ID letter	Priority (H, M, L)	Avg	Title	Description	On-going Project? (name and aspect covered by project)
A	M	2.1	Mapping seral stages of vegetation following fires using the Multi-Resolution Land Characterization program protocols	Earth cover or land cover maps may be utilized for developing fuels maps, for initial fire attack planning, for assessing ecological changes following fires and with improvement could be utilized to assess fire regime and condition class. Little information, however, is readily available for the mapping of earth cover over areas that are in early stages of seral development following fires. In many cases, earth cover mapping projects often assign earth cover class values that are based on plant communities that are in more mature stages of development; therefore, existing earth cover classes are only partially correct in adequately describing the vegetation occurring over burned areas. To better describe seral stage vegetation as a subset of existing earth cover classifications, the Multi-Resolution Land Characterization program protocols could be used to produce a set of new earth cover classes to identify areas that have been burned and are in different stages of plant community succession.	
B	M	2.2	Analyze landscape metrics: vegetation patch size and distribution patterns resulting from fire occurrence, vegetation manipulation and utilization of suppression options in Alaska.	Historical landscape scale fire occurrence in Alaska, vegetation manipulation near populated areas and along transportation corridors, and the mid-1980's implementation of Statewide Interagency Fire Management Plans have significantly contributed to changes in landscape scale mosaics and patch dynamics. Fire managers are interested in quantification and analysis of current landscape metrics to better understand trends that have taken place and current vegetation conditions. Investigation of patch dynamics of vegetation, and other landscape metrics, within areas (Refuges/Parks etc.) with little to no suppression history would help us understand natural patterns. It may be possible to use this method concept to investigate the different protection options within Alaska, or it may need to be structured between areas that have been traditionally in "limited" versus areas where suppression activities have been aggressive. This information may help fire managers understand if the "condition class" has changed in the context of patch size and the amount of area under different vegetation types.	

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C	H	2.6	Update and Expand Alaska Fire History and Fire Return Intervals	Statistics for wildfires in Alaska that occurred from 1957-1979 were gathered and analyzed by Gabriel and Tande in BLM Technical Report 9, "A Regional Approach to Fire History in Alaska" published in September 1983. It would be useful to fire managers to update statistics to encompass the period of 1957-2003 and include a more comprehensive analysis of fire return intervals and fire regimes. The analysis could also be correlated to current recognized ecoregions in Alaska instead of the "physiographic sections" utilized in the original study.	Recently all the fire records at AFS have been gone through and have mapped ignition points and perimeters (of fires that have perimeters) on military lands. (D. Mann)
D	H	2.7	Validate the Canadian Forest Fire Danger Rating System (CFFDRS) indices in Alaska and relate to fire risk, fire behavior, fire severity, and consumption	Fire management decisions in Alaska are based on the ability to predict fire risk and burning conditions. Most fire management agencies in Alaska have adopted the Canadian Forest Fire Danger Rating System (CFFDRS) as a method for predicting fire danger, behavior, and severity. The original fuel moisture drying algorithms were developed in eastern red pine and jack pine stands, which do not occur in Alaska and there is some question whether the CFFDRS indices adequately and accurately address drying trends in continuous and non-continuous permafrost laden organic soils. Preliminary results from PNW studies closely link duff moisture with forest floor consumption. Some investigations have been done, but research is needed to: • evaluate CFFDRS indices and drying trends in different geographic regions across Alaska • evaluate the use of weather station and soil moisture probes data to adequately represent duff moisture • determine whether overwinter drying values or default startup values should be utilized • evaluate whether existing CFFDRS equations and assumptions should be altered to better reflect drying conditions during the fire season • evaluate the relationship between CFFDRS indices and probability of ignitions, rate of spread, duration and depth of organic fuel consumption • evaluate whether drought indices in use with other fire danger rating systems would be useful to utilize in Alaska.	Allen, Jennifer. 2003. "Correlation of duff moisture and the Canadian Forest Fire Danger Rating System in South-Central Alaska." In house study by NPS, PNW, USFWS, BLM – Assessing duff moisture probes and CFFDRS. USFS Missoula Fire Lab (Jim Reardon) is working on a custom Alaska calibration for a new instrument tested by AFS in 2003 (Cambell Sci. Duff Moisture Meter) which allows a direct readout of volumetric moisture content at a particular layer. This may give us an additional tool to compare computed indices to actual duff moisture curves.

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E	M	1.9	Effects of fire initial attack suppression actions dictated by Fire Management Options in the Alaska Interagency Wildland Fire Management Plan on Fuel Condition Class and Fire Intervals.	The Alaska Interagency Fire Management Plan has been in effect since the 1980s. This plan provides guidelines to provide appropriate protection of values or property identified by land managers/owners, while taking into account the ecological role of fire as well as the cost of suppression efforts and prudent use of finite suppression resources. Initial attack suppression actions are guided by fire management options assigned to all burnable acreage in the State. Initial action ranges from aggressive initial attack with emphasis on minimizing acreage burned to surveillance. Managers would like to find out whether application of the fire management options over the past twenty years has resulted in any changes to condition class and extent of high fire hazard fuels compared to previous management practices.	Rupp/Mann. (UAF) JFS project "Development of a Computer Model for Management of Fuels, Human-Fire Interactions, and Wildland Fires in the Boreal Forest of Alaska". Goal to provide land managers with thematic representations of how forest cover and probability of large fire events respond to changes in fire management and to climatic change.
F	L	1.5	Social/political impacts of implementation of the Alaska Interagency Wildland Fire Management Plan (AIWFMP)	The direct and indirect impacts of the AIWFMP on various areas of the state is poorly understood. There is a perception among some fire managers that social tolerance and acceptance of wildland fire and associated smoke varies between rural and urban areas of Alaska. A generally accepted belief among fire managers is that fire management has a greater economic impact in rural Alaska than in urban Alaska. These perceptions and beliefs need to be studied, to understand whether support for the AIWFMP will continue, as well as determine what the sociopolitical impacts of implementation of the plan have been. This research should be performed under the supervision of a social scientist experienced in conducting interviews and surveys. EFF crew use prior to implementation of statewide planning and subsequent to statewide planning could be analyzed, as well as the perceived importance of EFF crew participation in villages where crews are located. Economic impacts/tradeoffs could be made utilizing forest economics modeling for private lands and public lands, and evaluated for rural and urban areas.	Terry Chapin/Scott Rupp (UAF). National Science Foundation to study human-fire interactions in Alaska. *Does anyone know how the project just started by UAF with a NSF grant relates to this topic??*

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G	M	2.1	Validate the use of the Canadian Fuel Models and determine whether these models or the NFFL fuel models best meet land manager and suppression agency needs.	Inaccuracies that exist in current fuel model applications in Alaska need to be quantified. Documentation needs to be increased to compare actual fire behavior in various fuel types to predictions made utilizing current fuel models. There are opportunities to integrate this need with Photo Series for Spruce and Mixed Forests data and Fuel Characteristics Class data to provide more reliable fuel modeling inputs for fire behavior prediction systems utilized in Alaska. If needed, develop a custom Canadian Fuel Model.	Comment: This seems to be part of H below.
H	H	2.67	Assess and improve predictive tools for Fire Management in terms of fire occurrence, fire behavior and fire spread.	Fire management personnel need a reliable method for predicting the probability of ignitions, rate of spread, duration and depth of organic fuel consumption in order to respond appropriately to fire situations and determine the effects of fires. Assess the use Canadian Fuel Models, NFFL fuel models and potentially customized fuel models in fire behavior prediction. Develop applicable fuel layers and assess the use of Farsite, Prometheus, Long Range Risk Assessment, (RERAP) Behave and FBP to provide reliable predictive capabilities for fire behavior and fire spread in spruce, mixed stands and tundra.	Jo Scott/Bob Burgan (USFS Missoula) have developed a new custom NFFL fuel model (TU01-05) for boreal spruce in response to our requests and are looking for Alaska FBA input to validate and refine.
I	L	1.4	Devise a valuation method for natural resources protected by fire suppression or changed by fire occurrence.	The Fire Program Analysis Initial Attack Preparedness Module currently being designed on an interagency basis will utilize a “quality acre protected” approach. Weighting of relative importance of initial attack response on fires will in part be based on monetized and non-monetized values to be protected. This study would validate “valuation” in comparision with AIWFMP fire management options on an interagency basis.	FPA work is currently being done.

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J	L	1.6	Determine effects of silvicultural methods alone and in concert with fire treatment on forest conditions in boreal and coastal forests of Alaska.	Determine desired forest conditions based on land manager, social scientist and public input for boreal and coastal forest areas where fire occurrence is significant. Based on desired forest condition(s) described, develop strategies to achieve those conditions. As an example, on the Kenai Peninsula, if deciduous forest establishment was determined to be a desireable forest condition, experiments could be performed to demonstrate effectiveness including scarification and/or prescribed fire, application to enhance deciduous forest regeneration in areas where grass is a short term risk to fire spread.	
K	H	2.8	Assess the effectiveness of Hazard Fuel Breaks in Boreal Forests.	With the lack of appropriate fire behavior models for boreal forests, evaluating the hazard fuel breaks being implemented in Alaska has been very difficult. Evaluation needs to include pre-treatment, treatment, measurement and data analysis, and then fire response through the treated area with long term vegetation monitoring post -burn. Shaded fuel breaks may be of particular importance, though it would be best to test multiple treatment patterns, and in different geographic regions of the state.	Bob Ott, TCC "Fuels Treatment Demonstration Sites in the Boreal Forests of Interior Alaska". Ongoing JFS project to compare thinning/pruning fuel treatments in boreal black spruce with the concomitant risk reduction, visual impact, environmental effects, and cost/benefit ratio.
L	M	2.0	Smoke management – Evaluate smoke emission and fuel consumption models in Alaska.	Emissions from Alaska's fuels are not well understood. Models are developed based on lower 48 fuels, rate of consumption etc. These models need to be evaluated for Alaska's fuels, particularly for duration of burning fuels. As wildland fire use becomes more common in Alaska, emission models such as EPM and CONSUME will be used more frequently.	Ron Babbitt, USFS Missoula: part of the Rapid Repsonse JFS project under T is to gather info on emissions, particularly smoldering combustion for EPM model.
M	L	1.6	Assessment of smoke transport models for use on Alaska wildland fires.	The existing smoke transport models available for use in Alaska are all developed for the Lower 48 states. Different terrain, weather and jet stream dynamics in Alaska potentially will alter the models' effectiveness. Computer simulation techniques can be used to provide an assessment of how well the models capture the important characteristics of smoke transport in Alaska. Understanding how well the models function for Alaska will enable fire managers to make better predictions and provide better capabilities for smoke management.	

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N	H	2.44	Develop a State-wide Fuels Map for Alaska	There has been a JFSP proposal that would use the existing DU maps, fill in areas with MRLC to create a state-wide model. Nancy French of Altarum Company submitted the proposal. A statewide map would greatly enhance our ability for coordination/cooperation. BLM – AFS has also been working on a strategy for creating a seamless map, but at this time it will only cover BLM lands.	Comment: JFS proposal was rejected in 2003. This seems very related to A above.
O	L	1.67	Demonstration project to utilize DEM data for improvement in assessing fuels and fire behavior.	Accurate Digital Elevation Model information (using IFSAR, LIDAR) could be obtained for a demonstration area and combined with current landcover and surficial geology data to improve data layers utilized in Farsite fire behavior prediction and further refine fire fuels mapping. Comparisons could be made with lower resolution data to determine differences in fire behavior predictions and distinctions in fuels models and fuel assessments.	
P	L	1.56	Implement LANDFIRE Study Area in Alaska: geospatial data of vegetation condition, fire fuels, risks and ecosystem status.	The LANDFIRE project is a multi-agency, inter-disciplinary research and development activity designed to develop a consistent and accurate methodology capable of producing geospatial data of vegetation conditions, fire fuels, risks, and ecosystem status at the national, regional, and local scales for implementation of the National Fire Plan. Expand current Landfire initiative to include a study area in Alaska or fund expansion of Landfire implementation to Alaska.	
Q	M	1.8	Linking the east-west boreal forest fire frequency gradient to moose browse availability and abundance. (from A.D. McGuire's proposal)	Resource management agencies must consider cultural and economic values in an ecological context when managing fire in the boreal forest. Moose management is a common concern of public land managers, subsistence managers and communities. Though our understanding of fire effects on moose habitat has improved, there are difficulties in expanding localized studies across the boreal forest due to a gradient in fire frequency and other factors that occur from east to western parts of the state. This study would use existing burns to develop an integrative assessment (incorporating climate, physiography, and landscape heterogeneity) for moose across an east-west gradient of fire frequency in interior Alaska. This study expansion, combined with findings from the currently funded BRD investigation of Caribou/fire relationships would enhance land and wildlife managers knowledge of the effects of fire on ungulates in Alaska. *The FETG believes that this concept would also be useful if expanded to include other fire effects (successional trajectories etc.) that may vary on the east-west or north – south gradient.*	

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R	M	1.8	Predicting the location of lichen dominated boreal habitat in relationship to past fires using Landsat 7 ETM+ imagery and the Multi-Resolution Land Characterization program protocols	Forested lichen habitats often dominate the winter habitat selection of caribou. In the boreal forest environment, the location and periodicity of wildland fires, and the rate of lichen recovery following fire often dictate the location and abundance of lichen habitat available to caribou. Identification of different lichen habitats using multivariate analysis of satellite imagery is often problematical because of forest/understory structure and density. The Multi-Resolution Land Characterization (MRLC) program is a new, national wide USGS activity that utilizes a series of mapping protocols that may be useful to predict the location of lichen dominated habitats. The MRLC protocols involve decision tree and regression tree analysis of Landsat 7 ETM+ satellite data, ancillary data layers (slope, aspect, elevation, soils, fire frequency), field points, and higher resolution satellite imagery (e.g., digital ortho-photo-quads) to produce descriptive variables related to land cover and estimates of canopy cover, both of which can be related to lichen habitat. This effort would build upon ongoing studies of caribou/fire relationships in south central and interior Alaska. Knowledge gained from current caribou studies could be used to enhance the mapping of lichen habitat, while providing additional land cover products for fire managers.	
S	M	1.89	Measuring climate change indices for fire prediction modeling	There seem to be increasing signs of climate change occurring in Alaska. One of the anticipated signs of climate change are changes in water budgets. These changes are important for predicting future fire behavior, fuel loadings and pre and post-fire vegetation response. A landscape scale documentation of lake drying patterns could provide a easily documented metric for modifying prediction models; however, information is needed to better document the evidence of drying patterns to actual water budgets.	Racine,Charles (2003, pending) "Postfire tundra vegetation recovery along a hillslope toposequence on the Seward Peninsula …" , will address, also a paper by Scott Rupp. Also related to E above.
T	H	2.6	Link fire behavior, fire weather, fuel consumption and burn severity to vegetation response	Building on the Rapid Response concept in the PNW research project which measures duff consumption by installing plots at actively burning fires; expand the approach to include fire behavior at the plot sites, fire weather specifics, and more expanded pre-fire vegetation documentation. This information would provide the basis for long term monitoring of vegetation response which would allow us to make a greater tie between fire severity and fire effects.	Ottmar/Babbitt/Ferguson "Forest Floor Consumption and Smoke Characterization in Boreal Fuelbed Types of Alaska". JFS sponsored beginning in 2003.