

Wildfire Risk Assessment Guide for Alaska Villages and Communities

BEAVER

Executive Summary

Beaver is located north bank of the Yukon River about 80 miles west of Fort Yukon and 110 miles north of Fairbanks. Beaver, a small, compact village, has been identified as community at risk from a catastrophic wildland fire. The 2004-2005 wildland fires burned large areas north of Beaver village along the former Caro Trail to the Chandalar River goldfields. Since 1908, a traditional housing development, composed of both frame and log houses, has grown up around a trading post at a steamboat landing on the north side of the Yukon River. The steamboat landing and trading post were formerly used to supply the Chandalar goldfields. The houses in the village have been constructed in an open area in riparian hardwoods adjoining the riverbank. The Beaver airport runway (facing E-W) provides a substantial firebreak north of the village, but north of the runway, mixed spruce and birch stands continue into the Federal lands of Yukon Flats National Wildlife Refuge. No previous hazardous fuels assessment has been done at Beaver. Three hazardous fuels/Firewise treatment areas may be identified: (1) the land surrounding the houses at the present site of the village, (2) the area at either end of the airport runway where fire may enter the village from the east or west, and (3) thinning continuing northwest along the access road from the airport runway to the village landfill, with a firebreak to be constructed perpendicular to the road, and along the Caro Trail to the north and east of the village. These projects remain to be initiated. Treating these three areas at Beaver will reduce hazardous fuels, protect values at risk, and improve the defensibility of the village. The project will be administered by the Beaver Tribal Council and take a year (2006) to complete. Funding will be secured through Region 7 U.S. Fish & Wildlife Service in cooperation with Alaska Fire Service.

Introduction

This risk assessment system provides information about four primary elements contributing to or mitigating wildfire danger within or near a given Alaskan village. These elements are 1) Risk/Hazard, 2) Barriers, 3) Fire Protection Response, and 4) Community Firewise Rating.

Identification and Description of Community and Area

Community: Beaver, AK (Village)

Location: T025N, R006E, Sec. 10, Fairbanks Meridian (N67.014° and W146.42W°)

Population: 67

Structures: 10 Community buildings

Homes: 30

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Community buildings:

1. Fuel site and electrical plant (1)
2. Airport maintenance shed (1)
3. School (1)
4. Community Center (1)
5. Beaver Tribal Council Hall (1)
6. Water Treatment Building - Laundromat(1)
7. State/Tribal Maintenance shed (1)
8. 2 Churches (1)
9. Community Store (1)
10. Beaver /Health Clinic (1)

Infrastructure

The city water system is derived from a well near the Yukon River. The water is treated and stored in a tank at the water treatment building. Residents haul water from this watering point. A new community water and sewage system is under construction and is expected to be finished in fall 2006.

Electricity is provided by Beaver Village Electric.

The Beaver School provides education for grades K-12.

The Beaver Health Clinic provides basic health care. Emergency service is provided by a health aid. An EMT training program is under consideration. A volunteer fire department is also under consideration.

Industry

Cottage industry and subsistence activities are the dominant industry. Some people in the village gain seasonal employment by wildland firefighting, forming a crew combined with residents of Stevens Village. There are not enough adults in the village of Beaver to support a fully active EFF crew. The combined Stevens Village/Beaver fire crew could be used for WUI projects in both communities.

Local Fire Prevention Efforts

The Beaver village is developing a volunteer fire department. Some adult men in the village are trained in wildland firefighting, and the village itself maintains a small shed for firefighting equipment, including a pump and hose, fire axe, boots, PPE, etc. The river provides a water source for the pump in summertime. This pump is not functional during the wintertime. There is no other structural firefighting equipment. Several years ago, an early spring grass fire lead to a house ignition and destroyed the building. The

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new 90,000 gallon water tank at the water treatment building could serve as an emergency water source for structure fire suppression during the time the river is ice-covered.

The Village has voluntarily suppressed nearby <1 to 5 acre wildland fires on an emergency basis.

Fire Equipment

The village owns three pieces of heavy equipment a small caterpillar tractor with a blade, used for road maintenance, and a front-end loader. A State DOT Airport front-end loader and road grader could be used as emergency fire equipment, to create fuelbreaks.

Values to be Protected

Along with protecting their homes, two areas of concern were brought up by the Village: (1) protecting the fuel site/electrical plant, (2) providing fuel breaks along the road west of town toward the landfill, and along the Caro Trail located east of town. The fuel assessment has identified the need for both primary and secondary fuel breaks that could be constructed on corporation lands east and west of Beaver. These fuel breaks would provide additional defensible lines from the airport runway. The proposed work will help to protect the Village and its infrastructure from the threat of wildland fire originating on Federal lands.

Natural Resources

The Village is surrounded by mixed white spruce and deciduous forest, composed of birch, willows, and balsam poplar. Notably, emergent spruce forms an understory beneath the deciduous stands. This indicates a seral conversion is occurring. Interspersed wetlands, the associated wildlife, and the intertwined ecological relationships continue northwards into the Yukon Flats National Wildlife Refuge. Within approximately nine miles, black spruce forests extend northward for miles on the adjacent uplands. These forests are subject to repeated wildland fires.

Cultural Sites

The cemetery is the nearest cultural site and is located in the middle of town.

Landfill

The new landfill began operation in 1999. The fenced large (2 acres) open landfill is located approximately 2.5 miles northwest of the village. Landfills are unfortunately a frequent source of ignition for wildfires near Alaska villages. Discarded material accumulates and is incinerated in burn barrels. Accidental or intentional ignition may occur at the landfill. Surrounding vegetation at the landfill is mixed deciduous, birch, with patches of black spruce.

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Hazards

The fuel site near the new airport contains five large oil tanks and is considered a major hazard in itself. The school also has six smaller fuel tanks. The landfill may also pose concern because of unidentified hazardous materials deposited there. The landfill, also a potential source of ignition, is also located in the --- stand northwest of the village.

Improvements

See the items listed under Infrastructure above. There are several miles of dirt roads and/or ATV/snowmobile trails connecting the village to the 3,954' x 75' airstrip, the landfill, and the surrounding area. These dirt roads and airstrip may serve as de facto fire lines in and north of the village.

Assessment of Risk, Hazard and Fire Protection Preparedness and Capacity:

1) Risk/Hazard Analysis (?) Needs VERIFICATION.

A) **Inside Community:** **HIGH**; C-1(spruce-lichen) fuel type (from the Canadian Forest Fire Danger Rating System - CFFDRS); fire return interval <100 years; fuels have accumulated since the area burned in 19--; portions re-burned in the 19--s; there have been two large recent fires -- miles north of Beaver – one in 2004 and the other in 2005 and one fire (2004) within Beaver.

B) **Outside Community:** **HIGH**; same fuel type description as above. Intermixed DOYON and U.S. Fish and Wildlife Service (Service) lands lie north of the village. The closest Service land is 2.75 miles from the center of Beaver.

2) Barriers

FAIR; the Yukon River borders Beaver on the south. The airport runway borders the village to the north. There are a series of lakes, riparian wetlands and meadows adjacent to the village to the east and west. The forest on the north side of the village is, however, made up of white spruce and large senescent willows, which eventually merge into black spruce uplands. These black spruce stands north of Beaver have an active and recent fire history. The intent of risk reduction activities at Beaver would be to connect those natural barriers such as meadows, lakes etc., to the existing large artificial barriers such as the airport runway. This would inhibit the progress of a large fire bearing down on Beaver from the north.

3) Fire Protection Resources

FAIR; Beaver and the surrounding area is under the protection of the Upper Yukon Zone – Alaska Fire Service.

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4) Firewise Ratings - **FAIR to POOR.**

Risk/Hazard Chart
(for use inside & outside village area)

Alaska Fire Return Interval

FUELS (predicted fire behavior based on historic summertime weather with hot, dry conditions)	High (0-99 years)	Moderate (100-300 years)	Low (>300 years)
Black Spruce Boreal Forest (CFFDRS=C2) <i>rate of spread: high</i> <i>intensity: high</i> <i>spotting potential: high</i>	[H]	M	M
Black Spruce Lichen Woodland (CFFDRS=C1) <i>rate or spread: moderate</i> <i>intensity: moderate</i> <i>spotting potential: high</i>	[H]	M	M
Grass (cured tall standing or matted; CFFDRS = O1a/O1b) <i>rate of spread: high</i> <i>intensity: moderate:</i> <i>spotting potential: low</i>	H	M	L
<i>Mixed Boreal Forest (pre-green-up; may include white or black spruce, aspen and/or birch; CFFDRS=M1)</i> <i>rate of spread: moderate</i> <i>intensity: moderate</i> <i>spotting potential: moderate</i>	M	M	L
Hardwood Forest (pre- green- up; includes aspen & birch; CFFDRS use D1 or M1) <i>rate of spread: low</i> <i>intensity: low</i> <i>spotting potential: low</i>	M	L	L
Deciduous Brush (includes willow & alder) <i>rate of spread: low</i> <i>intensity: low</i> <i>spotting potential: low</i>	L	L	L

Barrier Rating Chart

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Barrier Type (list specific type under excellent, fair or poor)	Excellent	Fair	Poor
Water (may include lakes, rivers, streams and sloughs)		X	
Fuels (may include non-flammable varieties, such as riparian willow and alder)			X
Other natural features (may include barren landscape or rock)			X
Human-made features (may include airstrips or other clearings)		X	
Overall Rating		X	

Key:

Excellent: Village has a barrier(s) that provides thorough protection from fuels >1 mile away in at least 3 cardinal directions. An example of this would be a small village sandwiched between a major river and a runway (Sleetmute), or a village on an island (Stony River).

Fair: The village has a barrier(s) that provides thorough protection from fuels >1 mile away in at least two cardinal directions. Villages may have multiple barriers affecting a rating. Examples are airstrips separating a village from significant outside fuels, villages set amidst certain vegetation types or some villages situated on major rivers (Red Devil).

Poor: Any barriers that exist provide protection from fuels >1 mile away in fewer than two cardinal directions. Examples of insignificant barriers are small streams or sloughs with narrow riparian zones situated in the midst of highly flammable fuel types.

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Resource Type& Location (list specific type under Excellent, Fair or Poor)	Excellent	Fair	Poor
AFS (smokejumpers, hotshots or other personnel)	X		
DOF (helitack, engine, or other personnel)			X
Other (may include other Federal agencies or professional & volunteer Fire Departments)		X	

Fire Protection Response Chart

***Key:**

High: adequate initial attack resources are more than 75 minutes away and adequate extended attack resources are more than 12 hours away.

Moderate: adequate initial attack resources are 30-75 minutes away and adequate extended attack can be in place in 8-12 hours.

Low: adequate initial attack resources are less than 30 minutes away and adequate extended attack can be in place in less than 8 hours.

*Adequate initial and extended attack forces are defined as the minimum force necessary to stop the spread of a wildfire under 90th percentile weather and fuels conditions. Calculating percentile weather can be done by downloading RAWs data into FireFamilyPlus from WIMS/KCFAST. Response times are based on resource location and historical response times.

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Firewise Elements (list any specific comments under excellent/fair/poor)	Excellent	Fair	Poor
Landscaping			X
Construction			X
Water Supply	X		
Access	X		
Clear of Flammables/ Refuse/Debris (flammables stored properly & area cleared)			X
Overall Rating (Based on average of 5 elements)			X

Firewise Rating Chart for Defensible Space

KEY

Landscaping Guidelines:

There is a clearing of at least 40 feet around the home for firefighting equipment; flammable brush and dead/overhanging branches are removed; trees are pruned 6-10 feet

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above the ground; lawn is mowed regularly and ladder fuels are removed from the yard; remaining trees are spaced at least 30' apart at crowns; garden equipment is kept on the property.

Construction Guidelines:

Home is made of fire-resistant or non-combustible construction materials (especially important for roofing); vents are covered with wire mesh no larger than 1/8 inch; at least two ground-level doors exist; at least two means of escape exist in each room.

Water Supply Guidelines:

Home has a reliable water source, sprinklers and enough hose to circle the home.

Access Guidelines:

Access roads are at least 2 lanes wide and clearly marked; ample turnaround space exists for vehicles/fire equipment.

Clear of Flammables/Refuse/Debris Guidelines:

Combustible materials are not located in the yard or under decks or porches; firewood is stored away from the house; all debris or refuse is picked up regularly.

Firewise Community Rating Guidelines:

Excellent: At least 75% of homesites and community buildings have excellent defensible space (as defined by the Firewise rating chart).

Fair: At least 75% of homesites and community buildings have at least fair defensible space.

Poor: More than 25% of homesites and community buildings have poor defensible space.

SUMMARY RATING SHEET

<u>Category</u>	<u>Rating</u>
Risk/Hazard	
a) Inside community:	HIGH
b) Outside community:	HIGH
Barriers:	FAIR
Fire Protection:	FAIR

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Community FireWise Rating:

POOR

Appendices

Appendix A. Completed Hazardous fuels assessment sheets.

Appendix B. Treatment area acreage calculations.

Appendix C. Beaver Fuels Treatment Project cost estimate.

Mitigation Plan

The Beaver Village Council has encouraged and will continue to encourage homeowners to create a defensible space around their homes. In some cases the vegetation around the home is needed to provide a wind/snow barrier. Homeowners in most cases only need to limb up black spruce trees 3-4 feet to provide a break in the continuity of fuels. There is a relatively high proportion of white spruce and deciduous brush in and around the existing homes in the core of the old village, and fire risk is considered lower around these homes. It is in the outlying home sites in the black spruce where some Firewise work can be done with defensible space in conjunction with the extensive thinning.

Summary

Beaver is located on the north bank of the Yukon River, about 90 air miles north of Fairbanks. It lies within the Yukon Flats National Wildlife Refuge. It lies approximately 66°34' North Latitude and 152°39" West Longitude (Sec. 15, T20N, R21W, Fairbanks Meridian). The area has a cold, continental climate with extreme temperature differences. The average daily maximum temperature is 72° F during July; the average minimum is below zero during January. The annual precipitation averages 13 inches, with 70 inches of snowfall. The Yukon River is ice-free from May through September.

The Village has expressed an interest in fuels reduction work for a number of years. A fuels assessment of the village and surrounding area has not been previously completed. There are three critical areas where fuels reduction/Firewise work may be needed: (1) the new housing development, (2) the area west of the new housing development where additional homes will be constructed, (3) along the road to the landfill, with a potential firebreak constructed perpendicular to the road. Some additional Firewise fuels reduction work (primarily limbing of black spruce) can also be done around those home sites not located in the core of the Village.

Beaver has no volunteer fire department. There is no fire hydrant system that can be used for wildland or structure fire suppression. The village is bordered by a water source (the Koyukuk River) to the north and west, and has several small ponds located within the

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village, but only one small pump and a limited amount of hose are available. The village, however, has two well-trained and experienced EFF crews.

Background

The residents of Beaver understand how an accumulation of natural fuels can increase the potential for wildland fire. Wildland fire has affected most of the residents over time in one way or another. They have either been on an EFF crew or have a family member on an EFF crew, and/or have been directly affected by a recent fire. Several large wildland fires have affected the immediate Beaver area in the past 70 years. Natural fuels have accumulated and are continuous and very responsive to drying trends. Homes, infrastructure, and cultural sites are at risk.

Goals and Objectives

The goal of this project is to reduce the threat of wildland fire to Beaver; protect homes, infrastructure, and cultural sites from wildland fire; and, further Firewise principles.

The objectives of this project are: (1) reduce the hazardous fuel accumulations adjacent to the new housing development, the access road, and landfill, (2) create a fire break north of the landfill extending from the new access road, and (3) present Firewise information at community and City and Tribal Council meetings.

Strategic Plan/Desired Condition

Priority values include: (1) protection of the new housing development, (2) community facilities, fuel storage, school and airport (3) creating a defensible fuel break between the landfill and the new housing development.

The buffer area along the shoulders of the access **road** will be increased to 2 chains. The desired condition for the access road is to have shoulders with a discontinuous natural fuel bed.

Along the new firebreak between the landfill and the new housing development, all black spruce will be removed along the line east of the road. This fuel break will extend past the end of the fenced landfill. The desired condition for the fuel break is to provide a first line of defense to an on-coming fire from the landfill to the south. This will require periodically (every 5-10 years) clearing the area of black spruce and dead trees and shrubs. Slash from these areas will be hand piled, covered, and burned in the winter. Some of the slash may get hauled to the bank of the Koyukuk River to help stop erosion.

Homeowners will be encouraged to remove black spruce and flammable brush within 30 feet of their homes and out buildings and prune the lower branches of all black spruce (3-

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4 feet up) on trees situated 30-50 feet from their homes and out buildings. A defensible space is the desired condition for all homes.

Actions and Methodology (Tactical Plan)

The above section describes the projects to be carried out by the Beaver Fuels Reduction Project which will be implemented by the people of Beaver. This will be their project from the beginning to the end. The work to be done is all hand work (slashing, piling, and burning). Safety will be emphasized throughout the whole operation. The Tribal Administrator will ensure that proper training will be given to all employees unfamiliar with the project and equipment they have not used before. Chainsaw operators will have either a Faller A or B “redcard” classification. The proper personal protective equipment will be used by all workers at all times.

Private homeowners will be responsible for the fuels reduction work around their homes.

Firewise information will be presented during refuge community meetings and Tribal Council meetings. Firewise principles will continue to be furthered after this project is completed.

The project will be monitored during implementation and after completion at years 1, 5, and 10. A minimum of one permanent photo point will be established (by the Service) in each treatment area to document pre, during, and post-treatment (years 1, 5, and 10) conditions. Monitoring in general will be done by both the Service and the Beaver Tribal Council. How the Beaver Tribal Council decides to monitor the project will be up to them. Monitoring will determine whether or not the work done has accomplished the project’s objectives. Periodic monitoring will determine the need for maintenance work.

It will take periodic maintenance for this to be a long-lasting and effective fuels treatment project. The treatment areas need to be examined at the minimum of every 10 years – except for the fuel site which needs to be monitored annually.

It is anticipated that the project will be completed one year from initiation.

Roles and Responsibilities

The Beaver Tribal Administrator will oversee the implementation of the project.

The Beaver Tribal Financial Administrator will manage the payroll portion of the project.

The Kanuti NWR Fire Management Officer (FMO) will coordinate all activities associated with the formulation/continuation of the project and the project implementation monitoring. The FMO will write and oversee implementation of the

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prescribed fire plan for pile burning. The village of Beaver will provide qualified firefighters type 2 to assist in pile burning.

The Tribal Administrator is responsible for out year monitoring (years 1, 5, and 10) and ensuring that the long-term maintenance needs of the project are taken care of.

Funding Guidelines

The project will be funded with fiscal year 2006 U.S. Fish & Wildlife Service 9264 Wildland Urban Interface funds.