area. After timber harvest activities cease in the spring, the access routes will be blocked with logs or large material to obstruct off road vehicle traffic. This will reduce wildlife impacts associated with roads.

Approximately three to four standing trees per acre will be retained within the harvest unit as nesting habitat.

Harvest operations are not expected to exceed six years and will occur typically from November to mid March, so disturbance from harvest operations will be relatively brief. Grass and alder will reseed rapidly on disturbed sites and help in effectively closing the road access. These actions are intended to closely align with the recommendations of the Kenai Peninsula Brown Bear Conservation Strategy (DF&G 2000).

Bears

For black bear, the proposed timber sale includes areas with potential late summer and early fall berry crops. It is doubtful that winter denning sites exist in the sale area for either brown or black bears. This is due to its proximity to residential development. No denning sites were found during field reviews for either species.

Increased vulnerability of local black bear populations to hunting is a function of road location and road density which, in turn, is related to the timber harvesting systems used and the level of logging activity (DF&G 1994).

To date, there has been no census for brown bears taken on the Kenai; there was estimated to be 250 to 300 bears in the late 1990's (DF&G, 1997). There appears to be a healthy viable population (DF&G, 2008). Since the 1950's the brown bear population on the Peninsula has

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increased to an estimated population of 300 in 1997 (DF&G 1997). This apparent population climb occurred despite a human population increase on the Kenai Peninsula from 9,053 in 1960 to 53,409 in 2008 (US Census Bureau, 2009).

The highest densities of brown bears are in the forested lowlands and sub-alpine areas west of the Kenai Mountains. No denning sites were identified within the proposed timber sale during field reconnaissance. Additionally, the proposed sale does not occur within the elevation range commonly chosen for den sites by brown bears (Jacobs 1989). Again, due to the proximity of the timber sale to human development, the area is not expected to be utilized frequently by brown bears.

At the onset of the spruce beetle infestation, the degrading stands were not expected to have significant impacts on bear populations (USFS 1990 and DF&G 1994). However, increased access associated with resource development is of concern to wildlife managers (Selinger, 2005). Logging roads may cause behavioral changes with the bear population. Although evidence suggests that road avoidance behavior and habitat loss leads to changes in wildlife productivity and survivorship, there is little data currently available to support this hypothesis (Frederick 1991). Again, this proposed sale will be accessed by roads that are only drivable during the winter months, when bear activity is expected to be minimal.

Several researchers suggest that grizzly bears habituate to open roads by shifting to a more nocturnal activity pattern. Apparently, darkness may serve as cover, allowing bears to use roads and adjacent habitats and cross open areas where they are vulnerable to human harassment and hunting mortality. To use areas within 100 meters (approximately 328 feet) of roads within their home range, bears have often done so under the cover of darkness by being nocturnal in their travel and feeding patterns (Frederick 1991). This travel period may be shorter in Alaska due to the state's latitude. However, numerous studies, including at least one in Alaska (Olson, et al 1998) have shown that brown bears will use highly disturbed areas by being nocturnal, while bears in undisturbed areas tend to be more crepuscular (active during twilight)(Frederick 1991). It has also been noted that sows with cubs and yearling juveniles more frequently used habitats near roads than other bears. These areas may have been relatively secure because potentially aggressive adult males avoided them (McLellan and Shackleton 1988). Several researchers reported that adult bears in open sites usually retreated to cover when a vehicle approached within 300 meters (984 feet). However, researchers McLellan and Shackleton found that bears fled even further when approached by people on foot; in 5 of 9 cases when bears in remote areas were approached by humans, bears fled for distances greater than 1 km (0.6 miles), or out of the immediate drainage (Frederick 1991). This illustrates that bears find vehicular traffic less threatening than people on foot. This may be attributable to habituation.

This timber sale may impact the home range of resident bears. However, research suggests that home ranges for brown bears can cover tens to hundreds of square miles and because of this variability; the concept of home range size is not very useful (DF&G 2000).

The availability of security cover is considered important in how brown bears are influenced by human activities. Brown bears are at least twice as likely to be displaced from open areas where

they can see or be seen by humans (Suring 1998). The harvested portion of the timber sale will provide little cover for bears until the regeneration reaches an adequate height.

Moose

Within the boreal forest, moose are generally more closely associated with forest cover in summer than in winter. This may reflect a preference for forage that is higher quality as a result of delayed plant development or different plant characteristics. Cows may prefer to calve and bed their newborns on forested knolls or other vegetated high points from which predators are more easily detected. These features may also present varied escape routes that require minimal energy expenditure by calves (Collins 1995).

As the dead spruce fall to the ground, escape routes will diminish and it is likely that energy expenditure by newborn moose for escape will be increased. The increase over time in the amount of deadfall that will occur without intervention will also decrease sight distance that may result in additional predation of young moose. The increasing amount of deadfall and debris on the forest floor could limit access to preferred foraging areas and limit mobility during critical times of the year for moose (DF&G 1994). DF&G (2003) notes that increasing deadfall over time will make moose travel through these areas more difficult. Slash depths of 1 to 2.3 feet reduced forage production and hindered access for many wildlife species (Bartels 1985).

While biologists recognize the importance of overstory disturbance in the boreal forest in terms of enhanced production of moose browse, recommendations for the size and shape of the forest openings vary greatly from 5 acres to a square mile or more. While birch is not the dominant species of the existing stand, this sale operation is intended to result in mature left standing as seed sources. Ground disturbance from logging activity will result in favorable conditions for subsequent birch regeneration.

Cover is more important in summer conditions; moose have an efficient way of keeping warm in severe weather but are less efficient in moderating the effects of high summer temperatures that can cause them to overheat (INFEST #6). The buffers along the muskeg will provide some cover, but the harvested areas will not provide shading and calving areas.

Other Fur Bearers

Timber harvest activities are expected to impact the habitat for ermines, mink, and river otters by reducing cover or abundance of available prey. By retaining timber in riparian areas—as will be required in this proposed sale—the above-mentioned impacts will be offset.

Lynx occur throughout the general area. Lynx will use early successional habitats resulting from timber cutting, but require proximity to mature mixed forests (DF&G 1994).

Birds

Spruce grouse are also affected by the loss of spruce trees to the spruce beetle primarily through the loss of winter feeding habitat (DF&G 1994). Gradual loss of escape and thermal cover habitat will also occur as the spruce trees lose their needles and eventually fall over (DF&G 1994). The decreased winter food supplies (loss of spruce needles and buds) may displace grouse into areas of lower quality habitat that could increase nutritional stress, and lead to increased mortality (DF&G 1994). Predators associated with grouse, such as owls and

goshawks, can be expected to show a response to the increased vulnerability of individual birds displaced by the infestation (USFS 1994). In large-scale infestation areas increased amounts of deadfall, grass, and other debris will impede grouse reproductive displays and reduce summer feeding habitat (DF&G 1994). The end result of no treatment of these dying stands will be a decline in local spruce grouse populations (USFS 1994).

Harvest operations will have similar effects. The loss of canopy will result in increased mortality from predation because of more visible nests and loss of protection from inclement weather (DF&G 1994). Leave areas will help to offset this loss to the extent that they are useful. Scarification, where feasible and quick reforestation efforts will help to create more suitable habitat conditions in a shorter period of time than if left in an unmanaged condition.

The spruce bark beetle infestation has increased the number of snags and downed woody material, likely benefiting cavity-nesting birds such as woodpeckers, some owls, brown creepers, nuthatches, and chickadees (DF&G 1994). Most snags are beetle-killed spruce. However, mature hardwood stands that contain some hardwood snags offer the most cavities. This is due to the morphological differences between spruce and hardwoods. Living spruce seldom has soft heartwood preferred by cavity nesters. Spruce that die usually falls to the ground within 10 years, which is the time it takes for the heartwood to soften. The larger diameter birch, aspen, and cottonwood trees are more important than spruce for cavity nesters, however, there is very few birch within the timber sale and no aspen or cottonwood trees. After the beetle outbreak subsides, woodpeckers will still benefit from the large numbers of secondary insects (*cerambycids*, ants, other *scolytids*) present, but this food abundance should only last 2 to 3 years (Schmid and Frye, 1977). The feeding value of these insects for woodpeckers will decrease because they are generally fewer in number and less accessible (they feed in deeper recesses in the wood). After these insects decline, the bird population is also expected to decline because of a lack of food. As the needles and bark fall off dead trees over time, these populations will also decline because of the reduction in available food and cover (DF&G, 1994).

The potential effects from a timber harvest on cavity-nesting and other non-game birds will be the shortage of suitable nesting trees, which could result in lower numbers of birds. The conversion of sites to early successional stages could result in a shift in bird species composition to favor birds that prefer grass, shrub/forbs, and sapling habitats (DF&G 1994).

Fish Habitat

As mentioned before, Clam Creek flows northeast of the sale area, and unnamed tributaries of Stariski Creek bisect the sale area; all are anadromous and high value resident fish habitat. Adverse impacts to fish habitat will be mitigated by adherence to the Alaska Forest Resources & Practices Act and the Alaska Forest Resources & Practices Regulations, specifically by leaving no-harvest retention zones along these streams.

Leaving trees alongside fish streams provides shade, bank stability, insect habitat, and large woody debris for nutrient cycling. All of these are provided by trees, as necessary contributions to fish habitat.

Within the proposed sale area, Clam Creek and an unnamed tributary support a run of Coho and Chinook salmon and possibly Pink salmon and anadromous Dolly Varden (DF&G 1998). Clam Creek is a tributary to Deep Creek. The distribution of spawning salmon within the Deep Creek and Clam Creek drainages is not known and there are no estimates for adult Steelhead or anadromous Dolly Varden. Resident rainbow trout, Dolly Varden, and sculpin are the most common resident fish in the sale vicinity.

C. Human activity and social considerations

Hunting

Hunting pressure is not expected to increase in the area as a result of timber harvest, due in part to the fact that. The Alaska Department of Fish and Game is responsible for setting hunting regulations, including restricting hunting areas.

Subsistence

The subject area has not been designated as a subsistence zone. Under current state law, subsistence harvest opportunities within the timber sale have been incorporated in general hunting and fishing regulations (DF&G 10/23/94). There are the following possible subsistence uses in the area: trapping, hunting and gathering of berries. The effects of the spruce beetle infestation and the proposed timber harvest on wildlife species of interest to both trapping and hunting are detailed above in the two wildlife sections. Most of the *Vaccinium* species prefer open forest conditions, which would tend to indicate that the berry crops might do well as the stands open up. However, Holsten, et al. (1995) indicated that on untreated beetle killed sites, lowbush cranberry decreased in number and on burned sites it doubled. It is anticipated that the berry crop will not be significantly affected by the proposed treatment.

Recreation

Recreational and public access to the sale area has traditionally been via motorized access such as ATV's and snowmobiles. There is an established public easement, 60 feet in width, along an existing seismic trail locally known as the Ninilchik Dome Road. Legal access is established by LSH 360 and ADL 225638. This trail connects with the Sterling Highway to the west of the sale. There are short segments of the trail that currently have no known easement reservation. Hunters use this trail extensively during hunting season. During the winter, the trail is used by snowmobilers for access into the Ninilchik Dome and Caribou Hills area. The sale is not expected to adversely affect hunting opportunities in the short term. In the long-term, in 10 to 15 years as the browse matures in development, the sale is likely to enhance moose production and hunting opportunities. Additionally, berry crops are also likely to be utilized by local wildlife. This should provide for more photo and hunting opportunities. Recreational highway vehicle users who prefer additional motorized access opportunities will not benefit by the proposed road management measures included in this sale.

This area is not known to have unique tourism values. At this time, there are no commercial recreation operations that use this area. There are no airplane access points within the proposed sale area

Cultural Resources

Currently, there no reports of cultural or historical sites in the Alaska Heritage Resources Survey within the sale area (DNR/AHRS, 2011). The Alaska Heritage Resources Survey (AHRS) is an inventory of all reported historic, prehistoric, and paleontological sites within the State of Alaska. The AHRS will be examined for updated information regarding the sale area prior to advertising this timber sale.

Under the Alaska Historic Preservation Act (41.35.200), all burials on state land are protected. If burials or human remains are found, all land-altering activities that would disturb the burial or remains shall cease and measures will be taken to protect it in place. The Office of History and Archaeology and a law enforcement officer will be notified immediately to ensure that proper procedures for dealing with human remains are followed.

Scenic

This sale will be visible from aircraft, snowmobiles, ATVs and 4WD vehicles. Residents and visitors to Alaska consistently rated forest vistas damaged by spruce beetles lower in scenic beauty, and the more tree mortality present the lower the perceived scenic beauty. Both residents and visitors cite loss of scenic values as an important effect of beetle damage. Visitors consistently report sightseeing as a dominant activity, and indicate views seen as a major factor affecting the quality of their visit to Alaska. Respondents of a USFS study consistently preferred preventative thinning treatments to a no-treatment scenario. For forested areas already severely impacted by spruce beetle, respondents preferred the visual conditions produced by rehabilitation strategies that resulted in more rapid regeneration of forest cover. From a list of proposed actions including a no action alternative, respondents continued to prefer actions which would include cutting and removing dead trees, even if selling them would only recover part of the costs (Daniel et. al. 1991).

Land Use

No agricultural use or grazing is known to occur. Traditional use areas may exist but the sale will not adversely impact these uses. However, opportunities for hunting and berry picking will likely be improved. Other recreational uses are identified above.

D. Sustained yield and allowable cut

This proposal complies with sustained yield/allowable cut principles outlined in the Kenai-Kodiak Area's Five Year Schedule of Timber Sales for CY-11 through CY-15.

E. Silviculture and Timber Harvest

The silvicultural prescription selected for spruce in this sale is salvage harvest, while keeping green reserves. All merchantable dead spruce larger than 8 inches in DBH will be removed. Live spruce greater than 9 inches diameter at breast height will be allowed for harvest. After harvest, the resulting stand will consist of multi-age spruce, due to the age diversity of the seedlings and pole-sized trees left in the stand. Healthy spruce and all birch will be retained for seed production and wildlife cover.

Birch is present in this stands; however it averages less than 5% of the total stem density. Birch is a prolific seeder, but viability of seed is potentially low due to age and vigor of the birch. Birch trees are not expected to grow to maturity in large numbers in the sale area, due to moose

browse. The birch is not expected to contribute significantly to regeneration of the harvest area. Birch trees will be allowed for harvest at the discretion of the state.

Logging will not be authorized during spring break-up, which usually occurs during a period from mid-April to June 1. The length of time to complete the harvest operations will be two years. The contract will require that care be taken to minimize damage to residuals.

Delimbed tops will be re-scattered and allowed to decompose or will be burned. Some piles will be retained for their wildlife values. Large amounts of nutrients such as phosphorous, nitrogen, and to a lesser extent for other mineral elements, are stored in the foliage, twigs, and branches; smaller amounts are in the main trunk of the tree (Bartels 1985). This material (limbs, twigs, and needles) is an important source of nutrients for the next stand of trees; typically over 95% of the nitrogen is contained within this material (Perry, et. al. 1989). Disposal of green or infested spruce material larger than five inches in diameter shall be in accordance with the standards set in 11 AAC 95.195(b) of the Forest Practices Regulations. Stump heights will be kept as low as feasible, typically less than one foot.

The sale area will be harvested in the winter. Logging will not be authorized during spring break-up, which usually occurs during a period from mid-April to June 1. The length of time to complete the harvest operations will be two years. Directional falling may be required to protect seedlings, saplings and pole-sized residuals. The contract will require that care be taken to minimize damage to residuals.

The State will conduct regeneration surveys within 7 years following harvest to determine if artificial regeneration will be necessary. Planting may be necessary on sites lacking sufficient regeneration to meet stocking standards. Planted spruce seedlings will be grown from locally collected seed. This proposal may be adjusted post-harvest depending on the success in protecting residual seedlings and saplings.

Regeneration surveys will monitor trends of survival and species composition and also help to determine if any further reforestation effort is required to meet the reforestation requirements of the Forest Resources & Practices Act (11 AAC 95.375).

F. Transportation

Near Mile 142.6 of the Sterling Highway, Tim Avenue extends east for approximately 2.25 miles before ending at Cook Inlet Region (CIRI) property line. An extension of Tim Avenue continues for approximately 2.1 miles through CIRI land. The access road into the sale area will extend southwest for approximately 300 feet before reaching the section line between CIRI and Kenai Peninsula Borough ownerships. The purchaser will need to construct at least 2.8 miles of ice road to serve as the mainline into the sale area, with an additional 1.5 miles of spur roads to access the harvest units.

Cook Inlet Region will require that the timber sale purchaser obtain a land use permit, pay a land use fee, and provide a certificate of insurance which names CIRI as an added insured, (CIRI, 2011).

Alternative access may be obtained through an adjacent Kenai Peninsula Borough parcel. This will require a Land Use Permit and a \$500 fee that must be obtained by the timber sale purchaser from the Borough.

All temporary roads will be put to bed upon completion of use in accordance with the Forest Resources & Practices Regulations on road closure (11 AAC 95.320). If necessary, log hauling on ice roads will begin when underlying ground is frozen sufficiently to support equipment. This requires a minimum of 8 inches of snow and 6 inches of frost (Mihalow 1992).

The timber sale purchaser will be required to close roads used on state lands at the conclusion of their sale. The temporary roads on state land that are put to bed upon completion of use will be closed in accordance with the Forest Resources & Practices Regulations on road closure (11 AAC 95.320). Additionally, wood debris will be spread over a portion of the road bed to minimize future impacts of all terrain vehicles.

G. Erosion

This proposed firewood sale is on relatively flat terrain; the overall slope is less than twenty percent grade. Therefore, no slope failures or soil movement is expected.

H. Mining

There is no known mining activity in this area and therefore no effect.

I. Materials

This proposed harvest will not preclude future development of a material site. Needed borrow material for the timber sale road(s) will be minimal and acquired from within the right of way. No pits will be developed.

V. MARKET CONDITIONS AND ECONOMICS

The local market includes domestic sawlogs house logs and firewood. Most of the timber from this sale area will probably be sold and utilized as firewood. The cost of heating oil on the Kenai Peninsula rose sharply in 2008. The demand for firewood has increased noticeably over the previous two years. Consequently, firewood sold at retail for \$150 to \$200 per cord in 2011. Firewood prices are presently competitive with sawlogs as an end product. Firewood will likely be in greater public demand than either sawlogs or house logs in the near future. The DOF anticipates this sale to be marketable based on past sale activity.

VI. ALTERNATIVE ACTIONS

After a review of the material and information discussed above, the following alternatives have been considered:

1. **Offer a timber sale as outline in this Forest Land Use Plan.** This alternative meets the objectives of the Five-Year Schedule of Timber Sales and one of DNR's mandates to make the state's renewable resources available for public use. It also meets the silvicultural objective of improving forest vigor, provides for a value-added end product and creates additional local jobs due to the combination of road building, logging, and trucking.

2. **Offer this timber sale at another time.** We believe that postponing the harvest of timber within the block is not in the public interest. As the dead trees continue to decay, their merchantability will decline; therefore it is important to provide opportunities to utilize a resource that currently is in high public demand—firewood.

Additionally, the increasing fuel loading as a result of the dead trees is not in the public's interest. Trees that would otherwise be salvaged would become sources for ignition and fuel loading for a potential catastrophic wildland fire. This timber block is located in the wildland-urban interface and is a high priority for removal of potentially hazardous fuels. Additionally, postponing the sales to a later date could result in sufficient loss of market value that the sale would become uneconomical.

3. **Modify the Sale by making the harvest units smaller.** This alternative would not provide sufficient wood to make the sale economical. The location and size of the harvest units has been designed to provide habitat protection as recommended in the Kenai Area Plan. This proposed sale has been reduced since it was first reviewed in 1999.

Moreover, wildfire fuel loading would not be as effectively reduced. Decreasing the size of the sale area will reduce the supply of firewood and leave more timber to further deteriorate on the site and exacerbate the wildfire fuel loading. This sale is appropriately balanced to maintain other resource values as well as provide economic benefits to the Kenai Peninsula.

4. **Do not offer this timber sale.** This alternative would result in not meeting any of the objectives outlined for this management action. Utilization of the forest resource would not be achieved. There would be no opportunity for this sale to contribute to the local economy. This alternative would prevent the state from providing a resource for the local wood products industry as well as firewood. As the dead timber decays, the potential for recovering forest products and local firewood diminishes.

VIII. Best Interest Decision

The purpose of this decision is to determine if the Department of Natural Resources, Division of Forestry, will make available timber located in portions of Section 31, Township 2 South Range 13 West, and Sections 6 and 7, Township 3 South Range 13 West, Seward Meridian.

After due consideration of all pertinent information and alternatives, the Division of Forestry has reached the following **Final Decision: To offer the sale as proposed in Alternative 1.** The Division of Forestry finds that this final decision satisfies the objectives as stated in this document and it is in the best interest of the State to proceed with this action under its authority of AS 38.05.035(c) and AS 38.05.120.

A person affected by this Best Interest Decision who provided timely written comment may request appeal it in accordance with 11 AAC 02. Any appeal must be received by September 10, 2012, and must be mailed or delivered to Dan Sullivan, Commissioner, Department of Natural Resources, 550 W. 7th Avenue, Suite 1400, Anchorage, Alaska 99501; or faxed to (907) 269-8918, or sent by electronic mail to dnr.appeals@alaska.gov. If no appeal is filed by that date, this decision goes into effect as a final order and decision on September 11, 2012.

If you have any questions, please contact Hans Rinke Kenai-Kodiak Area Forester at (907) 260-4200 or by e-mail hans.rinke@alaska.gov.



Michael Curran

Coastal Regional Forester



Date

Dome View Timber Sale
SC-3090 K
Final Finding—Forest Land Use Plan

Abbreviations

ADFG: Alaska Department of Fish and Game
AHRS: The Alaska Heritage Resources Survey
BMPs: Best Management Practices
DBH: diameter at breast height
DEC: Department of Environmental Conservation
DLP: Defense of Life and Property
DNR: Department of Natural Resources
DOF: Division of Forestry
FF: Final Finding (Forest Land Use Plan)
FLUP: Forest Land Use Plan
FRPA: Alaska Forest Resources & Practices Act
FYSTS: Five Year Schedule of Timber Sales
KAP: Kenai Area Plan
ORV: off-road vehicle
PD: Preliminary Decision (Forest Land Use Plan)
SHPO: State Historic Preservation Office

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Links to Planning Documents:

Kenai Area Plan: http://dnr.alaska.gov/mlw/planning/areaplans/kenai/pdfs/master_KAP.pdf

Comments & Responses

Department of Natural Resources, Division of Forestry

November 2011

The following comments were received during the public comment period on the DomeView Timber Sale.

Organization	Author	Location
DNR State Office of Historical Preservation	Mark Rollins	Anchorage
Dept. of Fish & Game—Division of Habitat	Patti Berkhahn	Soldotna

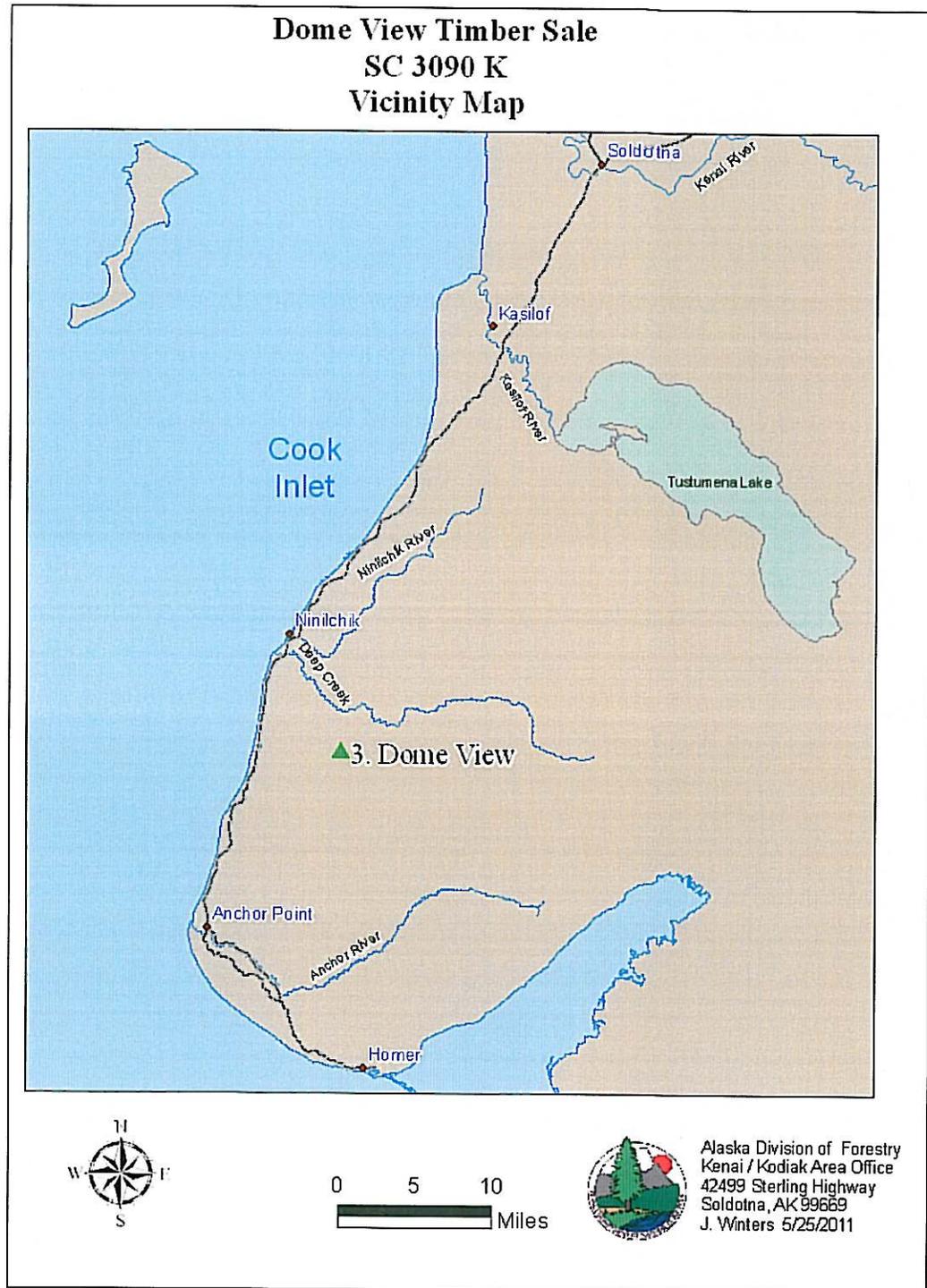
Commenter	Comment	Response
Marc Rollins— Alaska DNR; State Historic Preservation Office	The Alaska Heritage Resources Survey (AHRS) indicates that there are no recorded cultural resources within, or in proximity to, the proposed timber sale[s], as well as access roads. As such, should inadvertent discoveries of cultural resources occur during road construction and/or timber harvest / salvage activities, our office shall be notified and its concurrence requested for continuing construction or improvement so that we may evaluate whether the resources should be preserved in the public interest (as specified at Section 41.35.070[d]).	Noted. The timber sale contract will have provisions that require the SHPO be notified if a suspected cultural artifact is discovered. Timber harvest will occur during the winter months when there is frozen ground and snow cover.

Commenter	Comment	Response
<p>Patti Berkahn— DF&G-- Habitat</p>	<p>Flag all stream buffers prior to snowfall. Since there are no proposed crossings of resident or anadromous streams, and ‘no harvest’ stream buffers protect riparian areas, we believe fish habitat will be adequately protected in these proposed timber sales.</p> <ul style="list-style-type: none"> • Care should also be taken in implementing the scarification measure above in conjunction with the minimization of damage to residuals. This would best be done with on the ground direction from the area forester to get the best mix of adequate scarification and protection of seedlings and residuals. • The Silviculture and Timber Harvest section also lays out plans for planting of seedlings if this becomes necessary. The plan calls for planting with spruce seedlings from locally collected seed and grown seed. However, the section also notes that this proposal may be adjusted post-harvest depending on success in protecting residual seedlings and saplings. We request that if the proposal is altered that any planting done still be done with spruce seedlings from locally collected and grown seed. 	<p>As stated on Page 6 of this document, and depicted on the Sale Area Map (Page 26), access into the sale area will consist of winter roads that will cross unnamed tributaries of Stariski Creek. These streams have the characteristics of Type II C streams according to AS 41.17 950 (38) of the Alaska Forest Resources & Practices Act and will be provided 100-foot wide riparian protection accordingly. Stream crossings will be ice bridges subject to Bridge Standards under the Alaska Forest Resources and Practices Regulations.</p> <p>Scarification and protection of residual trees will be items subject to inspection by the Division of Forestry during timber sale contract compliance inspections.</p> <p>Noted. The Division of Forestry plans to plant seedlings grown from seed sources located as close to the sale area as possible.</p>

<p>Patti Berkahn— DF&G-- Habitat</p>	<p>Leave Strips along wetland and bog areas. Leave strips are intended to provide escape cover, thermal cover, resting cover, visual screens in hunting areas, and travel corridors for moose, bear, and other wildlife. They should include natural travel corridors such as ridge points, the forested edge of wetlands and tidelands, lake shorelines and riparian corridors along anadromous and high value resident fish streams. Trees along the edges of muskegs, as well as pockets of sub merchantable within the harvest units will be retained for the purpose of wildlife cover.</p> <ul style="list-style-type: none"> • While we concur with the DOF measures regarding the minimization of residuals we would like them to <u>include specific language to avoid disturbance or destruction of nurse logs</u>. A study by Boggs et al in the Anchor River drainage and published in 2008 entitled “White spruce regeneration following a major spruce beetle outbreak in forests on the Kenai Peninsula, Alaska” found that spruce that regerminated post beetle outbreak exhibited a strong preference for downed decaying logs and stumps (nurse logs). Protecting these nurse logs would increase the success of natural regeneration of forest cover in the unit. • <u>We would also like the directional falling to avoid seedlings, saplings and residuals to be a requirement</u>, rather than having the <u>may</u> language. 	<p>Noted. All harvest units will have no-harvest fringes left around them in order to provide for wildlife cover as recommended in the Kenai Area Plan.</p> <p>There are sufficient downed trees that are too rotten to be merchantable, and could eventually be a source of propagation. Timber harvest will occur during winter months when there is likely to be enough snow cover to protect some of the downed trees . The Division of Forestry prefers to depend upon natural regeneration from seed fall and planting. This will require site disturbance and infrequent disturbance of potential nurse logs, though not likely enough to negate the contribution of regeneration from nurse logs.</p> <p>Noted.</p>
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Timber Sale Maps





Dome View Timber Sale
SC-3090 K
388 Acres

Section 31, Township 2 South
Range 13 West, and Sections
6 and 7, Township 3 South
Range 13 West, Seward Meridian
J. Winters 5/17/2011

