



STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FORESTRY

**NOTICE OF OPERATIONS
DETAILED PLAN OF OPERATIONS SUMMARY**

Notice is given to the commissioner that an operation will be conducted on the lands described below and the completed maps attached, (AS 41.17.090). (Print or type)

Operator: _____

(Entity Responsible for Field Operations)

Operator's authorized representative: _____

(Contact Person)

Operator's authorized representative signature: _____

(DATE)

Operator's representative address: _____

City

State

Zip Code

LEGAL DESCRIPTION OF OPERATING AREA

Township: _____ Range: _____ Meridian: _____

Section(s): _____

NEAREST TOWN/ VILLAGE: _____

ESTIMATED STARTING DATE: _____

ESTIMATED COMPLETION DATE: _____

VOLUME TO BE HARVESTED: _____ MBF

TYPE OF ACTIVITY: _____

Date Received: _____

DPO # _____



STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FORESTRY

**NOTICE OF OPERATIONS
DETAILED PLAN OF OPERATIONS**

Operation name: _____
Name of nearest USGS named geographical landmark: _____
Previously assigned DPO #: _____

Operator: _____
(Entity Responsible for Field Operations)

Print authorized representative's name: _____
Authorized representative's signature: _____
Address: _____
Telephone: _____ Fax: _____
E-mail: _____

Timber owner: _____
Print authorized representative's name: _____
Authorized representative's signature: _____
Address: _____
Telephone: _____ Fax: _____
E-mail: _____

Landowner: _____
Print authorized representative's name: _____
Authorized representative's signature: _____
Address: _____
Telephone: _____ Fax: _____
E-mail: _____

**INFORMATION ON CORPORATION, LIMITED PARTNERSHIPS, GENERAL
PARTNERSHIPS, OR JOINT VENTURES**

Information has been previously submitted to the Division of Forestry and there have been no changes in any of the business relationships or key personnel.

Is this statement true? ☐ Yes ☐ No

If "no", complete and submit Page(s) 1 and 2 of Supplemental Information Form "A".

Official Use Only

REGION/AREA:	30 DAY ENDING DATE:	RECEIVED BY:
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Date Received: _____
DPO # _____



NOTICE OF OPERATIONS
DETAILED PLAN OF OPERATIONS
MAP SPECIFICATIONS

Attach a USGS quadrangle or similar **Vicinity Map**, at a 1:63,360 scale (1 inch =1 mile) suitable for black and white duplication on 8 ½"x11" paper which clearly shows the area of operations, a north arrow and if available, the legal subdivisions defining the area.

In addition to the above Vicinity Map, the items listed below are required to be identified on a **Detailed Plan of Operations Map** (11 AAC 95.220(a)(3)). The plan map should have the following areas identified or estimated if conditions exist that might influence their final location. If any of the items are missing without adequate explanation, this notification will be considered incomplete. The 30-day review period will not begin until this DPO is submitted in a complete form. The detailed map of operations should be readily reproducible in black and white in a standard size format. However, large formats or colored maps are acceptable if needed for clarity. If more than one sheet is required to adequately show operations, provide matchlines or reference each as a set of drawings i.e. Sheet 1 of 4, etc. Submit four (4) copies of your operation plan map.

Adequately label notable topographic features on each map (i.e. water bodies, etc.).

Does your **operation map** identify the following items? If "no" explain why.

	Yes	No	Explanation /notes
Road Types			
Permanent			_____
Temporary			_____
Winter road			_____
Roads to be closed			_____
Inactive roads			_____
Material extraction sites			_____
End-haul sites and spoil deposit areas			_____
Areas of unstable soil conditions			_____
Unit boundaries			_____
Yarding methods and landing areas			_____
Classified surface water locations			_____
Stream crossings and drainage structures			_____
Proposed activities in riparian areas			_____
Sort yard and solid waste sites			_____
Log transfer or barge facility			_____
Housing facilities, fuel storage			_____
Section, township and meridian lines			_____
North arrow, scale bar, plan date			_____



DETAILED PLAN OF OPERATIONS
HARVEST & SILVICULTURAL ACTIVITY
SUMMARY SHEET

Complete the following summary of harvest units and silvicultural actions for all submitted areas.

Unit Label	Acres	Type of Activity*	Sec	TWP	RG	Actual Layout? Y or N

TOTAL ACRES: _____ (If more than one kind of activity, list totals by activity.)

* i.e. harvest, thinning, planting, etc.

Date Received: _____ DPO # _____



NOTICE OF OPERATIONS
DETAILED PLAN OF OPERATIONS
HARVEST & SILVICULTURAL
CHARACTERISTICS

If the silvicultural activities in multiple units share a similar location, topographic characteristics and management treatments, list them on this page as a group. If the characteristics of the units are different, list each unit on a separate page. Attach additional detail pages as necessary to describe the activity. The following information should adequately describe the activity's potential to effect resources deemed important to the State in the Alaska Forest Resources and Practices Act and Regulations.

UNIT IDENTIFICATION(S): _____

Which of the following best describes the unit's topography?

☐ Relatively Flat ☐ Uniform Hillside ☐ Irregular or Complex Slopes

What percent of the unit occupies slopes greater than 67%? _____

TYPE OF ACTIVITY:

☐ Clearcut ☐ Partial Cut ☐ Salvage ☐ Other (Specify) _____
☐ Precommercial Thinning ☐ Chemical Application ☐ Commercial Thinning

FOR REGION II OR III – SEASON OF HARVESTING

☐ Winter harvest only
☐ Non-winter harvest only
☐ All-season harvest

CUTTING METHODS:

☐ Chainsaw ☐ Feller-buncher ☐ Whole Tree Processor ☐ Other _____

YARDING METHODS:

☐ Cable Yarding
Type: ☐ High Lead ☐ Skyline ☐ Other _____

☐ Ground Skidding

Type: ☐ Crawler Tractor ☐ Rubber Tired Skidder ☐ Shovel

Will forwarders or other off-road methods be used? ☐ YES ☐ NO

☐ Helicopter ☐ Other (Specify) _____

Will the activity be done by the: ☐ operator ☐ operator's contractor

If "contractor", has the contractor been copied this plan of operations? ☐ YES ☐ NO

Name of contractor: _____

List the roads or other means required for the access and removal of this timber from the landowner's property. _____



DETAILED PLAN OF OPERATIONS
ROAD ACTIVITY
SUMMARY SHEET

Complete the following summary of road actions for all submitted areas.

Road Label	Road Miles	Type of Activity*	Units Along Road	Sec	TWP	RG	Actual Layout? Y or N

TOTAL MILES OF NEW CONSTRUCTION: _____

* i.e. new construction, closure, reconstruction, etc.

Date Received: _____ DPO # _____



NOTICE OF OPERATIONS
DETAILED PLAN OF OPERATIONS
ROAD CHARACTERISTICS

If the road activities share a similar location and topographic characteristics, list them on this page as a group. If the characteristics of the roads are different, list each road on a separate page. Attach additional detail pages as necessary to describe the activity. The following information should adequately describe the activity's potential to effect resources deemed important to the State in the Alaska Forest Resources and Practices Act and Regulations.

ROAD IDENTIFICATION(S): _____

☐ New Construction ☐ Reconstruction ☐ Closure ROAD

CONSTRUCTION DETAILS:

METHOD:

- ☐ Modified natural sub-grade with rock fill overlay.
- ☐ Modified natural sub-grade with mineral soil overlay.
- ☐ Modified natural sub-grade with winter/ice road construction:
 - ☐ One winter only ☐ More than one winter
- ☐ Unmodified natural sub-grade, natural running surface.
- ☐ Reconstruction of one of the above methods (check one).
- ☐ Other _____

This road is: ☐ Permanent ☐ Temporary

What percent of the road occupies side slopes in the following categories:
_____ 0-30% _____ 30-67% _____ >67%

Are you removing or replacing drainage structures? ☐ YES ☐ NO

Will the road building be done by the: ☐ operator ☐ operator's contractor

If "contractor", has the contractor been copied this plan of operations? ☐ YES ☐ NO

Name of road contractor: _____



NOTICE OF OPERATIONS
DETAILED PLAN OF OPERATIONS
WATER AND SOIL QUALITY CHARACTERISTICS

Is there evidence of previous mass soil movement or surface erosion on the proposed road route or in the unit? If so, where and what methods will you employ to minimize additional soil movement in the future due to your activity?

List each known or suspected classified stream (11AAC 95.265) that will be crossed with a road:

Stream Label	Stream Type	Road Label and Location Description	Type of Structure Proposed	Site visit Request? Yes/ No

(Show the location(s) on the operation map and label them appropriately.)

List each unit that abuts or encompasses known or suspected classified waters:

Unit Label	Stream Type	Stream Label	Variation Requests			Site visit Request? Yes/ No
			None	Attached	Later	

(Show the location(s) on operation map and label them appropriately.)

Detail operational activities that you plan to perform within the riparian areas of classified waters (11 AAC 95.265), such as stream crossings, road ROW, skyline corridors, tail-holds, yarding, etc. Show the location(s) on the operation map.

Date Received: _____ DPO # _____



NOTICE OF OPERATIONS
DETAILED PLAN OF OPERATIONS
INSECT INFESTATION OR DISEASE
CONTROL METHODS

In Regions II & III (and Region I, if notified by the DOF) slash management for spruce trees or limbs greater than five (5) inches in diameter will be accomplished by:

- ☐ Manufacture into cants, lumber, house logs, chips, or firewood.
- ☐ Burning, subject to applicable regulations (anticipated date of burn: _____).
- ☐ Leaving limbs only, dried by uniform scattering in areas open to sunshine.
- ☐ Chemically treated, subject to applicable regulations;
- ☐ Stored in an appropriate manner, as specified (attach correspondence);
- ☐ Other methods (attach correspondence to be approved by the Division).



NOTICE OF OPERATIONS
DETAILED PLAN OF OPERATIONS
REFORESTATION COMMITMENT

Regeneration of forested land is required within a specified time frame for each Region by the Alaska Forest Resources and Practices Regulations. See Sections 11 AAC 95.375, .380 and .385 for information on landowner's responsibilities. **Operators in Regions II and III must fill out Supplemental Sheet "C"** unless the operation is part of a land use conversion or the landowner requests an exemption from reforestation requirements

DOF may approve an exemption from the reforestation standards if the landowner can demonstrate to the satisfaction of the Area Forester that:

1. The stand is significantly composed of insect and disease-killed, wind thrown, fire killed, or fatally damaged trees;
2. The land will be converted to another use in accordance with 11 AAC 95.200; or
3. The stand will have a residual amount of trees that meet the minimum standards set out in 11 AAC 95.375(b) (3) and (4).

☐ Landowner requests an exemption from reforestation under 11AAC 95.375(g). Submit supporting documentation as per the Alaska Forest Resources and Practices Regulations or as directed by the Division of Forestry.

☐ Landowner requests a variation from reforestation standards under 11AAC 95.375(c). Submit documentation of pre-harvest stocking and distribution as per the Alaska Forest Resources and Practices Regulations or as directed by the Division of Forestry.

☐ Land use conversion (include a letter to the Division of Forestry stating the nature of the conversion, i.e. commercial, residential, agriculture or recreational land use).

REGENERATION METHOD

Region I

☐ Landowner will be artificially regenerating the site.

Species and source of seedlings or seed:

Date of proposed artificial planting:

Landowner will rely on natural regeneration of the site in Region I.
In Region I, skip to SITE PREPARATION METHOD on page 12.

Region II or III

Landowner will be artificially regenerating the site.

Species and source of seedlings or seed:

Date of proposed artificial planting:

Landowner will rely on natural regeneration of the site in Region II or III. In these regions, please provide known information on the following indicators of suitability for natural regeneration. If a box is checked "no," please explain in the "Notes" box on page 12. N/A means "not applicable."

Yes No N/A Unknown

Seedbed and soil conditions suitable for natural regeneration

Moss layers are shallow (≤ 4 ") or absent

Where birch or spruce regeneration is targeted, exposed mineral soil will exist on at least 25% of the harvest area and is well-distributed across the unit

Where aspen regeneration from suckering is targeted, root damage will be minimal and soil exposure will encourage warming.

Yes No N/A Unknown

Seed/vegetative reproduction sources available

Exposure to prevailing winds, if known

Adequate seed trees exist within 3 tree heights of the reforestation site for spruce or within 2 tree heights for birch

Where spruce regeneration is targeted, large seed crop in year prior to harvest or current year

Where vegetative reproduction is targeted, the harvest area contains sufficient, well-distributed paper birch, aspen, balsam poplar, western black cottonwood, red alder, or other species known to regenerate vegetatively as approved by the Division.

Yes No N/A Unknown

Competition and infestation risk

Calamagrostis (bluejoint grass) is not visually evident. If *Calamagrostis* is visually evident, describe abundance and distribution. Note: *Calamagrostis* coverage of more than 1-2% distributed across the site indicates that grass coverage may expand rapidly after harvest without treatment.

Equisetum (horsetail) is present prior to harvest

The site is not currently subject to intense herbivory due to peaks in the hare cycle, dense moose populations, or scarcity of browse in the surrounding landscape.

Existing stands are not infested with bark beetles

(*Dendroctonus* or *Ips*)

Where spruce regeneration is targeted, harvest areas are free of known incidence of *Onnia tomentosus* root rot.

Note: *tomentosus* can kill regeneration of spruce and, to a lesser degree, pine and larch. If *tomentosus* is present, describe the extent of the problem in the "Notes" box on page 12. Design reforestation to minimize continuation or spread of the disease

Notes:

Note: If likely competition or other factors indicate challenges for natural reforestation, prompt reforestation through site preparation and/or artificial regeneration is recommended to ensure success and minimize costs.

☐ Landowner requests an extended period for natural regeneration under 11 AAC 95.375(d)(6)

SITE PREPARATION METHOD

What method of site preparation will be used? If different types of preparation methods are to be used in the notification area, attach adequate detail to define their location.

When will site preparation be accomplished? _____



NOTICE OF OPERATIONS
DETAILED PLAN OF OPERATIONS
SUPPLEMENTAL INFORMATION FORM "A"
CORPORATION, LIMITED PARTNERSHIP, GENERAL
PARTNERSHIP, OR JOINT VENTURE INFORMATION

INSTRUCTIONS:

Corporation, partnership or joint venture information is required by 11 AAC 95.220(b). After the initial submittal of this information, subsequent Detailed Plan of Operations need only make reference to the previously submitted materials.

If any of the business relationships or key personnel change during the notification period, this form must be resubmitted as appropriate to maintain compliance with 11 AAC 95.220(b).

The following information applies to the: ☐ Operator ☐ Timber Owner ☐ Land Owner

In accordance with 11 AAC 95.220(b),

CORPORATION: *"a corporation must be identified by a copy of the corporation's certificate of incorporation and articles of incorporation showing the corporation's name and articles of incorporation,"* ☐ Copy attached

Also disclose "The identities of the registered agent, president, vice president, secretary, and treasurer" below:

Registered Agent _____

President _____

Vice President _____

Secretary _____

Treasurer _____

LIMITED PARTNERSHIP: "must be identified by a copy of the limited partnership agreement, evidence of filing of the limited partnership in the real property records as required by AS 32.11, and by the names and addresses of all general partners.

☐ Copy attached (including names and addresses of all parties)

☐ Evidence of filing in Recorder's Office, attached



NOTICE OF OPERATIONS
DETAILED PLAN OF OPERATIONS
SUPPLEMENTAL INFORMATION FORM "A"
CORPORATION, LIMITED PARTNERSHIP, GENERAL
PARTNERSHIP, OR JOINT VENTURE INFORMATION

GENERAL PARTNERSHIP or JOINT VENTURE: 11 ACC 95.220(b) states that a general partnership or joint venture must be identified by documentation showing the:

(1) Proper name of the partnership or joint venture.

(2) Date that the partnership or joint venture was formed. _____

(3) Mailing address of the partnership or joint venture.

(4) Physical address of the partnership or joint venture.

(5) Names and titles of persons authorized to act for the partnership or joint venture.

(6) Names and addresses of all partners or all parties to a joint venture (use additional sheets as necessary).

NOTE: If any of the above information changes (including key individuals), resubmit Pages 1 and 2 of Supplemental Form "A".



NOTICE OF OPERATIONS
DETAILED PLAN OF OPERATIONS
SUPPLEMENTAL INFORMATION FORM "B"
MINING RECLAMATION ACT CERTIFICATION

This page of the Operations Plan need only be filed once a year for a particular operation area if all statements on this form are applicable to subsequent notifications during the current calendar year. Silvicultural operations according to Sec 27.19.050 of the Mining Reclamation Act are exempted from bonding and annual reclamation plan filing where less than five acres and less than 50,000 cubic yards of gravel or other materials are disturbed or removed at one location in any year and there is a cumulative disturbed area of less than five acres at one location.

Pursuant to 11 AAC 97.250, _____ certifies that:

[Company Name]

1. With respect to any material site to be established or operated in the current operating year that lies within the operating area covered by operations titled _____, DPO _____.
 - a. the total acreage and volume of the material to be mined from each material site are within the limits set out in AS 27.19.050(a)(2);
 - b. _____ will reclaim all acreage required to be
[Company Name]
rehabilitated under 11 AAC 95.325; and
 - c. _____ in compliance with the rehabilitation
[Company Name]
measures required under 11 AAC 95.325 will constitute the reclamation measures to be used to reclaim the total area mined; and
2. With respect to any material site established or operated in any prior year that lies within the operating area covered by this plan of operations:
 - a. the area and volume mined from each material site are within the limits set out in AS 27.19.050(a)(2); and
 - b. each material site is in compliance with 11 ACC 95.325

Dated: _____

[Company Name]

By: _____

Title: _____

Date Received: _____

DPO # _____



NOTICE OF OPERATIONS
DETAILED PLAN OF OPERATIONS
SUPPLEMENTAL INFORMATION FORM "C"
REFORESTATION PLAN EXAMPLE AND WORKSHEET

NOTE: This supplemental sheet must be completed for operations in Regions II and III unless the Area Forester gives a written reforestation exemption or the operator is making a land use conversion.

Regulations promulgated under the Alaska Forest Resources and Practices Act (AFRPA) requires harvested land in AFRPA Regions II and III to be reforested within seven years of harvest unless an extension is granted under 11 AAC 95.375(d)(6). The reforestation standards must be met by a sufficient number of vigorous, well-distributed commercial trees free from significant damage. Qualifying trees may be residual trees, new seedlings, or a combination of trees and seedlings approved by the division that meet the standards in 11 AAC 95 .375 (b)(4) and (d)(2). Regeneration must have survived on site a minimum of two years. Tree species considered by the Division for stocking purposes include Sitka spruce, white spruce, Lutz spruce, aspen, balsam poplar, western black cottonwood, and paper birch or other commercial species approved by the Division.

DETERMINATION OF RESIDUAL STOCKING LEVELS

To use this worksheet for reforestation planning, first estimate the number of residual commercial trees that will be left after timber harvest in each size class. Then, for each size class, divide the number of stems per acre needed to meet the minimum stocking standard found in 11 AAC 95.375(b)(4) into the estimated number of trees per acre left after harvest and multiply by 100 to determine the stocking percentage. Percentages from each size class are then added to determine overall residual stocking levels. An example follows:

RESIDUAL STOCKING TABLE EXAMPLE

Average DBH (Diameter at breast height)	Residual Trees (Trees / acre)	Minimum Stocking Standard (Trees / acre)	Stocking %
Greater than or equal to 9"	20	120	17%
6" to 8"	30	170	18%
1" to 5"	60	200	30%
Total residual stocking %			65%

DETERMINATION OF MINIMUM SEEDLING REQUIREMENTS

In the example given above with 65% residual stocking, 158 additional tree seedlings per acre will be needed to satisfy the minimum stocking requirement. This is determined by multiplying the minimum 450 seedlings/acre times the balance of the stocking percentage (35%) to achieve the minimum stocking level. The required number of seedlings may be achieved through natural regeneration, planting or artificial seedling. The new trees must survive on the site for a minimum of two years within seven years of harvest.

RESIDUAL STOCKING CALCULATION TABLE

Average DBH (Diameter at breast height)	Residual Trees (Trees / acre)	Minimum Stocking Standard (Trees/ acre)	Stocking %
Greater than or equal to 9"		120	%
6" to 8"		170	%
1" to 5"		200	%
Total Residual Stocking %			%

SEEDLINGS REQUIRED

$$\text{Percentage Under stocked} = 100 - \text{Total Residual Stocking \%}$$

Percentage Under stocked = $100 - \frac{\text{Percentage Over stocked}}{\text{Percentage Under stocked}} \times 100 = \frac{100 - 100}{100} \times 100 = 0\%$

$$\text{Seedlings/ Acre Required} = \text{Percentage Understocked}/100 \times 450$$

Seedlings/ Acre Required = % /100 x 450 =

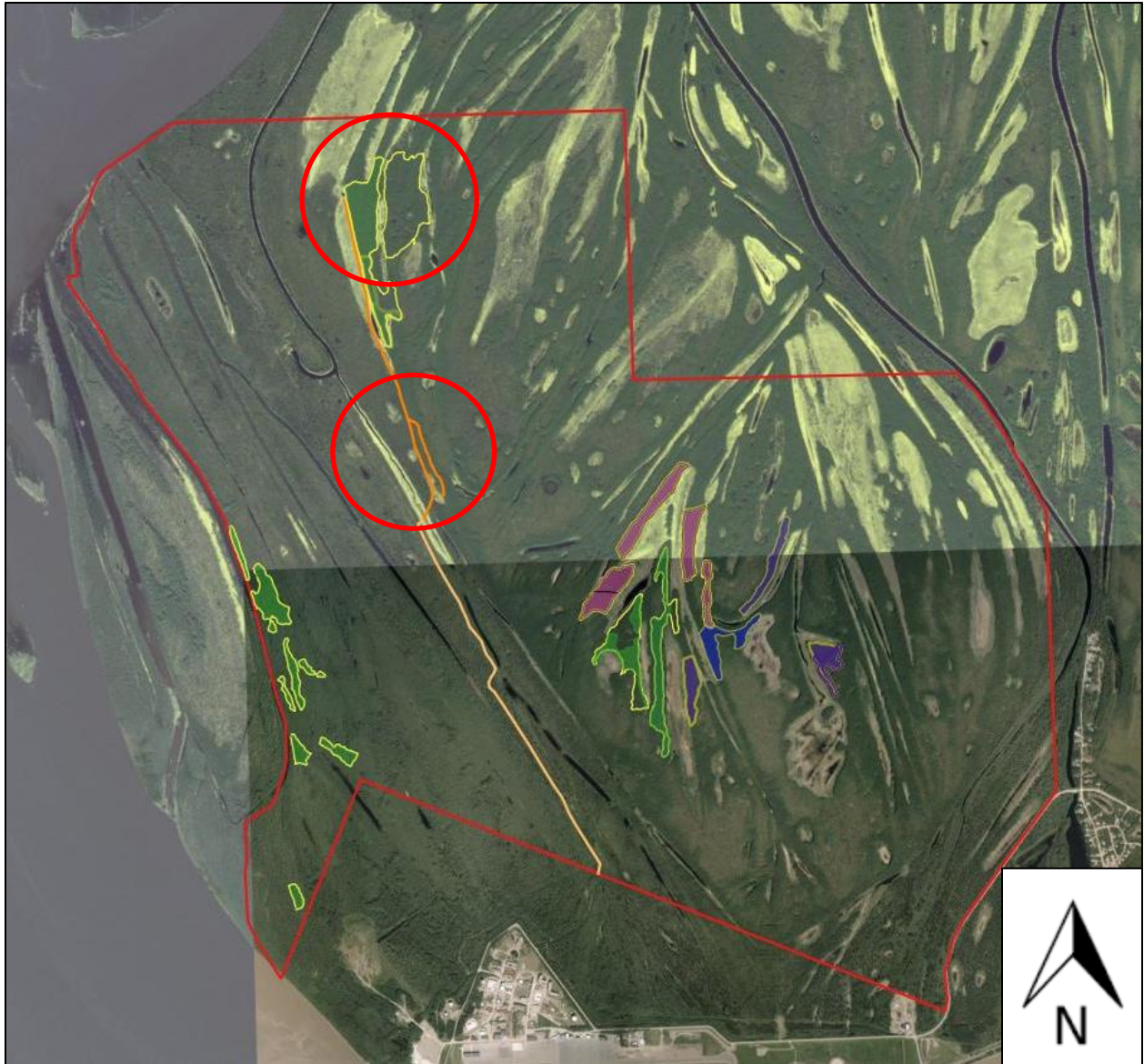


Figure S1 – Current timber sale area (TSA) boundary with previous harvest units shaded. Red circles indicate general area of 2019-20 operations.



Figure S2 - Enlarged view of Unit 22, identified with yellow boundary. Unit 22 measured 29.8 acres and is positioned in the northern segment of the Timber Sale Area.

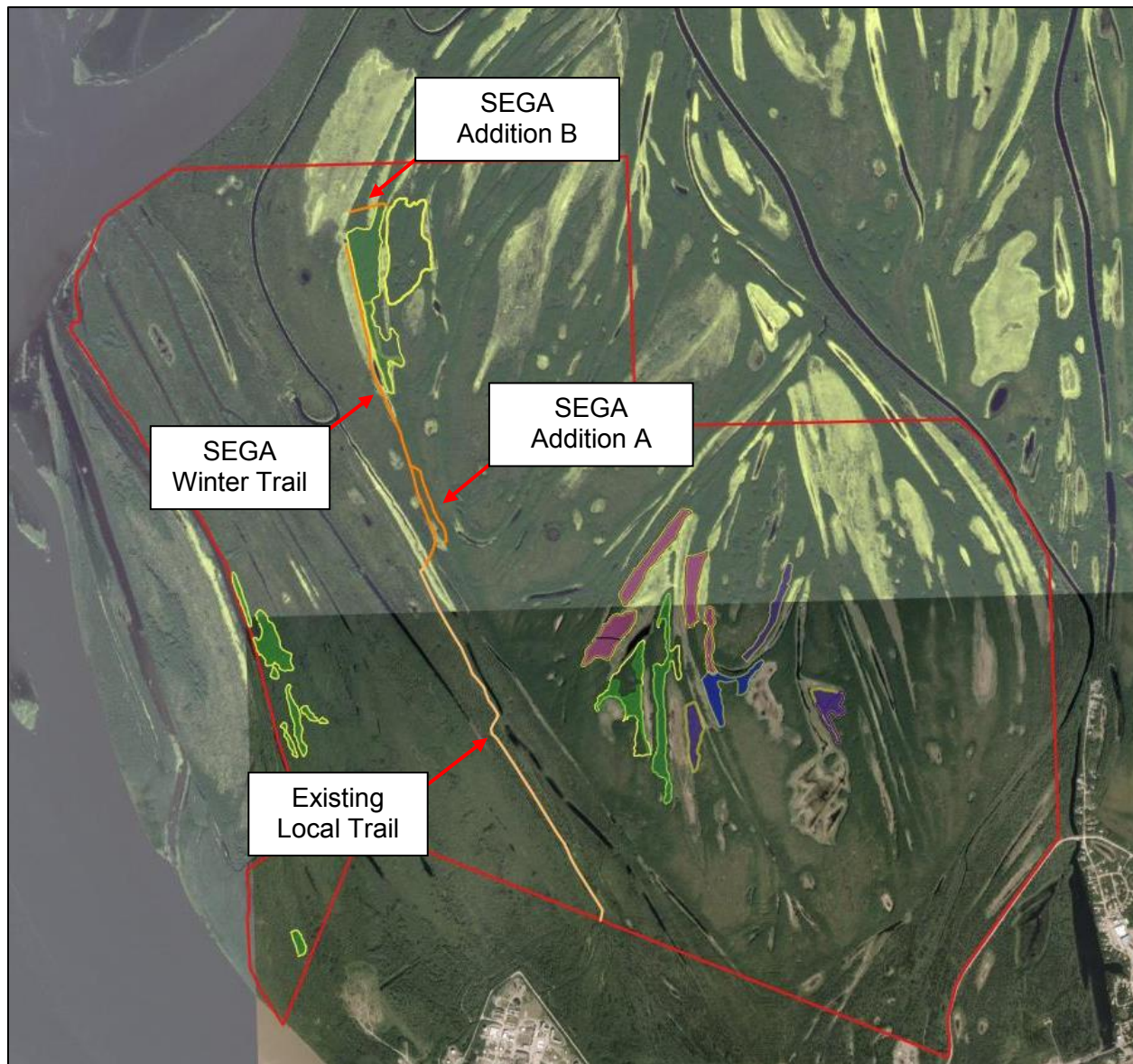


Figure S3 - Existing Local Trail (peach) and SEGA Winter Route (orange). Note two new construction segments.

Road Types

- Permanent – No permanent roads exist within the timber sale boundary.
- Temporary – The DOT&PF Trail begins to the west of the former Air Base and will be utilized to access the harvest units, as well as transport logs to the on-base decking site. State Right-of-Way Permit On-File.
- Winter Road – Harvest operations will include utilizing the existing local trail, which is 1.5 miles in length. Approximately 1.25 miles of additional winter road will be used, in order to access Unit 22. New construction Addition A is approximately 1530' and Addition B 460'.
- Roads to be closed – The Winter Road will be closed to public traffic. Warning signs will be posted on the DOT&PF Trail.
- Inactive roads – No inactive roads exist within the timber sale boundary.



Figure S4 - Low-ground segment of winter route (in red) constructed during the 2018-19 season.

The low-ground segment proved difficult to establish a smooth running surface with trail making equipment (i.e., dozer-blade, tire-groomer). We believe this is due to existing soft soil conditions and the vegetation type that was removed (i.e., dwarf birch, black spruce, willow, alder). It is our intention to stop using this segment for all traffic and construct alternate access to quality portions.



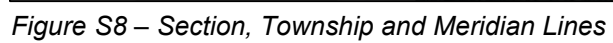
Figure S5 - Remaining route (orange line), measured at 1.25 miles, travels south to north and skirts to the west of an active lake and U21. Addition B will facilitate shorter skid trails for the northern portion of U22.



Figure S6 - Unit 21 with area total.



Figure S7 - Approximate location of log-landings for U22.



Introduction

This operations plan is for the *SEGA 2019-2020 Winter Timber Harvest*, scheduled to begin on December 9, 2019 with closing activities culminating on or around April 1st, 2020. The purpose of this operation is to safely and efficiently maneuver harvest equipment and process timber, in order to provide the Galena City School District (GCSD) with an estimated 1-year wood-fuel supply for the campus district heating system. Upon completion of scheduled events, SEGA strives to have approximately 1598 green tons (gt) of timber felled and stacked. Based on outcomes of this operation, detailed information will become available that will further refine procedures and better satisfy annual plan requirements.

Timber Harvest Schedules

Harvest operations are scheduled to follow the below methodology. Temporary winter road construction will begin when soil is frozen to a depth of 6" or greater. The harvest processor will be followed by a dozer, in order to shear stumps and level the route to an appropriate condition for service vehicle and log-truck transportation.

The harvester will clear designated trees within harvest units, by felling, de-limbing and stacking in place. Logs will be decked in unit landing or roadside for easy retrieval by the log-truck. It is estimated that route construction and felling/skidding half of the targeted material will be complete by the end of January.

As needed and conditions allow, route maintenance will continue throughout the colder months. It is estimated that route maintenance will require approximately 2-3 days per month.

As late-winter (i.e., February and March) conditions experience increased average temperatures and available daylight, route conditions will allow the transporting of timber by the log-truck. Timber hauling will continue until complete or conditions become unfavorable for soil and equipment considerations. Felling and skidding of the remaining material will occur during this timeframe.

The harvest units identified have been selected due to the high volume of Alaska paper birch, favorable natural regeneration characteristics, distance to final decking locations and terrain that allows employees to safely develop an enhanced operational capacity.

Unit 22 and route Addition A has been mapped, marked and cruised. Volume results indicate an average of 2367 cf per acre (cf/a) for Unit 22 and 1753 cf/a for Addition A. Cruise results pending for Addition B.

Silvicultural Activities

The clear cut prescription with retention of stems less than 3.5" diameter breast height (DBH) will be applied to relatively small patch units. Alaska paper birch is the targeted species, while some poplar, willow and alder will be harvested to allow access. Stems with a DBH between 14" and 22" will likely be harvested as saw-logs or retained as seed-trees or minor shelterbelts for stems > 22".

Natural regeneration methods that promote seed, root and stump-sprouting will be applied and remain consistent with requirements of the Alaska Forest Resources & Practices Act. Skid trails will be minimized to distances less than 1200'. No mechanical scarification is planned to occur within the harvest units, unless soil compaction is been deemed excessive upon inspection.

Retention of habitat will occur in each unit, when feasible, to support wildlife. For example, existing downed trees (i.e., detritus) and trees that have been identified to actively host cavity-dwelling species. Furthermore, logging slash (e.g., bark, branches and tops less than 3" DBH) will remain within each unit and will be dispersed to promote habitat and reduce potential effects of large piles.

Actions to Minimize Impacts to Fish & Wildlife

Harvest activities will minimize ecological impacts to fish and wildlife, apply appropriate reforestation activities and attempt to enhance conditions for a variety of forest values. SEGA intends to implement positive-impact logging strategies that will compliment disciplined monitoring and adherence to recognized protocols and regulations (i.e., the Alaska Forest Resources & Practices Act 2013 with 2015 amendments).

These actions revolve around five critical functions, including; a) reduce physical effects of logging equipment, b) mitigate effects on residual trees, c) establish procedures that eliminate environmental impacts of pollution, d) avoid creating conditions that promote the unpredictable impacts of invasive species and e) carefully consider areas of harvest, in order to decrease the potential effects of fragmentation.

All extraction activities will take place during the winter, in order to protect ground vegetation and reduce exposure of mineral soil. Entrance to harvest units will begin when soil frost depth meets or exceeds 6" or when snow accumulation provides adequate load bearing capacity (8-12"). The wide-footprint and tracked-wheels of the harvester, accompanied by wide tires on the skidder, reduce ground pressure and soil compaction.

Felling and skidding will occur in the early-winter when the ground is frozen, but little snow has accumulated. This aids in reducing the potential of soil compaction, while assisting future regeneration. The tracks of the harvester and wide chained tires of the skidder will provide limited scarification disturbance (i.e., tilling) to low-pass areas within the harvest units. Individual stands are configured in random shaped patches. This characteristic promotes short randomly distributed skid trails that position material for retrieval. Multiple-pass transportation routes will strive to occupy < 15% of the total area impacted with 10% as the ultimate goal. These areas are more likely to experience soil compaction and altered regrowth, due to thick snow trails that take longer to melt than surrounding areas. Careful mechanical site restoration may be required for heavily used routes and when deemed necessary to support regeneration.

Temporary access routes and water crossings will be constructed in a manner that promotes natural drainage when compacted snow melts and avoids causing bank erosion and sedimentation that threatens future water quality. Water body crossings will be avoided when feasible; however, where required, right angle passages will be located to fit the topography and be located away from or upstream of bends. Slash material may be utilized to stabilize entrances or exits, but should not be to such an extent that material impedes flow rate. Travel during freeze-up and break-up will be avoided, in order to reduce potential formation of ruts. Closure markings will be erected to restrict off-road vehicle (ORV) use during warmer months that inflicts significant damage to vegetative layers and rutting.

The harvest units scheduled for this operations plan do not require any stream or water body crossings.

Avoidance of soil compaction further reduces potential damage to residual trees. Compressed fine-root systems or injury from soil shearing can allow entry of disease-causing organisms. Main stem injury from felled timber or equipment can introduce infection, reducing productive capacity and stem strength. Smaller stems (e.g., 2"-4" dbh) and other undergrowth (e.g., < 2") that impedes felling and stroke processing should be removed first (i.e., cut or driven over), as they can obstruct safe operations and damage equipment (e.g., rub or break hydraulic lines and fittings). In this situation, smaller stems may be added to larger bundles for later processing; however, when possible, residual damage to this vegetation should be avoided. This can be avoided by practicing careful felling techniques and minimizing harvester entry points. Layout patterns should facilitate direct retrieval by skidder or log-truck. Rub trees that are later harvested can aid in more complex skid patterns.

Environmental impacts of petroleum, oil and lubricants (POL) will be minimized by handling in designated locations only with a ready spill-response kit on-site. Checks for leaks, worn hoses and loose-fittings will be part of daily pre-inspections. Fluid compartments are to be filled at the conclusion of each day, followed by post-preventive maintenance checks. Large quantities of POL will not be stored within the harvest unit; rather, a service-vehicle will transport bulk fuel (i.e., ~125 gallons) and associated tools and equipment.

Riparian Zone buffer widths vary by water-body class designation. Back-sloughs and lakes require a 66' buffer, while large waterbodies (e.g., Yukon River) and salmon-rearing streams necessitate a 100' safeguard. Within harvest areas, trees larger than 22" will be retained, which may require retention of smaller merchantable timber to protect against damaging wind-throw, provide wildlife habitat between recently opened canopy, and to serve as seed-trees. Additional buffers and corridors will be retained, when applicable, to negate the potential effects of fragmentation.

Fire Prevention and Suppression

Fire extinguishers will be available within each vehicle, piece of harvest equipment and at a centrally known location within each unit, when actively harvesting. State and Federal (e.g., Bureau of Land Management (BLM)) fire suppression centers will be made aware of operations, as well as the local fire chief.

Hazardous substance plan

Hazmat Emergency Response Spill Kits will be available on-site, during all operations. Routine maintenance and refueling operations will be performed at a central location within each unit, when feasible, and all spills or leaks of Hazmat will be removed and disposed of in accordance with the City of Galena's Hazmat protocol and the Alaska Department of Environmental Conservation.

Identification of other hazardous substances, not consistent with the above, will be marked and left undisturbed until the appropriate agency protocol can be applied for removal.

Natural Disaster plan

As soon as possible after the disturbance event, the following items will be performed:

- Contact with all personnel associated with operational activities (e.g., employees, member entities, landowner, state and federal agencies).
- Site inspection of applicable harvest units including; personnel, harvest equipment and condition of timber inventory.
- Perform property and timber activities such as;
 - Repair and/or improve road access.
 - Repair and/or improve water crossings
 - Establish fire lanes, as needed
 - Inspect unit and sale boundaries
 - Coordinate with landowner and adjacent landowners for necessary activities or access agreements.