
VECTORIZING OLD GROWTH TECHNICAL ADVISORY PANEL DATA

METHODOLOGY

Forest Analysis and Inventory Branch, Office of the Chief Forester
Ministry of Forests

May 2022

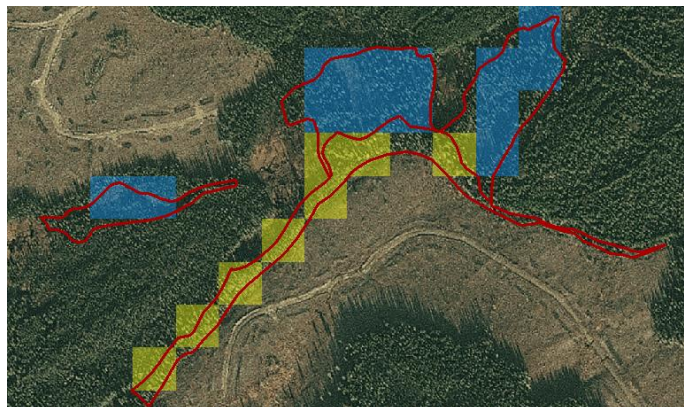


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Introduction

On Nov 2nd the Province of British Columbia released the results of the Old Growth Technical Advisory Panel's (TAP) province-wide analysis which identified priority old growth areas. The release included 5 datasets identifying the location of at-risk old growth in the province including 4 datasets outlining priority areas they recommended for deferral. They also released 6 accompanying datasets with information supporting the identification of at-risk areas or areas where other possible at-risk forests exist. A list of the datasets is below.

Priority- At-Risk Deferral Areas

Map 1 Priority Deferral

Map 2 Big Tree Old Growth

Map 3 Prioritized Big Treed Old Growth

Map 4 Ancient Forest

Map 5 Remnant Old Ecosystems

Additional Datasets

Map 6: Intact Watersheds

Map 7: Recruitment Forest

Map 8: Old Growth Forest Tree Size

Underlay 1. Woodland and Sparsely Treed

Underlay 2. Forest Assessment Land Base (FALB)

Supplemental: Seral Stage

For their analysis, the TAP divided the province into 1 hectare (100m x 100m) raster squares. This format presents some issues for operational-scale assessments. The raster linework does not line up precisely with other operational datasets that are often in a vector format (e.g., Provincial Forest Cover Inventory). As a result, there has been a strong demand for recreating the TAP data into a vector-based spatial format. This document outlines the methodologies used to translate the data into a vector format and reports the resulting changes in area (ha) from these translations. Three main methodologies were applied to translate the data, depending on the complexity of recreated the TAP logic and the size of the data. Each methodology is outlined in subsequent sections.

Vectorizing TAP Forest Assessment Land Base (FALB) and Seral Stage Datasets - Methodology

Basic Process and Assumptions

Figure 1. Generalized process creating a vector based FALB and Seral Stage dataset

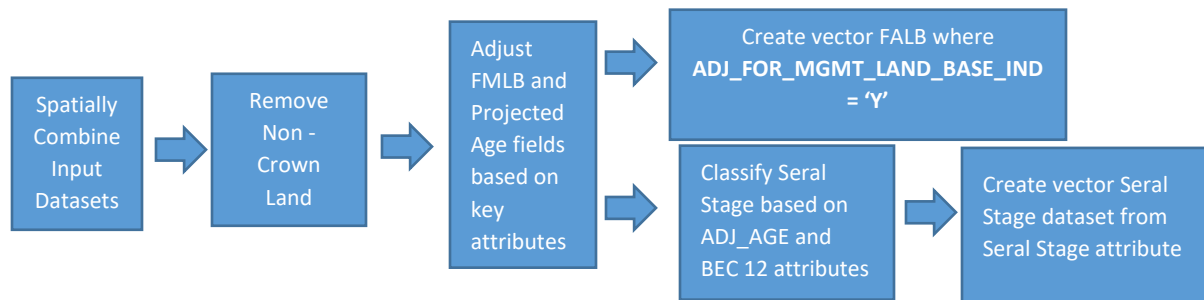


Figure 1 outlines the generalized process for the creation of the FALB and Seral Stage vector datasets. Initially, vector-based input datasets were spatially combined to create a vector-based resultant (For more details on the input datasets see Appendix A).

The Forest Assessment Land Base (FALB) is the land base used by the TAP for all their analysis. The FALB was designed to be a modified version of the provincial Vegetation Inventory (Vegetation Composite Polygons Rank 1 Layer, aka VRI) forest management land base (FMLB), with private, municipal and first nation reserve lands removed. Staying consistent with the TAP methodology, the Generalized Forest Cover Ownership dataset was used to remove the following lands from the vector resultant:

- Private land (i.e. Own Code 40),
- Treaty land (i.e. Own Code 41),
- Municipal land (i.e. Own Code 52),
- First Nation Reserve land (i.e. Own Code 80), or
- Land outside of British Columbia (using Biogeoclimatic Ecosystem Classification (BEC) 12 as the provincial boundary).

The logic used by the TAP to modify the FMLB was then applied to the vector-based resultant created earlier. A new field called ADJ_FOR_MGMT_LAND_BASE_IND was populated in the vector resultant with this logic. A 'Y' value indicated that a polygon is FMLB according to the TAP logic. Appendix B details the logic used to populate the ADJ_FOR_MGMT_LAND_BASE_IND field.

For their analysis, the TAP also modified stand age attributes captured in the provincial Vegetation Inventory. These modifications relied on attribution from input disturbance datasets (e.g. consolidated cut blocks, fire severity, % stand mortality). A new field called ADJ_AGE was populated in the vector resultant using the same disturbance datasets used by TAP to adjust stand age. Appendix C details the logic used to adjust stand age.

The TAP calculated Seral Stage using definitions outlined in the Biodiversity Guidebook (<https://www.for.gov.bc.ca/hfd/library/documents/bib19715.pdf>) in combination with the adjusted stand ages and version 12 of the Biogeoclimatic Ecosystem Classification (BEC) Zone/Subzone/Variant/Phase map. A new Seral Stage attribute was populated in the vector resultant using the same seral stage calculations as the TAP. Seral Stage was classified as either Early, Mid, Mature or Old. Appendix D details exact logic used to calculate Seral Stage.

The final FALB vector dataset was produced using FMLB indicated in by ADJ_FOR_MGMT_LAND_BASE_IND field in the vector resultant dataset. Likewise, the Seral Stage vector datasets was produced using Seral Stage values indicated in by Seral Stage field in the vector resultant dataset.

Note: Polygons with an area under 100 m² were removed from all the vectorized datasets FALB and Seral Stage vector datasets.

Vectorizing TAP Old Growth Forest Tree Size - Methodology

Basic Process and Assumptions

Figure 2. Generalized process creating a vector based Old Growth Forest Tree Size vector dataset

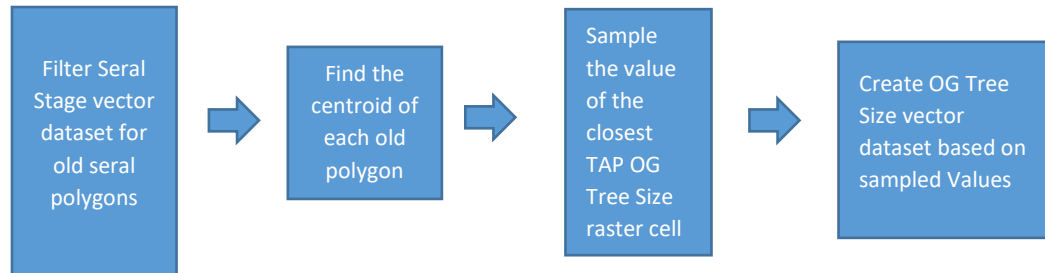


Figure 2 outlines the generalized process for the creation of the Old Growth Forest Tree Size vector datasets.

To produce the vectorized Old Growth Forest Tree Size dataset, polygons were used from the vector resultant produced for the creation of the vector Seral Stage dataset. A subset of the vector resultant including only Old seral stage polygons was used.

The TAP Old Growth Forest Tree Size raster dataset classifies old growth stands into a relative trees size. To keep the same tree size classification in the vectorized dataset, the location of the center of within each old seral polygon was determined. GIS tools were used to sample the value of the TAP Old Growth Forest Tree Size raster dataset at the location of each center point. These values were joined back to the old seral vector polygons and a vector old growth tree size dataset was created based on these values.

Note: Polygons with an area under 100 m² were removed from all the vectorized datasets Old Growth Forest Tree Size vector datasets.

Vectorizing TAP MAP 1 to 7 - Methodology

Basic Process and Assumptions

Figure 3. Generalized process creating a vector based FALB and Seral Stage dataset

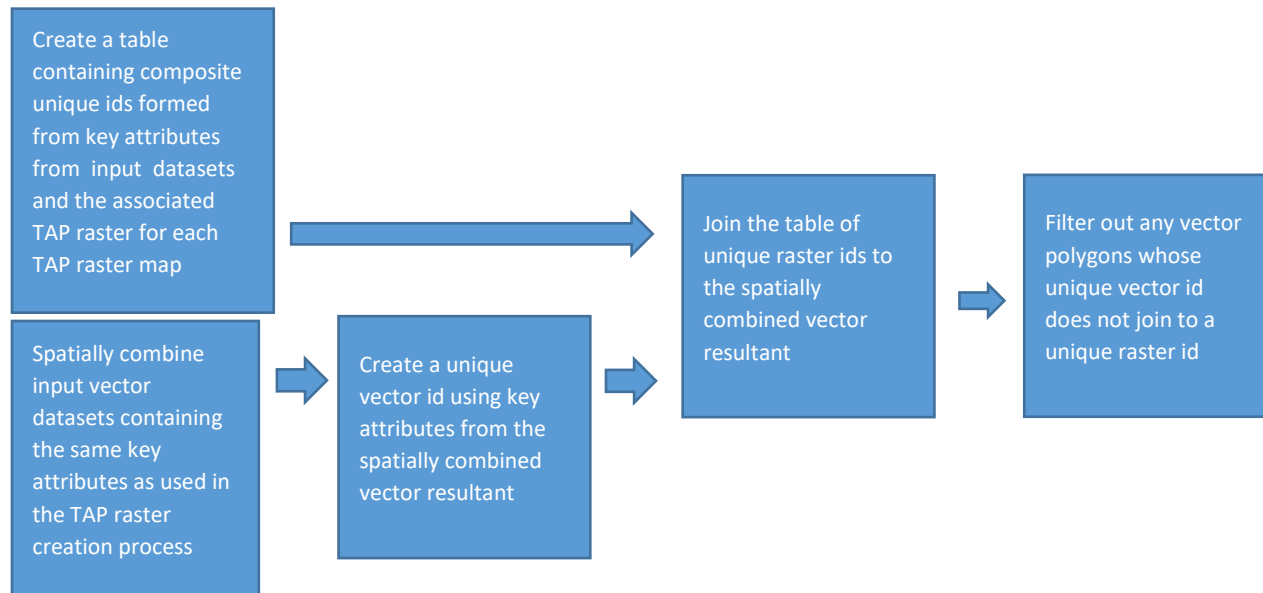


Figure 3 outlines the generalized process for the creation of the FALB and Seral Stage vector datasets.

The TAP relied on several input datasets to generate their final raster products. Key attributes from these input datasets were combined into a matrix. The combination of these attribute determined values for each map designated by the TAP.

To vectorize TAP MAP 1 to 7, the unique combinations of input attributes for each cell location with a map value was added table. A composite unique id was created for each attribute combination. Table 1 details the key attributes used to form this unique combination of input attributes.

Table 1. The key attributes from input TAP data used to generate composite unique ids for each TAP raster dataset

Input Dataset	Key Attribute
Consolidated Cutblocks	Harvest Year
Baseline Thematic Mapping Present Land Use Version 1	Present_Land_Use_Label_BTM
Fire Burn Severity - Historical	Burn_Severity_Rating
Local burn severity dataset (pre 2016 fires)	Severity Class
FADM - Tree Farm License Current View (TFL)	Forest_File_ID

BC Parks, Ecological Reserves, and Protected Areas	ObjectID
VRI - 2020 - Forest Vegetation Composite Rank 1 Layer (R1)	Feature_ID
BEC Map 12	Zone, Subzone and Variant
Landscape Units of British Columbia - Current	LANDSCAPE_UNIT_PROVID

The vector version of each input dataset reference in table 1 were spatially combined into a vector resultant. Composite IDs were generated for each polygon in the resultant dataset using the same key attribution used in the unique raster ids table.

The unique raster ids table was joined onto the spatially combined vector resultant using the Composite IDs. Any vector polygon that did not have an associated value in the unique raster ids table was removed from the analysis. The final vector datasets were generated from the remaining polygons using the map values from the unique raster ids table.

Note: Polygons with an area under 100 m² were removed from all the vectorized datasets. Any polygon under 0.5 ha was removed from the prioritized at-risk datasets (i.e. Map 1 Priority Deferral, Map 3 Prioritized Big Treed Old Growth, Map 4 Ancient Forest, Map 5 Remnant Old Ecosystems)

Vectorization Examples

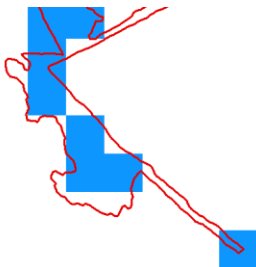
In most cases the vector polygons follow cutting permits and forest inventory boundaries more closely than the original raster. In the examples below, the resulting vectorized polygons have a red outline while the original TAP raster is in blue fill. Black outlines represent forest inventory polygons, and the orange fill is a cutting permit (see figure 4).

Figure 4 – Example of the vectorization process outcome on a cutting permit



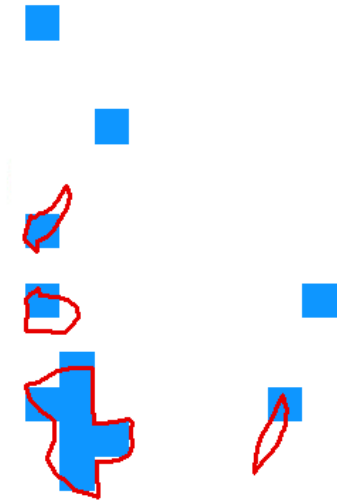
The original TAP mapping captures any polygon whose center point crosses the center of the 1 ha pixel. As a result, some areas that were given TAP values are only amounts of vector polygons cross the pixel. Conversely, skinny polygons may not have been assigned values across multiple pixels because they did not encompass the center point (see Figure 5).

Figure 5. Vectorization process results for skinny polygons



Small polygons were removed from all the vectorized datasets to limit slivers and areas that are noise in the data as seen in figure 6.

Figure 6. Small polygons were removed where a TAP raster value exists



Results

Table 2. Summary of area difference between original OGSR TAP raster values and the vectorized version of the datasets.

Dataset Name	Value	Original Raster Area(ha)	Vectorized Area (ha)	Difference (ha)	% Difference
Map 1 Priority Deferral	Priority Deferral Area	3,982,087	3,970,589	-11,498	-0.29%
Map 2 Big Tree Old Growth	Big-treed older mature forest	1,141,189	1,138,954	-2,235	-0.20%
	Big-treed old growth	6,179,887	6,182,616	2,729	0.04%
	Total	7,321,076	7,321,571	495	0.01%
Map 3 Prioritized Big Treed Old Growth	Priority big-treed older mature forest	398,291	399,741	1,450	0.36%
	Priority big-treed old growth	3,010,551	3,017,940	7,389	0.25%
	Total	3,408,842	3,417,681	8,839	0.26%
Map 4 Ancient Forest	Ancient at older than 250 years	302,698	299,000	-3,698	-1.22%
	Ancient at older than 400 years	288,932	285,924	-3,008	-1.04%
	Total	591,630	584,924	-6,706	-1.13%
Map 5 Remnant Old Ecosystems	Remnant at landscape unit scale	373,159	368,105	-5,054	-1.35%
	Remnant at BEC variant scale	385,951	379,765	-6,186	-1.60%
	Total	759,110	747,870	-11,240	-1.48%
Map 6: Intact Watersheds	70 - 80% intact	7,588,275	7,538,793	-49,482	-0.65%
	80 - 90% intact	6,600,232	6,548,881	-51,351	-0.78%
	> 90% intact	25,022,570	24,964,511	-58,059	-0.23%
	Total	39,211,077	39,052,185	-158,892	-0.41%
Map 7: Recruitment Forest	Recruitment forest	420,116	420,756	640	0.15%
Map 8: Old Growth Forest Tree Size	Very Small	1,437,762	1,439,252	1,490	0.10%
	Small	3,715,996	3,722,886	6,890	0.19%
	Medium	3,737,708	3,745,569	7,861	0.21%
	Large	1,580,926	1,581,974	1,048	0.07%
	Very Large	305,325	305,128	-197	-0.06%

	Unknown	343,107	338,568	-4,539	-1.32%
	Total	11,120,824	11,133,376	12,552	0.11%
Underlay 1. Woodland and Sparsely Treed	Woodland and sparsely treed	4,666,516	4,628,238	-38,278	-0.82%
Underlay 2. Forest Assessment Land Base (FALB)	Forest Assessment Land Base	56,203,480	56,216,981	13,501	0.024%
Supplemental: Seral Stage	Early	11,193,531	11,185,765	-7,766	-0.07%
	Mid	15,843,612	15,843,940	328	0.00%
	Mature	18,045,513	18,054,313	8,800	0.05%
	Old	11,120,824	11,133,520	12,696	0.11%
	Total	56,203,480	56,217,539	14,059	0.03%

Appendix A – Input Datasets for Vector FALB Dataset Creation

Description	Source
Internal Data Burn Severity 2007 - 2020	Internal Directory
BCGW Burn Severity 2015 - 2020	WHSE_FOREST_VEGETATION.VEG_BURN_SEVERITY_SP
BCGW BEC 12	WHSE_FOREST_VEGETATION.BEC_BIOGEOCLIMATIC_POLY
BCGW Landscape Units	WHSE_LAND_USE_PLANNING.RMP_LANDSCAPE_UNIT_SVW
BCGW -Consolidated Cut blocks	WHSE_FOREST_VEGETATION.VEG_CONSOLIDATED_CUT_BLOCKS_SP (From 2021/07/21)
BCGW - Generalized Forest Cover Ownership	WHSE_FOREST_VEGETATION.F_OWN (Own codes 40/41/52/80)
BCGW - First Nations Treaty Lands	WHSE_LEGAL_ADMIN_BOUNDARIES.FNT_TREATY_LAND_SP
BCGW - Baseline Thematic Mapping Present Land Use Version 1 Spatial Layer	WHSE_BASEMAPPING.BTM_PRESENT_LAND_USE_V1_SVW
BCGW - VRI - 2020 - Forest Vegetation Composite Rank 1 Layer (R1)	WHSE_FOREST_VEGETATION.VEG_COMP_LYR_R1_POLY
BCGW - FADM - Tree Farm License Current View (TFL) – TFL19	WHSE_ADMIN_BOUNDARIES.FADM_TFL_ALL_SP (FOREST_FILE_ID = 'TFL19')
BCGW - BC Parks, Ecological Reserves, and Protected Areas – STRATHCONA Park	WHSE_TANTALIS.TA_PARK_ECORES_PA_SVW (PROTECTED_LANDS_NAME = 'STRATHCONA PARK')

Appendix B – Adjusted FMLB logic

Order	Criteria Applied	Description	Adjusted FMLB
1	((bclcs_level_5 <> 'OC' or bclcs_level_5 is null) and (non_productive_descriptor_cd = 'U' or bclcs_level_5 = 'UR' or land_cover_class_cd_1 = 'UR' or land_cover_class_cd_2 = 'UR' or land_cover_class_cd_3 = 'UR' or non_veg_cover_type_1 = 'UR'))	Removed all areas from the FMLB that: <ul style="list-style-type: none"> have 'Unreported' non-productive or land cover class attributes. 	No
4	(adj_age is null and natural_disturbance <> 'NDT5' and ZONE not in ('CMA', 'IMA', 'BAF', 'BAFA') and present_land_use_label = 'Selectively Logged')	Removed all areas from the FMLB that: <ul style="list-style-type: none"> do not have a projected age in forest inventory; and have a Natural Disturbance Type 1,2,3 or 4; and are NOT in BEC Zone 'CMA', 'IMA', 'BAF' or 'BAFA'; and are labelled as 'Selectively Logged' according to Baseline Thematic Mapping. <p>**This logic needs to be revisited**</p>	No
2	((BURN_SEVERITY_RATING is Null or BURN_SEVERITY_RATING = '') and bclcs_level_1 IS NOT NULL and bclcs_level_1 <> 'U' and bclcs_level_1 <> 'T' and bclcs_level_2 <> 'T' and present_land_use_label not in ('Old Forest', 'Young Forest', 'Selectively Logged', 'Recently Logged'))	Removed all areas from the FMLB that are: <ul style="list-style-type: none"> non-treed according to British Columbia Land Cover Classification Scheme; and non-forested according to Baseline Thematic Mapping (BTM); and are not burned according to Burn Severity Rating (BCGW). 	No
3	((natural_disturbance is null and zone is null) or (opening_id is null and adj_age is null)) and (present_land_use_label not in ('Old Forest', 'Selectively Logged', 'Young Forest', 'Recently Logged') or present_land_use_label is null))	Removed all areas from the FMLB that: <ul style="list-style-type: none"> do not have a projected age in forest inventory; or do not have an Opening Id in Forest Inventory; or do not have a BEC Zone; and are non-forested according to Baseline Thematic Mapping (BTM) 	No
5	(OPENING_ID is not null or HARVEST_DATE is not null)	Added all areas to the FMLB that: <ul style="list-style-type: none"> have an Opening ID or Harvest Date value in the forest inventory information. 	Yes
7	((FID_VRI_AND_TFLVRI_2020_UNKNOWN_ > 0) and HARVEST_YEAR_UNK > 0)	Added all areas to the FMLB that <ul style="list-style-type: none"> have unknown forest inventory information; and 	Yes

		<ul style="list-style-type: none"> Consolidated Cutblocks indicated the area has been logged regardless of year 	
8	(FID_STRATHCONA_PARK > 0 and bclcs_level_1 ='V' and bclcs_level_2 = 'T' and site_index > 4 and for_mgmt_land_base_ind ='N')	Added all areas to the FMLB that: <ul style="list-style-type: none"> are in Strathcona Park; and have a VRI Site Index value >= 4; and are vegetated and treed according to British Columbia Land Cover Classification Scheme 	Yes
9	(FID_TFL19 > 0 and (for_mgmt_land_base_ind = 'N' or FOR_MGMT_LAND_BASE_IND is Null) and present_land_use_label in ('Old Forest', 'Recently Logged', 'Selectively Logged', 'Young Forest'))	Added all areas to the FMLB that: <ul style="list-style-type: none"> are in TFL19; and Baseline Thematic Mapping indicates are forested 	Yes
10	((FID_VRI_AND_TFLVRI_2020_UNKNOWN_ > 0) and present_land_use_label in ('Old Forest', 'Recently Logged', 'Selectively Logged', 'Young Forest'))	Added all areas to the FMLB that: <ul style="list-style-type: none"> have an unknown forest inventory; and Baseline Thematic Mapping indicates are forested 	Yes
11	NATURAL_DISTURBANCE = 'NDT5' or (ZONE in ('CMA', 'IMA', 'BAF', 'BAFA'))	Removed all areas from the FMLB that: <ul style="list-style-type: none"> have a Natural Disturbance Type 5; or are in the following BEC Zones: <ol style="list-style-type: none"> Coastal Mountain-Heather Alpine – CMA, Interior Mountain-Heather Alpine – IMA Boreal Altai Fescue Alpine – BAFA, BAF 	No
12	BGC_LABEL = " or BGC_LABEL is Null	Removed all areas from the FMLB that: <ul style="list-style-type: none"> Outside of BC (as defined by BEC) 	No

Appendix C – Applied calculations for Adjusted Age

Order	Criteria Applied	Description	Adjusted Age
1	(BCLCS_LEVEL_1 IS NULL OR BCLCS_LEVEL_1 = 'U') AND HARVEST_YEAR > 0	Adjusted the age of areas where: <ul style="list-style-type: none"> there is NO available forest inventory; and the consolidated cutblocks dataset indicates there has been harvest 	2020 minus harvest year minus 1

2	BCLCS_LEVEL_1 IS NOT NULL AND BCLCS_LEVEL_1 <> 'U' AND REFERENCE_YEAR > 0 AND HARVEST_YEAR > REFERENCE_YEAR	Adjusted the age of areas where: <ul style="list-style-type: none"> there is available forest inventory; and the consolidated cutblocks dataset indicates harvest occurred after the year of the inventory was captured. 	2020 minus harvest year minus 1
3	SEVERITY_CLASS in ('HIGH','MEDIUM')	Adjusted the age of areas where: <ul style="list-style-type: none"> Internal Fire Severity mapping indicates a High or Medium Burn Severity occurred from 2007 to 2020 	2020 minus fire year
4	STAND_PERCENTAGE_DEAD > 70	Adjusted the age of areas where: <ul style="list-style-type: none"> Forest Inventory data indicates the stand to have greater than 70% dead volume (mainly from mountain pine beetle) 	2020 minus 1995

Appendix D – Seral Stage Classification

Order	Criteria Applied	Description	Seral Stage
1	NATURAL_DISTURBANCE in ('NDT1', 'NDT2','NDT4', 'NDT3') and ADJ_AGE <= 40	Adjusted the seral stage in areas where: <ul style="list-style-type: none"> Natural Disturbance Type is 1,2,3 or 4: and Adjusted age is 40 years or younger 	Early
2	(NATURAL_DISTURBANCE in ('NDT4') and ADJ_AGE > 40 and ADJ_AGE <= 100) OR (NATURAL_DISTURBANCE in ('NDT3') and zone in ('CWH') and ADJ_AGE > 40 and ADJ_AGE <= 80) OR	Adjusted the seral stage in areas where: <ul style="list-style-type: none"> Natural Disturbance Type is 4 and adjusted age is greater than 40 years old and 100 years or younger; or Natural Disturbance Type is 3 and BEC Zone is Coastal Western Hemlock (CWH) and adjusted age is greater than 40 years old and 80 years or younger; or Natural Disturbance Type is 3 and BEC Zone is <ul style="list-style-type: none"> Sub-Boreal Pine—Spruce (SBPS) Sub-Boreal Spruce (SBS) Montane Spruce (MS) Interior Cedar—Hemlock (ICH) Boreal White and Black Spruce (BWBS) 	Mid

<p>(NATURAL_DISTURBANCE in ('NDT3') and zone in ('SBPS','SBS','MS','ICH','BWBS') and ADJ_AGE > 40 and ADJ_AGE <= 100)</p> <p>OR</p> <p>(NATURAL_DISTURBANCE in ('NDT3') and zone in ('ESSF') and ADJ_AGE > 40 and ADJ_AGE <= 120)</p> <p>OR</p> <p>(NATURAL_DISTURBANCE in ('NDT2') and zone in ('ESSF','SWB') and ADJ_AGE > 40 and ADJ_AGE <= 120)</p> <p>OR</p> <p>(NATURAL_DISTURBANCE in ('NDT2') and zone in ('ICH','SBS') and ADJ_AGE > 40 and ADJ_AGE <= 100)</p> <p>OR</p> <p>(NATURAL_DISTURBANCE in ('NDT2') and zone in ('CDF','CWH') and ADJ_AGE > 40 and ADJ_AGE <= 80)</p> <p>OR</p> <p>(NATURAL_DISTURBANCE in ('NDT1') and zone in ('ESSF','MH') and ADJ_AGE > 40 and ADJ_AGE <= 120)</p> <p>OR</p> <p>(NATURAL_DISTURBANCE in ('NDT1') and zone in ('ICH') and ADJ_AGE > 40 and ADJ_AGE <= 100)</p> <p>OR</p> <p>(NATURAL_DISTURBANCE in ('NDT1') and zone in ('CWH') and ADJ_AGE > 40 and ADJ_AGE <= 80)</p>	<p>and adjusted age is greater than 40 years old and 100 years or younger; or</p> <ul style="list-style-type: none"> • Natural Disturbance Type is 3 and BEC Zone is Engelmann Spruce—Subalpine Fir (ESSF) and adjusted age is greater than 40 years old and 120 years or younger; or • Natural Disturbance Type is 2 and BEC Zone is <ul style="list-style-type: none"> ○ Spruce-Willow-Birch (SWB) ○ Engelmann Spruce—Subalpine Fir (ESSF) and adjusted age is greater than 40 years old and 120 years or younger; or • Natural Disturbance Type is 2 and BEC Zone is <ul style="list-style-type: none"> ○ Interior Cedar-Hemlock (ICH) ○ Sub-Boreal Spruce (SBS) and adjusted age is greater than 40 years old and 100 years or younger; or • Natural Disturbance Type is 2 and BEC Zone is <ul style="list-style-type: none"> ○ Coastal Douglas-fir (CDF) ○ Coastal Western Hemlock (CWH) and adjusted age is greater than 40 years old and 80 years or younger; or • Natural Disturbance Type is 1 and BEC Zone is <ul style="list-style-type: none"> ○ Engelmann Spruce—Subalpine Fir (ESSF) ○ Mountain Hemlock (MH) and adjusted age is greater than 40 years old and 120 years or younger; or • Natural Disturbance Type is 1 and BEC Zone is <ul style="list-style-type: none"> ○ Interior Cedar-Hemlock (ICH) and adjusted age is greater than 40 years old and 100 years or younger; or • Natural Disturbance Type is 1 and BEC Zone is <ul style="list-style-type: none"> ○ Coastal Western Hemlock (CWH) and adjusted age is greater than 40 years old and 80 years or younger; or 	
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3	<p>(NATURAL_DISTURBANCE in ('NDT4') and ADJ_AGE > 100 and ADJ_AGE <= 250)</p> <p>OR</p> <p>(NATURAL_DISTURBANCE in ('NDT3') and zone in ('CWH') and ADJ_AGE > 80 and ADJ_AGE <= 140)</p> <p>OR</p> <p>(NATURAL_DISTURBANCE in ('NDT3') and zone in ('SBPS','SBS','MS','ICH','BWBS') and ADJ_AGE > 100 and ADJ_AGE <= 140)</p> <p>OR</p> <p>(NATURAL_DISTURBANCE in ('NDT3') and zone in ('ESSF') and ADJ_AGE > 120 and ADJ_AGE <= 140) OR (NATURAL_DISTURBANCE in ('NDT2') and zone in ('ESSF','SWB') and ADJ_AGE > 120 and ADJ_AGE <= 250)</p> <p>OR</p> <p>(NATURAL_DISTURBANCE in ('NDT2') and zone in ('ICH','SBS') and ADJ_AGE > 100 and ADJ_AGE <= 250)</p> <p>OR</p> <p>(NATURAL_DISTURBANCE in ('NDT2') and zone in ('CDF','CWH') and ADJ_AGE > 80 and ADJ_AGE <= 250)</p> <p>OR</p> <p>(NATURAL_DISTURBANCE in ('NDT1') and zone in ('ESSF','MH') and ADJ_AGE > 120 and ADJ_AGE <= 250)</p> <p>OR</p>	<ul style="list-style-type: none"> • Natural Disturbance Type is 4 and adjusted age is greater than 100 years old and 250 years or younger; or • Natural Disturbance Type is 3 and BEC Zone is <ul style="list-style-type: none"> ○ Coastal Western Hemlock (CWH) and adjusted age is greater than 80 years old and 140 years or younger; or • Natural Disturbance Type is 3 and BEC Zone is <ul style="list-style-type: none"> ○ Sub-Boreal Pine—Spruce (SBPS) ○ Sub-Boreal Spruce (SBS) ○ Montane Spruce (MS) ○ Interior Cedar—Hemlock (ICH) ○ Boreal White and Black Spruce (BWBS) and adjusted age is greater than 100 years old and 140 years or younger; or • Natural Disturbance Type is 3 and BEC Zone is Engelmann Spruce—Subalpine Fir (ESSF) and adjusted age is greater than 120 years old and 140 years or younger; or • Natural Disturbance Type is 2 and BEC Zone is <ul style="list-style-type: none"> ○ Spruce-Willow-Birch (SWB) ○ Engelmann Spruce—Subalpine Fir (ESSF) and adjusted age is greater than 120 years old and 250 years or younger; or • Natural Disturbance Type is 2 and BEC Zone is <ul style="list-style-type: none"> ○ Interior Cedar-Hemlock (ICH) ○ Sub-Boreal Spruce (SBS) and adjusted age is greater than 100 years old and 250 years or younger; or • Natural Disturbance Type is 2 and BEC Zone is <ul style="list-style-type: none"> ○ Coastal Douglas-fir (CDF) ○ Coastal Western Hemlock (CWH) and adjusted age is greater than 80 years old and 250 years or younger; or • Natural Disturbance Type is 1 and BEC Zone is <ul style="list-style-type: none"> ○ Engelmann Spruce—Subalpine Fir (ESSF) ○ Mountain Hemlock (MH) and adjusted age is greater than 120 years old and 250 years or younger; or 	Mature
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	<p>(NATURAL_DISTURBANCE in ('NDT1') and zone in ('ICH') and ADJ_AGE > 100 and ADJ_AGE <= 250)</p> <p>OR</p> <p>(NATURAL_DISTURBANCE in ('NDT1') and zone in ('CWH') and ADJ_AGE > 80 and ADJ_AGE <= 250)</p>	<ul style="list-style-type: none"> Natural Disturbance Type is 1 and BEC Zone is <ul style="list-style-type: none"> Interior Cedar-Hemlock (ICH) and adjusted age is greater than 100 years old and 250 years or younger; or Natural Disturbance Type is 1 and BEC Zone is <ul style="list-style-type: none"> Coastal Western Hemlock (CWH) and adjusted age is greater than 80 years old and 250 years or younger; or 	
4	<p>(NATURAL_DISTURBANCE in ('NDT3') and ADJ_AGE > 140) OR</p> <p>(NATURAL_DISTURBANCE in ('NDT1', 'NDT2','NDT4') and ADJ_AGE > 250)</p>	<ul style="list-style-type: none"> Natural Disturbance Type is 3 and adjusted age is greater than 140 years old; or Natural Disturbance Type is 1,2, or 4 and adjusted age is greater than 250 years old; 	Old
5	<p>ADJ_AGE is NULL and (bclcs_level_1 is null or bclcs_level_1 = 'U') and PRESENT_LAND_USE_LABEL = 'Old Forest'</p>	Adjusted the seral stage in areas where forest inventory is missing and Baseline Thematic Mapping (BTM) data classifies stand as Old Forest	Old
7	<p>ADJ_AGE is NULL and (bclcs_level_1 is null or bclcs_level_1 = 'U') and PRESENT_LAND_USE_LABEL = 'Selectively Logged'</p>	Adjusted the seral stage in areas where forest inventory is missing and Baseline Thematic Mapping (BTM) data classifies stand as Selectively Logged	Mature
6	<p>ADJ_AGE is NULL and (bclcs_level_1 is null or bclcs_level_1 = 'U') and PRESENT_LAND_USE_LABEL = 'Young Forest'</p>	Adjusted the seral stage in areas where forest inventory is missing and Baseline Thematic Mapping (BTM) data classifies stand as Young Forest	Mid
8	<p>ADJ_AGE is NULL and (bclcs_level_1 is null or bclcs_level_1 = 'U') and PRESENT_LAND_USE_LABEL = 'Recently Logged'</p>	Adjusted the seral stage in areas where forest inventory is missing and Baseline Thematic Mapping (BTM) data classifies stand as Recently Logged	Early
9	<p>BCLCS_LEVEL_1 = 'V' and BCLCS_LEVEL_2 = 'N' and PROJ_AGE_1 is Null and OPENING_ID is not NULL and SERAL_STAGE in ('Mature' , 'Mid' , 'Old')</p>	Adjusted the seral stage in areas that are classified as vegetated non treed but have an opening_id	Early