

Cutting Permit A082 – Deer Creek Fire Salvage Summary Document

January 4, 2019

Introduction:

The Deer Creek fire of 2018 burned 3849 hectares, mostly within the Deer Creek Community Watershed. This unfortunate event was caused by lightning and was discovered on August 11, 2018. As fire suppression efforts expanded in the area this fire was amalgamated administratively with the Bulldog Mountain, Syringa Creek, North Bowman Creek, and Michaud Creek fires as a part of the Syringa Complex. This allowed resources such as air tanker support to be coordinated and allocated between these five fires in the southern Arrow Lake area. Evacuation alerts, evacuation orders, and area restrictions were in place for much of the summer and into the fall season in the area.

The Deer Creek Community Watershed falls within Kalesnikoff Lumber Company's operating area. Kalesnikoff has been working in Deer Creek since the early 1980's, and when restrictions were lifted and staff were once again able to access the area it was a sad sight to see forests young and old burned throughout approximately 39% of the entire watershed.

This fire can be predominantly characterized as having burned with significant intensity on the ground. Fire intensity in the forest canopy is highly variable and ranges from areas of running crown fire where the timber canopy is completely burned to where damage is concentrated mainly in the bottom 2m and on the ground. Surprisingly, fairly large areas have been identified where the ground fire was hot enough to remove the forest floor layer almost completely without having moved into the canopy at all. The ground fire was hot enough to kill a very high proportion of the timber, even where it did not enter the canopy. Water repellent, or 'hydrophobic' soils have been noted in several areas which gives some concern for surface runoff and erosion during the spring melt and summer rains of the next few years.

This document gives details of the planning process and a description of Kalesnikoff's proposed strategy to salvage timber killed by the Deer Creek fire. It is intended to be an information sharing tool which can be used to inform the public and other stakeholders, as well as to solicit feedback from interested parties. A georeferenced pdf map will accompany this document to give clarity regarding the areas described, and will be referenced within this document. These materials, as well as additional assessments and information will soon be posted to Kalesnikoff's website, and may be accessed using the following link:

<http://www.kalesnikoff.com/public-stakeholder-engagement/>

Background, General Principles for Salvaging Fire-Damaged Timber:

Timber damaged by wildfires is a priority for salvage harvest for several reasons, and the relative importance of each reason may change from one area to another based on a number of considerations. The following are a few examples of why timber harvest in the Deer Creek fire is a priority for Kalesnikoff:

- **Management of insect Populations:** Due to rapidly increasing levels of Douglas-fir bark beetle infestation within the West Kootenays, fire damaged stands are important to manage in order to reduce the possibility of increased spread of this forest pest. Douglas-fir bark beetles have a preference for attacking trees which have been stressed or weakened, and are known to gravitate to fire-damaged timber.
- **Hydrological Recovery:** Fire-damaged timber rapidly loses its ability to intercept snow, and in climates such as ours, this snow interception generally plays an important role in the overall hydrological function of the watershed. It is because of this factor that forestry operations in our region manage watersheds to remain within cut levels that will not adversely affect the natural function of each drainage basin. Natural processes such as fire, insects, and disease result in a patchwork or mosaic of age classes of timber within the forest, and the desire is to mimic this mosaic while maintaining enough forest cover that will intercept snow such that damaging floods do not occur. Equivalent Clearcut Area (ECA) is a measurement that summarizes a particular drainage basin based on the amount of forest cover or lack thereof, and is generally the primary metric used to ensure forestry activities do not overcut to the point of causing these adverse effects. Recommended ECA thresholds are based on thorough studies of the watershed as a whole, and are made by qualified registered professionals. In the case of a fire that affects a relatively large area of the watershed, such as in this case, there is concern that increased ECA due to loss of forest cover may lead to a higher potential for flooding, especially during the spring freshet. Salvaging the timber and promptly reforesting the site can aid in the recovery process as a new forest of conifers will be established and nurtured. In the absence of salvage harvesting, recovery may take much longer and the resulting forest may not reach the density required for significant snow interception for a very long time.
- **Timber Value:** Timber is a valuable resource both as a building material and as a significant source of revenue to the government. Timber damaged by fire rapidly loses its value as a commodity and if not salvaged in a timely fashion, the incentive to harvest quickly decreases to the point that it may not be undertaken at all. The result is a non-recoverable loss to both the forest company in terms of available fibre and to the citizens and Province of British Columbia in the terms of stumpage and tax revenues. The intent is to capture the value of the timber before it is gone forever.

The Planning Process:

Due to the large scale of the Deer Creek fire in relation to the size of the watershed and the late date to begin field work due to area restrictions and safety considerations, some portions of the planning process are still ongoing. The following is a summary of some considerations within the planning process thus far and next steps to ensure success in this endeavor:

- **Hydrological Function:** Deer Creek is a Community Watershed and as such requires a high level of stewardship and planning to ensure the continued quality of the creek as a domestic water source. Kalesnikoff has been operating in this area for well over thirty years with an excellent track record of ensuring this important resource is protected from adverse effects. In 2015 a fire of significant but smaller scale burned a portion of the headwaters area of this watershed. After the much larger 2018 fire, approximately 46% of the watershed area has now burned within the last three years. This level of burn represents a sharp increase in ECA within the watershed. Due to the scale of recent disturbance, Kalesnikoff has engaged Dr. Kim Green of Apex Geoscience Consultants Ltd. to provide a professional opinion regarding the proposed salvage operation. Dr. Green previously completed a hydrogeomorphic assessment of the entire Deer Creek watershed in early 2015, and subsequently provided guidance for forest management after the 2015 fire. Those assessments will be shared on our website, as well as Dr. Green's assessment of the current salvage proposal, once complete. Kalesnikoff will adhere to recommendations made by Dr. Green with respect to this project.
- **Terrain Constraints:** Wildfires can have significant impacts on soils and often increase hazards with respect to terrain stability and soil erosion potential. Given that much of this fire burned with relatively high intensity at ground level, the organic matter layer has been largely removed throughout many areas. Hydrophobic soils have been observed at several locations and are likely present in many areas with varying depths, thicknesses, and potential effects throughout the fire. These water-repellant soils tend to increase the hazard of debris flows/debris floods and surface soil erosion as snowmelt or rainfall does not infiltrate easily into the soil but rather has a tendency to run over the surface. This surface flow may become concentrated and/or increase in velocity and erosive power, especially on steeper slopes.

Due to the increased hazards resulting from the fire, Kalesnikoff has taken a precautionary approach to planning salvage harvesting, avoiding steep slopes and areas which have been identified as higher risk in previous assessments. Because harvesting operations involve road and trail construction, the potential for water diversions can increase, and flow may become concentrated in ditches. In areas with pre-existing terrain hazards the combination of burned soils and harvesting operations presents an intolerable risk, so we have opted to prioritize salvage operations on more benign terrain.

While we feel it would be inadvisable to conduct this salvage operation on steeper and more hazardous terrain, harvesting operations can actually have a beneficial effect on soil recovery in the more benign terrain in this proposal. Hydrophobic layers in the soil may persist for several years under normal conditions. Where harvesting occurs, machine traffic can help to break up the hydrophobic layers, promoting more efficient water infiltration and thereby reducing overland flow. This can help the ash layer found at the surface to mix into the surface soil rather than running off into local creeks.

- **Timing of Operations:** Due to the necessity for timely salvage in order to minimize the loss of timber value, harvest operations are proposed to begin during the winter of 2019. Due to the scale of this proposal, operations are expected to take several months. Kalesnikoff will closely monitor conditions during the spring thaw to ensure no excessive site disturbance occurs. If continuance of operations will cause environmental damage during the freshet, work will cease until conditions are dry enough to safely resume.

Under normal circumstances log hauling does not occur on this road system between Victoria Day long weekend and Labour Day long weekend. This agreement recognizes road

safety concerns around increased public traffic during the summer months. If hauling cannot be completed by Victoria Day long weekend of 2019, Kalesnikoff proposes to scale back operations to a level that can ensure public safety on the roads. Additional measures may be taken to mitigate road safety hazards posed by heavy traffic if necessary. Public input and further discussion will be needed in order to provide assurance that operations may continue in this fashion.

Activities Completed to Date:

Kalesnikoff has been working toward the submission of a cutting permit application for this project with the following activities completed to date:

- **Reconnaissance of Burned Areas:** Recent medium resolution satellite imagery was used to identify burned areas. Kalesnikoff already had lidar imagery covering significant portions of the Deer Creek operating area and this data was used to create initial areas of interest based on terrain and timber types identified as having been affected by the fire. Ground level reconnaissance then confirmed the intensity of burn, timber types, and suitability for salvage harvest in each of these areas.
- **Field Marking:** Road and boundary field marking is now complete for blocks in this proposal. Some additional marking such as for prescribed leave trees will still take place prior to harvest, however the bulk of the field work is now complete. The accompanying Referral Map reflects the most up to date GPS data available for each block, however there may be minor adjustments to road and boundary locations as the remainder of the GPS data is incorporated. More detailed Site Plan and Harvest Plan maps will follow the overview Referral Map and will have final locations on them.
- **Review of Constraints and Higher Level Planning Considerations:** Our initial review of harvesting constraints such as visual quality objectives, ungulate winter range, old growth management areas, etc. on a block-by-block basis has shown this proposal to be consistent with various higher level planning objectives and strategies. As mentioned above, Kalesnikoff has requested a review of potential hydrological effects of this proposal and will adhere to recommendations made by Dr. Green once her analysis is complete. If this analysis yields recommendations that result in material changes to the proposal those changes and their rationale will be appropriately communicated to stakeholders.

Block Summary:

The following summaries provide information with respect to each of the four proposed blocks that form Cutting Permit A082. The Referral Map can be used to identify the specific blocks for reference. All blocks will employ a ground based harvest system as no areas are steep enough to require an overhead cable yarding system.

- **Block 1:** This block is a large complex with a harvest area of approximately 140 hectares (ha). The eastern portion of the block is on rather flat terrain and is comprised of a mixed timber type that includes mainly Western larch and Lodgepole pine, with smaller components of Subalpine fir, Engelmann spruce, Western red cedar, and Douglas-fir. Most of the eastern portion saw a variable intensity of ground fire that was hot enough to kill almost all of the trees, however larger diameter larch will be retained as leave trees since they will have the best chance for survival. The western end of the block is on moderately steep terrain and saw variable fire intensity that entered the crown in some areas. The timber type in the western portion contains more fir and cedar. Due to the likelihood of subsequent infestation by bark beetles, Douglas-fir will not be retained as a leave tree

species, however larger diameter larch and clumps of aspen will be retained within the harvest area wherever it is safe to do so. Aside from individual leave trees, stand-level biodiversity will be maintained through reserve areas which are shown on the Referral Map. The reserves are generally equally affected by the fire, however they will act to break up the landscape and provide vertical structure until the newly planted forest in the harvested area can become established. The new road system in Block 1 will create a temporary loop that will connect the Cougar Ridge road with the Deer Main road. This connection will be deactivated once harvest operations are complete. Portions of new road will be rehabilitated and planted post-harvest in other areas of this block as well for access control and forest regeneration purposes.

- **Block 2:** This block consists of burned areas adjacent to the Rusty road in the Rusty Creek sub-basin of the Deer Creek watershed. The harvest area for Block 2 is approximately 32ha. These blocks have heavier fire damage and consist of a mix of Western larch and Western red cedar, with components of Douglas-fir and Western hemlock. Aside from timber salvage, part of the intent of this block is to remove dangerous snags from the roadside which would otherwise create hazards to road users for the foreseeable future. Due to the relatively heavy fire damage, individual leave trees will not be maintained in this block. Stand level biodiversity will be maintained in a series of reserves shown on the Referral Map. New roads constructed for this block are designed to keep harvest operations off the main Rusty road and will be rehabilitated and planted after harvest.
- **Block 3:** This block has a proposed harvest area of approximately 16ha and the forest canopy is comprised mainly of a mix of Western larch and Lodgepole pine, with a component of Western red cedar and Douglas-fir on the moist benches. Fire intensity was variable here, ranging between relatively high intensity ground fire to crown fire that killed even some of the larger diameter larch. Stand level biodiversity will be maintained by assessing and hand-marking large diameter larch which are less badly burned and stand the best chance for survival. The new road required for this block will be rehabilitated and planted post-harvest.
- **Block 4:** Block 4 is a small planned opening with a harvest area of approximately 6ha. The forest canopy is dominated by Douglas-fir. Due to the likelihood of bark beetle infestation, individual leave trees will not be maintained in this block. Stand-level biodiversity will be maintained in several small reserves. No new road construction is required for this block. An existing old skid trail will be utilized to access some of the timber and wood will be decked at the side of the existing main road.

Public and Stakeholder Review and Comment:

At this time, the General Public and local Stakeholders are invited to review and comment on Kalesnikoff's proposed plans. Comments, questions, and concerns can be directed to our email address, referrals@kalesnikoff.com. Kalesnikoff staff will endeavor to address each concern to the best of the company's ability, and will retain records of all inquiries and actions taken as a result of those inquiries. The review and comment period will be open until February 8, 2019. As more detailed information becomes available it will be posted to our website at <http://www.kalesnikoff.com/public-stakeholder-engagement/> and distributed by email.

Sincerely,

Kalesnikoff Lumber Company Woodlands Team