

**Forest Access Mapping, Inventory and Reforestation Projects**

**FY2015 Request: \$900,000**  
**Reference No: 58258**

**AP/AL:** Appropriation **Project Type:** Research / Studies / Planning  
**Category:** Natural Resources  
**Location:** Statewide **House District:** Statewide (HD 1-40)  
**Impact House District:** Statewide (HD 1-40) **Contact:** Jean Davis  
**Estimated Project Dates:** 07/01/2014 - 06/30/2019 **Contact Phone:** (907)465-2422

**Brief Summary and Statement of Need:**

This project will enable the Division of Forestry to complete four related high priority projects. First, the purchase and installation of new bridges and culverts will support improved access to state forest units. Second, widespread areas of windstorm damaged timber in Interior Alaska will be mapped to promote its salvage. Third, a comprehensive interagency effort will install and monitor permanent forest inventory plots to provide managers with up-to-date growth and yield trends to help meet woody biomass demand. And fourth, the planting of 500 acres of white spruce seedlings will eliminate the reforestation backlog in the Fairbanks area.

<b>Funding:</b>	<b>FY2015</b>	<b>FY2016</b>	<b>FY2017</b>	<b>FY2018</b>	<b>FY2019</b>	<b>FY2020</b>	<b>Total</b>
Timber Rcp	\$900,000						\$900,000
<b>Total:</b>	<b>\$900,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$900,000</b>

<input type="checkbox"/> State Match Required	<input checked="" type="checkbox"/> One-Time Project	<input type="checkbox"/> Phased - new	<input type="checkbox"/> Phased - underway	<input type="checkbox"/> On-Going
0% = Minimum State Match % Required		<input type="checkbox"/> Amendment	<input type="checkbox"/> Mental Health Bill	

**Operating & Maintenance Costs:**

	<u>Amount</u>	<u>Staff</u>
Project Development:	0	0
Ongoing Operating:	0	0
One-Time Startup:	0	0
<b>Totals:</b>	<b>0</b>	<b>0</b>

**Prior Funding History / Additional Information:**

No Prior Funding History.

**Project Description/Justification:**

The following four projects are described in detail below:

- Project 1 - Water Crossing Structures for Timber Sales Access \$450,000
- Project 2 - GIS Mapping for Salvage Timber Sales and Hazardous Fuels Mitigation \$100,000
- Project 3 - Forest Inventory for Biomass Identification \$250,000
- Project 4 - Tanana Valley State Forest Reforestation \$100,000

**Project 1: Water Crossing Structures for Timber Sales Access**

**What is the issue or problem to be solved?**

The Division of Forestry statewide small timber sale program does not generate enough revenue on a sale by sale basis to cover the cost of major water crossing structures necessary for new or replacement access to a management unit or multiple management units to enable the division to sustainably meet increasing demand for wood.

**What is the scope of the project to be performed?**

\$450,000 will be utilized to design, purchase and install bridges and large culverts where necessary for access to management units within the Tanana Valley, Haines and Southeast State Forests. Prioritization for these funds will take into account both the immediate needs of the statewide local industries and the potential for the management units to generate immediate and long-term timber sale revenues.

**What results will be achieved or products produced?**

This project will result in a continued steady flow of fiber to all users of forest products, economic development for communities, job creation and retention, and a steady stream of timber sale program revenue to the state.

**Why is this project needed now – What is the impact of remaining status quo?**

New access is critical for maintaining a continuous supply of fiber from state forests to local manufacturers of wood products. Of particular interest is the small timber sale program in southern Southeast, which will come to a standstill in no more than three years, as the road accessible state forest parcels on Prince of Wales Island are nearly depleted. Operations must move to state forest parcels that exist on other islands if the local industry is to survive. Crossing structures will be necessary to gain access.

**Project 2: GIS Mapping for Salvage Timber Sales & Hazardous Fuels Mitigation**

**What is the issue or problem to be solved?**

The interior region of Alaska experienced an unusually widespread and destructive wind event during mid-September 2012. The event was subsequently declared both a state and a national disaster. The impacted area extends from Tanacross to the west, and north of Delta Junction. Division of Forestry personnel, providing reconnaissance of fires caused by the wind event, reported and photographed large swathes of trees uprooted or broken off within their response units. Risks associated with such damage are known to be: control of wildland fires; (beetle caused) forest health problems; riparian effects; and impacts on transportation infrastructure.

**What is the scope of the project to be performed?**

\$100,000 will fund a systematic and controlled mapping effort of the windstorm damaged area to occur with a high level of geographic accuracy combining high resolution satellite imagery and Geographic Information Systems (GIS) to allow for salvage timber sales, identification of hazardous (fire) fuels and identification of forest health concerns. This project will acquire new imagery at a suitable scale to enable ocular identification of the blown down timber areas. These areas will be delineated on the imagery by the use of a trained vegetation interpreter utilizing DatEm software linked to a Geographic Information System.

A subset of the delineated stands will be field checked to confirm operability. Current and proposed access routes will be identified and selected timber units made available for salvage efforts. Areas with hazardous fuels and forest health concerns will also be identified.

**What results will be achieved or products produced?**

This project will result in identification of the extent of wind damage and provide a means to delineate

stands for salvage for woody biomass, fuelwood or sawtimber. Additional hazards will also be identified such as wildland fire risk areas, forest health concerns, riparian effects and transportation infrastructure damage. The information produced will be the basis for designing a timber and biomass salvage program, hazard fuel reduction activities and riparian area restoration and salvage.

Assessment of the wind damaged timber will provide the following products:

- Ability to assess flood hazard potential within and adjacent to populated areas.
- Determination of operable stands to be made available for salvage.
- Evaluation of wildland fire hazard in areas impacted by the wind event.
- Establishment of baseline data in order to monitor for and mitigate potential insect and disease impacts to the forest land base.

### **Why is this project needed now – What is the impact of remaining status quo?**

Mapping of the damaged timber was attempted with several flyovers following the wind event and during the 2013 fire season. However, due to the extensive area impacted, and the various intensities of the blow down timber, complete and accurate mapping was not possible. Timber resources damaged during the wind event can lose significant marketability especially for trees lying on the ground. Fire hazards and insect populations can also build quickly and have the potential to affect undamaged adjacent forests. Quick assessment and delineation of impacted stands can accelerate utilization of operable timber, and mitigate hazardous fuels and insect damaged areas. Without an accurate assessment of the wind damaged timber, hazardous fuels and insect build ups may remain unchecked and can affect future sustainable forest management opportunities in this area of interior Alaska.

### **Project 3: Forest Inventory for Biomass Identification**

#### **What is the issue or problem to be solved?**

Demand for wood as an energy source is continuing its dramatic rise, as is the demand for public lands to sustainably supply fiber to these projects; forest inventory information, along with measures of tree growth and mortality, must be known. The Alaska Energy Authority continues to fund grant applications for woody biomass projects statewide through its Renewable Energy Fund. Fifteen biomass systems are in construction, ten in operation and an additional 13 project proposals have been submitted. This is especially important in interior Alaska where growth rates are slow, and wildfire activity is on the increase. Proposed Interior biomass projects are receiving intense scrutiny by the public, agencies and media as to whether long-term biomass supply agreements are truly sustainable. Assessing growth and mortality is necessary so that sustainable harvest levels can be scheduled and defended.

#### **What is the scope of the project to be performed?**

\$250,000 will combine field sampling, airborne LiDAR and hyper spectral imaging, and incorporate the University of Alaska, NASA and U.S. Forest Service as partners in this pilot project utilizing 21st century technology for more cost efficient forest inventory. The U.S. Forest Service will contribute an additional \$600,000 to the project. This project will install permanent sample inventory plots within the Tanana Valley State Forest. The plot installation protocol will utilize a new method based on pilot studies on the Kenai Peninsula and in the Tok area. Through collaboration with NASA the field sampling will be combined with airborne LiDAR and hyperspectral imaging to increase accuracy and reduce costs. The use of advanced remote sensing technologies is both cost-effective and efficient,

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since high resolution airborne imagery and measurements can be combined to reach multiple resource objectives (e.g. timber and biomass harvest, carbon accountability, habitat assessments, biodiversity, climate studies). Inventory plots will be installed in a grid pattern which will be over flown with G-LiHT, a portable, airborne imaging system that simultaneously maps the composition, structure, and function of the forest area. The 300 meter wide strips will be tied by GPS to the field plots. The G-LiHT system uses three components and includes:

- (1) LiDAR to provide 3D information about the spatial distribution of canopy elements;
- (2) Imaging Spectroscopy to discern species composition; and
- (3) Thermal Measurements to quantify surface temperatures and detect heat and moisture stress.

These plots will be re-measured in subsequent years to capture growth and yield for the individual sample trees. The plots will provide up-to-date, consistent and scientific information on growth, mortality, status and trends of forests in this area.

**What results will be achieved or products produced?**

This project will result in stable and increased economic, environmental and social benefits from the use of trees from state lands. The information produced will be the basis for updating allowable cut levels, identifying management opportunities, promoting alternative energy use, assisting in hazard fuel mitigation activities and supporting land management planning. A permanent sample plot system will provide a foundation for the timber sale program. The timber sale program supports many local economies throughout Alaska. It continues to be a stable source of sustainable timber resources relied upon for a variety of uses by industry and the public. In many areas, although other land owners exist, state timber provides the majority of the volume that is available on a consistent basis. Predicting future growth and yield of forest land is an essential part of sustainable forest management planning since in the long run we cannot cut more than we grow. Growth is measured as change in some characteristic such as volume over some period of time. It is further adjusted by any mortality. Yield is the total amount of wood that could be removed over some period of time. The ability to verify that forest harvest is equal to the growth ensures true sustained yield management and timber sales and biomass development can continue to occur on a long term basis. A permanent plot timber inventory system will provide the following products:

- Biomass resource information compatible with the University of Alaska Growth and Yield Program and the U.S. Forest Service Forest Inventory and Analysis Program.
- Determination of growth and yield and forest health.
- Provides a raw data source for future growth model development.
- Determination of sustained yield flow of timber products.
- Local and regional scale sampling of woody biomass, productivity, disturbance and degradation.

**Why is this project needed now – What is the impact of remaining status quo?**

High fuel cost, particularly in rural Alaska, is having major impact on local economies. Demand for biomass and alternative energy from wood is widespread. Potential investors require assured long term resource availability prior to committing to new projects. Long term projects entail significant public review and acceptance to move forward. Without verifiable and defensible estimates on forest growth and yield it is becoming more difficult to provide acceptable levels of documentation.

**Project 4: Tanana Valley State Forest Reforestation**

**What is the issue or problem to be solved?**

Within the Fairbanks area of the Tanana Valley State Forest natural regeneration of tree species following logging operations cannot be depended upon to meet the requirements set forth within Article 5 of the Alaska Forest Resources and Practices Act (FRPA;11 AAC 95). Data from regeneration surveys from the last several years shows that approximately 25 percent of the plots are under stocked. This under stocking does not meet the regeneration standards set forth in 11 AAC 95.375 (d).

**What is the scope of the project to be performed?**

\$100,000 will fund the planting of 500 acres of white spruce seedlings within 35 different harvest units within the Fairbanks area of the Tanana Valley State Forest to completely eliminate the reforestation backlog. The total number of trees that will be planted is approximately 225,000.

**What results will be achieved or products produced?**

This project will result in a private sector planting contractor planting approximately 500 acres within the Fairbanks area of the Tanana Valley State Forest to completely eliminate the Fairbanks area reforestation backlog. The Fairbanks area timber sale program will then be in compliance with state law.

**Why is this project needed now – What is the impact of remaining status quo?**

Approximately 500 acres within Fairbanks area of the Tanana Valley State Forest do not meet adequate stocking levels as outlined in state law (11 AAC 95.375 (d)). Without funding, this state forest will remain out of compliance with state law.

**Specific Spending Detail:**

<u>LINE ITEM</u>	<u>DOLLAR AMOUNT</u>	<u>DESCRIPTION</u>
Personal Services	\$ 80,000	Imagery interpretation, database development, field reconnaissance, field data collection, plot installation, report writing, and engineering.
Travel	\$ 35,000	Travel and per diem for field data collection crew and engineers.
Services	\$ 315,000	Imagery acquisition, GIS capacity development, remote sensing, G-LiHT

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		imagery acquisition, and boat and helicopter time.
Commodities	\$ 20,000	Field supplies, tree tags, flagging, and data recorder.
Capital Outlay	\$ 450,000	Bridges and large culverts.
<b>Project Total</b>	<b>\$ 900,000</b>	

**Personal Services Detail:**

Number of new position(s)

Number of existing position(s):

Type of Position(s): PFT

NP

NP

(10-9291) Engineering Assistant III, Ketchikan  
 (10-9075) Engineering Assistant III, Anchorage  
 (10-1385) Forester II, Fairbanks