COMMUNITY ASSESSMENT AND WILDFIRE PROTECTION PLAN

HORSESHOE LAKE

Matanuska-Susitna Borough, Alaska

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Introduction

Horseshoe Lake is a residential community of 246 properties with 157 homes and other structures. The community is located within the larger, unincorporated community of Big Lake, Alaska. The area began attracting recreational development in the form of small cabins in the 1950's. The Horseshoe Lake Community was heavily impacted by the 1996 Miller's Reach Fire with many residents losing their homes and surrounding forest to the fire. What was once a scattering of homes nestled among the spruce forest at the edges of the lake has become a community of modern, re-built homes standing proud amid regenerating wildlands. The community publishes a local directory which includes the locations of fire pumps, hose, and homeowner firefighting tools and capabilities. They meet on a regular basis to discuss common interests. Primary among those shared concerns is wildfire protection.

Planning Process

Project Methodology

Beginning in the winter of 2004, the Matanuska-Susitna Borough Emergency Programs Coordinator met informally with Horseshoe Lake community members to discuss the idea of becoming a Firewise USA Community. In October 2005, community leaders met in a planning session with Chief Bill Gamble of the Big Lake fire department, a forester on contract to the Borough, and Borough Emergency Services representative to formally initiate the process of meeting the requirements to become the first Firewise USA community in Alaska. The contract forester and his partner made several visits to the community to compare aerial photographs and borough GIS maps against what the saw on the ground. This resulted in the Community Assessment of fuel types, vulnerabilities, and risk level that is part of this document.

Preparation of the Horseshoe Lake Protection Plan

The Matanuska-Susitna Borough contracts with Sanders Forestry to conduct and prioritize fire risk assessments in all borough communities. Prescriptions for fuel treatments such as shaded fuel breaks are being written and put out to bid. The Mat-Su area Forester provided professional guidance by visiting the community to compare his observations against this assessment and plan. The Borough's GIS Hazards Mapping Technician provided the Fire Risk Hazard Rating Map. This map reflects data gathered by the foresters in preparation of this plan. It reflects the vegetation fuels types and loading and does not consider the structures.

Community Participation

Public Involvement

Residents of Horseshoe Lake have been meeting twice each month, for the past eight years, for an informal breakfast to discuss community issues. Because the 1996 fire had been so traumatic and destructive, the community became pro-active about preventing and mitigating wildfire. Many residents have

systematically cleared burnt standing timber and shared fire-safe best practices in rebuilding their homes. Each Spring, before green-up, when fire danger is approaching it's height, the community comes out *en masse* to clean up the debris of winter from their roadways and properties. The borough has set up a free woody debris disposal site at the Big Lake dump (and all others in the borough). Horseshoe Lake residents carted many truck loads of brush to the site during their community clean-up days during the first week of May this year. On June 15, 2006 the entire Big Lake community will join in a commemoration of the 10 year anniversary of the Miller's Reach Fire to be held at the Big lake Public Library. Horseshoe Lake residents will be on hand to distribute Firewise brochures and talk with other area residents about how to create and maintain defensible space at their homes. The borough Wildfire Mitigation Program staff, assisted by Horseshoe Lake residents, will run a continuous loop of Miller's Reach pictures coupled with a Power Point presentation about Firewise principles.

Public Outreach

The Big Lake Elementary School, Fire Station 8-1, and Public Library are sites of Firewise defensible space demonstration projects completed in 2005. The Matanuska-Susitna Borough had been conducting Firewise activities in the Big Lake area as part of its borough-wide Wildfire Mitigation Program. During the summer of 2005, the borough partnered with the Chugachmiut Native Corporation to deliver Firewise education to homeowners in the Big Lake area including Horseshoe Lake.

Firewise presentations were made to the public attending Big Lake Chamber of Commerce meetings in the winter of 2005 and spring of 2006 and at meeting of the Big Lake Chamber of Commerce during the same months. Horseshoe Lake residents were present at these meetings and shared information about wildfire safety planning.

A Horseshoe Lake resident is on the Community Council Board as well as on the community Firewise Board. This has made the monthly Big Lake Community Council meetings an effective venue for Firewise discussions. The Council has responsibility for providing Borough administration with community opinions regarding public works projects, firebreaks, road development and maintenance.

COMMUNITY BACKGROUND

The Horseshoe Lake Community is located north of Big Lake in the Matanuska-Susitna Borough (MSB) in southcentral Alaska. This community was developed in the early 1950's consisting of parcels used for recreational cabin sites built by Anchorage and Palmer residents. Over the years the number of year-round residents has increased, though many structures are still recreational or seasonal in use. Initially a single pioneer road was constructed for access and later

improved to serve permanent residents. MSB real property records list 246 parcels and 157 structures within the community boundaries.

The geographic features of this area offer a variety of land use activities including recreation, residential and commercial development. The majority of the homes and properties near Horseshoe Lake represent high assessed values with new construction in progress. Currently, there are seven home-based businesses in the community and a large church camp population during the summer. An FAA VOR site exists west of Horseshoe Lake. The MSB 2006 real property value assessments for the Horseshoe Lake Community total $24,517,900.

Presently this community is still served by a single access paved road. West Lakes Blvd. connects via Beaver Lake Rd. to Big Lake Road. Horseshoe Lake Rd, the main artery through the community, is an unimproved gravel road. Other methods of transportation include aircraft, boats, snowmachines and ATV's.

Electricity is provided to many of the residents by the Matanuska Electrical Association (MEA). Other residents use generators as an alternative power source. The Big Lake Fire Station 8-2 is a secondary station located south of Horseshoe Lake on West Lakes Blvd.

EMERGENCY PREPAREDNESS

Fire protection is provided to the Horseshoe Lake area residents by the Big Lake Volunteer Fire Department (BLVFD) and the State of Alaska, Division of Forestry. An International Organization for Standardization (ISO) fire protection Class 8B10 rating is currently in effect for the Horseshoe Lake area.

The Big Lake Fire Service has two fire stations. Station 8-1 is the primary station located in the town of Big Lake. Station 8-2 serves the north side of Big Lake including the Horseshoe Lake area. Trained volunteer firefighters averaging 17 to 25 personnel are on-call in the Big Lake service area. Fire apparatus is used for multi-risk incidents determined by capability and access. Structural engines and tankers are used to suppress and support wildland fire operations as needed. A list of apparatus is as follows:

Station 8-1

Rescue 81		
Engine 811	1250 GPM	1000 Gal.
Command 81		
Tanker 811	1250 GPM	2000 Gal.
Support 81	160 GPM	250 Gal.

Station 8-2

Fireboat 81	2 Portable pumps 550 Gal. each/800 Ft. Fire Hose
Engine 821	1000 GPM 1000 Gal.

Tanker 821 1000 GPM 1000 Gal.

The State Division of Forestry has statutory authority to protect forested lands from wildfire on state, private, and municipal lands. The DOF bases its Mat-Su area operations in the City of Palmer and shares a cooperative agreement with the MSB to provide wildland fire protection. Another inter-agency agreement between the State and the BLM Alaska Fire Service exists to protect State and federal jurisdiction lands in southern Alaska. Standard initial attack resources for the Mat-Su Area, Division of Forestry are as follows:

Apparatus
(4) Engines – Type 3
(3) Engines – Type 6
(2) Engines – Type 7
(1) Water Tender

Aircraft
(1-2) Helicopters – Type 2
(1-2) Air Tankers – Type 1

Fire Crews
Pioneer Peak – Type 1 20 Person
Gannet Glacier – Type 2 10 Person

Fire Suppression Personal
(14) Fire Suppression Technicians
(2) Fire Suppression Foreman
(1) Fire Management Officer

Fire suppression success is determined by an effective initial attack on wildfires to conserve the values at risk and reduce suppression costs. A mutual response of State and Borough trained, experienced and well-equipped firefighters is critical to preparedness.

COMMUNITY RISK

The Horseshoe Lake community consists of multiple private parcels intermixed with wildland fuels. This rural interface community borders several lakes and is surrounded by a greater wildland environment previously burned in the 1996 Miller's Reach Fire. Most of the forest vegetation in the developed areas near Horseshoe Lake survived the devastating affect of the Miller Reach Fire. Other lake communities in the north Big Lake area suffered catastrophic losses. Natural and human caused events that influenced the conservation of homes and forests near Horseshoe Lake do not predicate a low risk probability for future wildland fires.

Fire frequency and ignition potential in the Mat-Su Borough has increased with socioeconomic activities and climatic warming trends. Human caused fires are the most common, specifically debris burning and recreational activities.

FUEL VEGETATION DESCRIPTION

Two general vegetative fuel models can be identified for this area. The first could be described as a previously burned black spruce and muskeg forest fuel complex varying in stand density with a mixed hardwood component. Lesser stands of green black spruce and muskeg vegetation are occluded by burned areas. Surface vegetation consists of spruce/hardwood fire slash, low shrubs, grass/forbs and moss. The regeneration of predominant hardwood seedlings and saplings with an understory of spruce seedlings is evident in most of the burned area. Dead standing fire-killed trees are expected to add to the surface fuel load volume within the next ten years.

The second fuel model more representative of the immediate fire hazard to local residents is the live dense spruce/hardwood forests surrounding homes and roads. Black and White Spruce are the dominant tree types. Field observations and low level photography indicate a contiguous stand of these types intermixed with structures and in close proximity to single access/egress roads.
(Re: Community Maps)

Fuel Hazards

Assessment of fire hazard in the project areas is based on prediction of fire intensity, behavior, and the likely effectiveness of fire suppression tactics. Hazard level assessment is based on photo interpreted vegetation types (fuels), and site-specific field observations.

Fire Slash, Hardwood/Spruce Seedlings, Shrubs, Grass/Forbs (FS, Hd1Bs1C, OS, GH)

Moderate to Very High Hazard Level

The burned areas represent a more transitional fuel model influenced by the regeneration of forest vegetation and the changing composition of fire killed spruce trees. This fuel complex is more representative of a slash model and surface fire behavior varying in intensity determined by live and dead fuel load volumes. Surface fuel loads are expected to accumulate as standing dead trees fall from wind and stump decay. Fuel comparisons can be made with Anderson's Fuel Models #2, #5, #10, #11, #12, and #13*. Rapidly spreading fires with high heat intensities capable of generating firebrands can occur where fuels are well distributed. Active flames can be sustained for longer periods in concentrated material larger than 3 inches. Severe weather conditions could make fire control efforts very difficult.

Natural regeneration after the 1996 burn will require long-term monitoring and research to determine changing wildfire hazard levels and risk probabilities. Custom fuel class models are not available at this time.

Black Spruce Stands (Bs1C, Bs1Hd2C, Bs2Hd2C, Ws2Hd2C)
Very High to Extreme Hazard Level
Spruce stands in this area contain seedling, sapling and pole-size black spruce, white spruce and mixed hardwoods (aspen, birch, cottonwood) trees. Fires in closed black and white spruce stands are often very intense, generating dangerous flame lengths and spread characteristics. Fires in dense spruce stands can exhibit extreme fire intensity, including crowning, torching and spotting behavior. These conditions could best be described by Anderson's Fuel Models # 4, # 6 and # 7*. Consequently, fires burning in severe conditions can be very resistant to ground and aerial control efforts.

*Forest Service General Technical Report INT-122, H.E. Anderson

Fire Hazard Summary
The high spruce component found in the described stands is capable of supporting very intense wildfires that exhibit extreme fire behavior and are very resistant to control by direct attack. Wildfire in these fuel types could be life threatening. In the event of wildfire, area residents would need to use the S. Horseshoe Lake Road and West Lakes Blvd. to evacuate which is bordered by hazardous fuel types and has very narrow clearing limits. A wildfire in close proximity to the road could make the road impassable for emergency ingress and egress traffic.

WILDFIRE RISK ASSESSMENT
Wildfire risk is based on the probability a fire could occur.

Risk of Ignition
Big Lake and surrounding communities are subject to a high fire risk due to the vegetation fuel types, topography, weather patterns and the probability of ignition. Debris burning and outdoor recreation activities leading to escaped wildland fires are common.

The local community of Horseshoe Lake has the benefit of natural fuel barriers (lakes). These barriers also limit emergency response vehicles and public evacuation to single road ingress and egress routes. Development density (values at risk) is concentrated in spruce stands where fires are more likely to occur. Human caused ignition within these residential areas represents a higher level of risk to property owners.

Risk to Infrastructure
Most of the residences, critical ingress/egress routes and facilities are within or adjacent to forested areas classed as high to extreme wildfire hazard. Fire risk and hazard evaluations have been performed using low-level aerial photography and ground-truthing by qualified forestry/fire personnel. At this time, individual

home assessments are being completed by the MSB Department of Emergency Services (DES) in compliance with the Firewise program.

The majority of values at risk are private homes and properties in a well established rural community. Part of this community is a church camp (Camp Maranatha) that provides housing and organized activities during the summer fire season. Multiple structures have been constructed on this site, some of them used for facilitating large groups of children and adults. Many of the private homes have been improved or rebuilt with new construction indicating high capital investments reflected by the total assessed property values. Further consideration should be given to more realistic replacement values when evaluating individual structures and facilities.

Power lines should be protected to maintain communications and power to water wells during fire emergencies. This could be combined with the treatment prescriptions of ingress/egress routes where appropriate. Other important values such as recreational lands, fish and wildlife habitat, and water quality are at risk and could be adversely impacted by fires.

HAZARD REDUCTION PRIORITIES

All of the properties prioritized for fuel reduction treatment are privately owned with the exception of public roads and ROW easements. Cooperative land owners and representative agencies should prioritize home defensible and survivable space. Residential homes and other structures should be individually assessed for the level of risk. Defensible spacing should incorporate the three zone requirements outlined in Firewise Alaska AWFCG. Safe access routes should be provided to the main road system.

Priority projects identified for fuel reduction are but not limited to:

- Properties adjacent to the total S. Horseshoe Lake Road system
- Properties along the west shore of West Lake
- The private road accessing properties north and west of West Lake
- The north and west properties of Hourglass Lake and connecting access roads to South Horseshoe Lake Road
- Big Lake Station 8-2

Fuel Reduction

The project plan will accomplish risk/hazard fuel reduction objectives by constructing primarily shaded hardwood fuel breaks along Horseshoe Lakes Road, West Lakes Blvd. and on private property (cooperating landowners). The treatment areas will be 50-200 feet wide from the existing cleared ROW. Defensible space within the home ignition zones should be assessed individually also recognizing threats to adjoining properties.

General Treatment Prescription

All Vegetation (Fuel) Types

- Space, cut, chip or remove live and dead seedling/sapling and pole-timber sized spruce trees by means of mechanical and/or manual fuel reduction contracts. This includes the deposition of dead woody surface debris greater than 3 inches in diameter and 4 feet in length.
- Retain chips on-site to inhibit regeneration of spruce trees and bluejoint reed grass establishment.
- Modify forest fuels characteristics by retaining most hardwood trees, when present, (birch, aspen, cottonwood) to create a hardwood shaded fuel break.
- On private property, sound (rot free) boles greater than 5 inches in diameter and 4 feet in length or greater will be decked for salvage/utilization. This will remain the property of the landowner for private utilization, unless otherwise directed.

The proposed community treatment areas surrounds Horseshoe and West Lakes, the north half of Hourglass Lake and property north of W. Lakes Blvd. including Bottle Lake. (MSB Parcel Map LS09).

General Legal Description:
Sections 12, 13, 14, T17N, R4W, S.M.
Section 11 north of E. Lakes Blvd., T17N, R4E, S.M

The treatment prescriptions are designed to treat hazardous fuels adjacent to primary access/egress routes and provide defensible space to home owners. To complete the project as designed it will be necessary to inform private landowners with land inside or adjacent to the proposed treatment areas about the treatment methods, predicted condition of lands following treatment, project benefits, and to request and obtain their written approval to conduct hazard fuel reduction on specified portions of their lands.

ACTION PLAN

Information gathered through community meetings, the MSB Emergency Management SBBWMP and the State of Alaska, Division of Forestry has identified a list of primary goals for this CWPP. Emergency preparedness, education, hazard fuel reduction and wildfire mitigation management topics are listed in descending order of priority. Community participants and planning members will need to identify roles and responsibilities, funding needs, project priorities and timetables for implementing the recommended actions.

The actions recommended for the Horseshoe Lake community and proposed hazard fuel reduction projects are listed below.

Emergency Preparedness
Fire Resources and Planning

- Develop a wildfire pre-suppression plan and evacuation procedures for the Horseshoe Lake community to be coordinated by the Big Lake Fire Department and the State Division of Forestry.

- Develop a fire protection map including: vegetation hazard ratings, ingress/egress routes, values at risk, safety zones, drafting locations, helispots and GPS coordinates.

- Identify emergency response resource needs and maintain a baseline level of equipment, personnel and training to provide adequate fire protection.

- Provide homeowners with fire prevention and planning information.

Education

- Educate residents on Firewise objectives, fire prevention and escape routes/safety zones.
- Contact absentee landowners to get them involved in fuel hazard mitigation on their properties.
- Provide education on “shelter in place” versus evacuation.

Mitigation Management

- Determine the best locations for fire breaks.

- Encourage the use of hardwood shaded fuel breaks and defensible space.

- Provide residents with treatment prescription specifications and sustained maintenance.

Treatment /Disposal

- Perform fuel reduction treatment by cutting, chipping, shredding, mulching or burning using mechanical or hand labor methods. Remove excess vegetation from the treatment areas.

- Utilize the MSB Big Lake Transfer Site for wood disposal.

- Encourage the MSB Firewise “cost-share” program for treating home defensible space.

- Authorize and coordinate controlled burning with the State of Alaska, Division of Forestry in Palmer.

Public Safety

- Identify and assess ingress/egress routes for South Horseshoe Lake Road and connecting private roads.

- Develop community evacuation plans including future subdivision or development planning.

- Develop a public notification system for emergencies. Have an alternate telephone calling system for emergency information.