National Forest Inventory

Photo Plot
Data Dictionary
For First Remeasurement

Version 5.2
September 21, 2017

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Objective

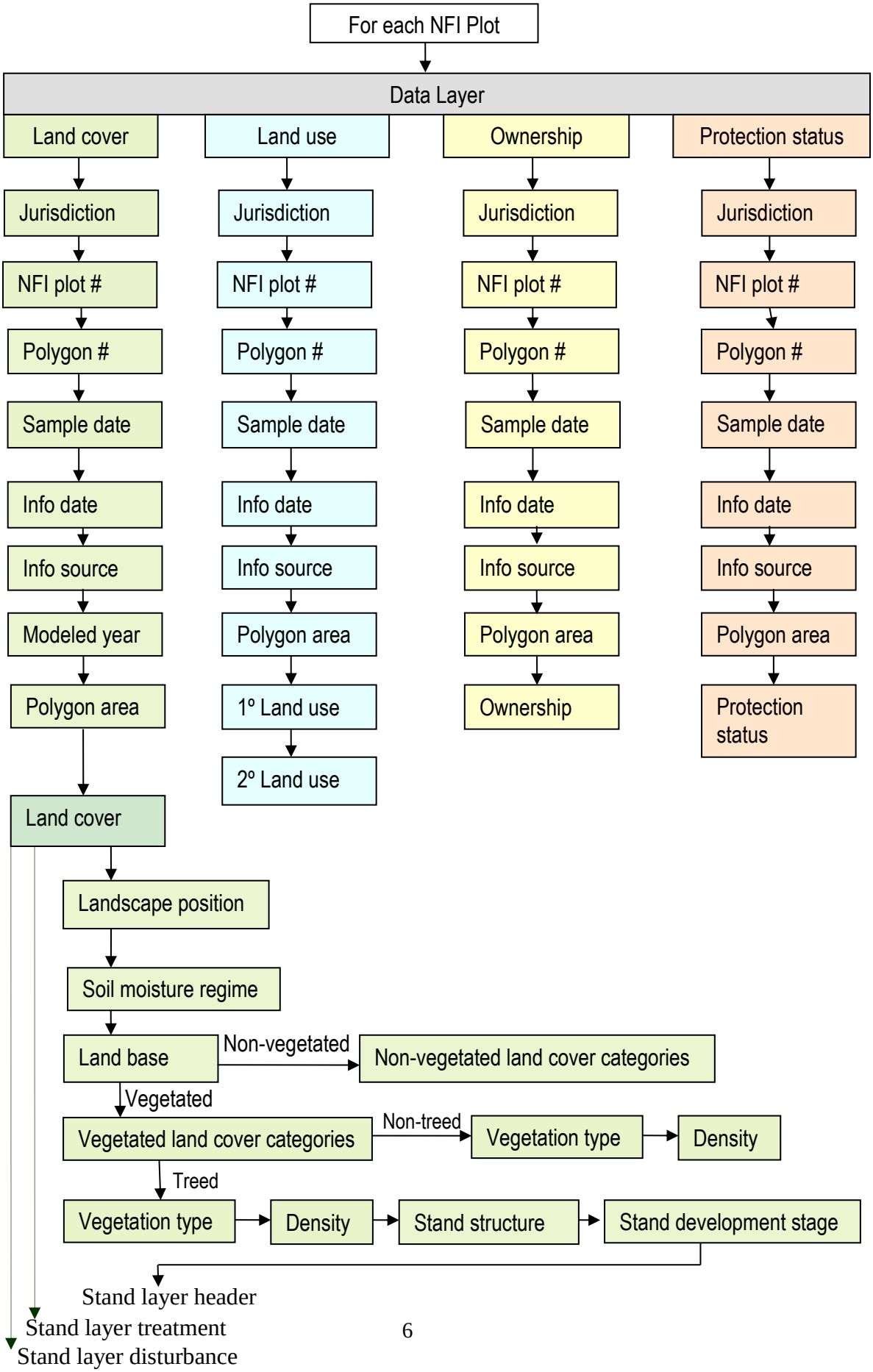
This document's primary objective is to describe the input data required to fully populate the NFI photo plot database. A separate section has been added in this version to describe the data generated by the NFI photo plot compiler (Compiled Data).

Background

There are 4 data layers for which data must be provided for each 2 km by 2 km NFI photo plot. These are land cover, land use, ownership, and protection status. The land cover information is interpreted from aerial photographs and very high spatial resolution satellite images. Land use information can also be derived from aerial photos and satellite imagery, or may come from other data sources and maps. Ownership and protection status information is derived from other data sources and maps. This document is intended to provide guidance on the data entry for each of these layers.

Note that updates to the input data tables from version 5.1.4 of this data dictionary are in red throughout this document.

The following chart illustrates the data flow and decisions:


For each NFI Plot
Data Layer
Land cover
Land use
Ownership
Protection status
Jurisdiction
NFI plot #
Polygon #
Sample date
Info date
Info source
Modeled year
Polygon area
Land cover
Polygon area
1º Land use
2º Land use
Ownership
Protection status
Landscape position
Soil moisture regime
Land base
Non-vegetated
Non-vegetated land cover categories
Vegetated
Vegetated land cover categories
Non-treed
Vegetation type
Density
Treed
Vegetation type
Density
Stand structure
Stand development stage
Stand layer header
Stand layer treatment
Stand layer disturbance

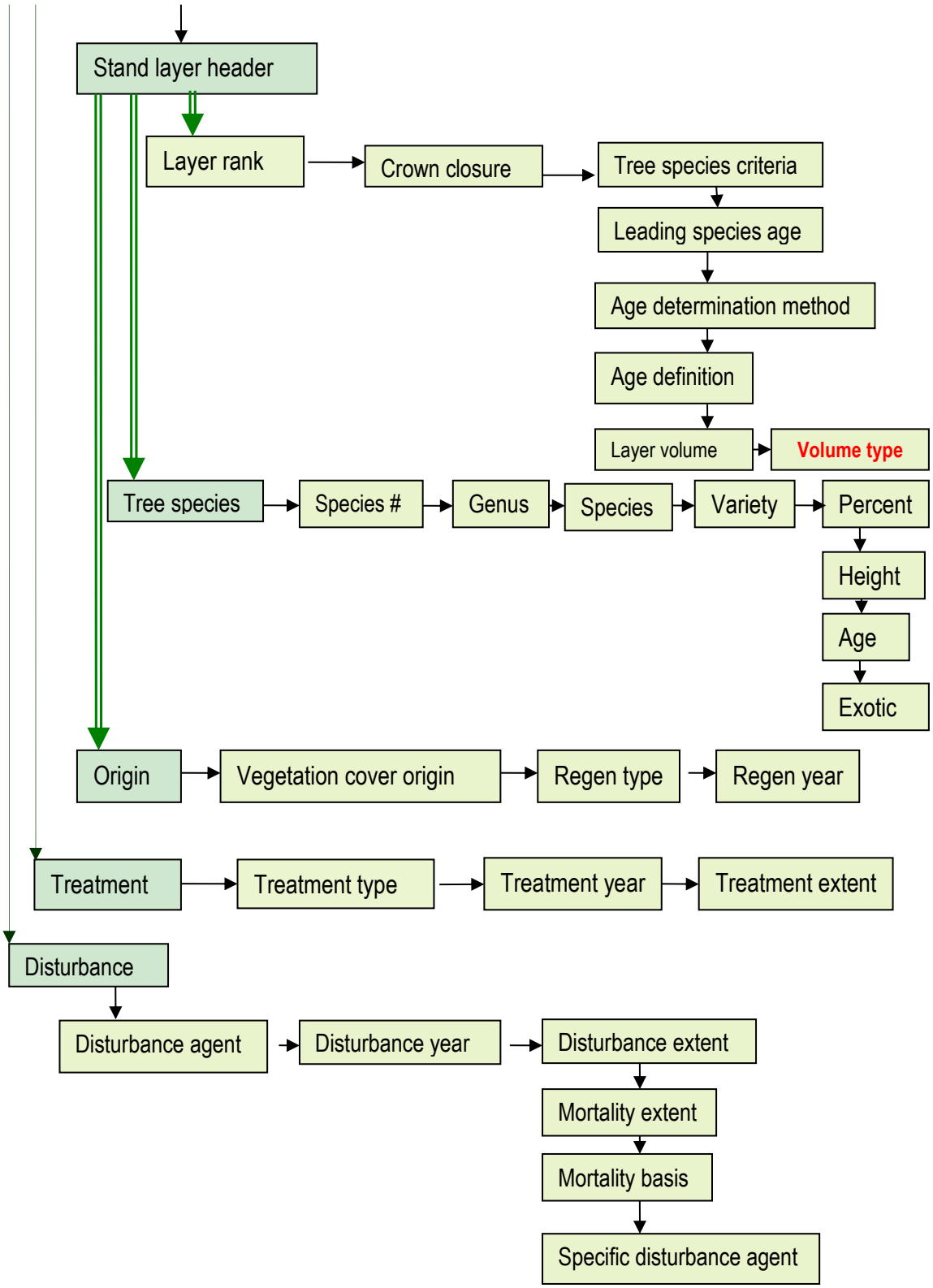

Stand layer header
Layer rank
Crown closure
Tree species criteria
Leading species age
Age determination method
Age definition
Layer volume
Volume type
Tree species
Species #
Genus
Species
Variety
Percent
Height
Age
Exotic
Origin
Vegetation cover origin
Regen type
Regen year
Treatment
Treatment type
Treatment year
Treatment extent
Disturbance
Disturbance agent
Disturbance year
Disturbance extent
Mortality extent
Mortality basis
Specific disturbance agent

Table Structure

1. LANDUSE POLYGON

Database table name: pp_landuse

Field	Description (Units)	Field Name	Format	Index	Not Null
1	jurisdiction id	JURIS_ID	Char 2	Y	Y
2	network label	NFI_PLOT	Num 7	Y	Y
3	polygon identifier	POLY_ID	Char 20	Y	Y
4	sampling date (yyyy-mon-dd)	SAMPLE_DATE	Date 11	Y	Y
5	date of information (yyyy-mon-dd)	INFO_DATE	Date 11	N	Y
6	source of information	INFO_SOURCE	Char 1	N	Y
7	land use area (ha)	POLY_AREA	Dec 7.4	N	Y
8	primary land use	LANDUSE1	Char 4	N	Y
9	secondary land use	LANDUSE2	Char 4	N	N

2. OWNERSHIP POLYGON

Database table name: pp_ownership

Field	Description (Units)	Field Name	Format	Index	Not Null
1	jurisdiction id	JURIS_ID	Char 2	Y	Y
2	network label	NFI_PLOT	Num 7	Y	Y
3	polygon identifier	POLY_ID	Char 20	Y	Y
4	sampling date (yyyy-mon-dd)	SAMPLE_DATE	Date 11	Y	Y
5	date of information (yyyy-mon-dd)	INFO_DATE	Date 11	N	Y
6	source of information	INFO_SOURCE	Char 1	N	Y
7	ownership area size (ha)	POLY_AREA	Dec 7.4	N	Y
8	owner	OWNERSHIP	Char 4	N	Y

3. PROTECTION STATUS POLYGON

Database table name: pp_protect_status

Field	Description (Units)	Field Name	Format	Index	Not Null
1	jurisdiction id	JURIS_ID	Char 2	Y	Y
2	network label	NFI_PLOT	Num 7	Y	Y
3	polygon identifier	POLY_ID	Char 20	Y	Y
4	sampling date (yyyy-mon-dd)	SAMPLE_DATE	Date 11	Y	Y
5	date of information (yyyy-mon-dd)	INFO_DATE	Date 11	N	Y
6	source of information	INFO_SOURCE	Char 1	N	Y
7	protection area size (ha)	POLY_AREA	Dec 7.4	N	Y
8	protection status	STATUS	Num 1	N	Y

4. LAND COVER POLYGON

Database table name: pp_landcover

Field	Description (Units)	Field Name	Format	Index	Not Null
1	jurisdiction id	JURIS_ID	Char 2	Y	Y
2	network label	NFI_PLOT	Num 7	Y	Y
3	polygon identifier	POLY_ID	Char 20	Y	Y
4	sampling date (yyyy-mon-dd)	SAMPLE_DATE	Date 11	Y	Y

Field	Description (Units)	Field Name	Format	Index	Not Null	
5	date of information (yyyy-mon-dd)	INFO_DATE	Date 11	N	Y	
6	source of information	INFO_SOURCE	Char 1	N	Y	
7	modeled year (yyyy)	MODEL_YR	Num 4	N	N	
8	polygon area	POLY_AREA	Dec 7.4	N	Y	
9	land base	LAND_BASE	Char 1	N	Y	
10	land cover	LAND_COVER	Char 1	N	Y	*Rule edit*
11	landscape position	LAND_POS	Char 1	N	Y	
12	vegetation type	VEG_TYPE	Char 2	N	Y	
13	density class	DENSITY_CL	Char 2	N	Y	
14	stand structure	STAND_STRU	Char 4	N	Y	
15	moisture regime	SOIL_MOIST	Char 2	N	Y	*Rule edit*
16	development stage	DEVEL_STAGE	Char2	N	Y	*Reference update*

5. STAND LAYER HEADER INFORMATION

Database table name: pp_std_layer_header

Field	Description (Units)	Field Name	Format	Index	Not Null	
1	jurisdiction id	JURIS_ID	Char 2	Y	Y	
2	network label	NFI_PLOT	Num 7	Y	Y	
3	polygon identifier	POLY_ID	Char 20	Y	Y	
4	sampling date (yyyy-mon-dd)	SAMPLE_DATE	Date 11	Y	Y	
5	date of information (yyyy-mon-dd)	INFO_DATE	Date 11	N	Y	
6	source of information	INFO_SOURCE	Char 1	N	Y	
7	modeled year	MODEL_YR	Num 4	N	N	
9	layer rank	LAYER_RK	Num 2	Y	Y	*Rule edit*
10	crown closure	CLOSURE	Num 3	N	Y	*Rule edit*
11	tree species criteria	LEAD_CRITR	Char 2	N	N	
12	leading tree species age (years)	LEAD_SP_AGE	Num	N	N	*Rule edit*
13	age determination method	AGE_DETM	Char	N	Y	
14	age definition	AGE_DEFN	Char	N	Y	
15	total layer volume(m^3/ha)	LAYER_VOL	Num	N	Y	*Rule edit*
16	volume type	VOL_TYPE	Char 3	N	N	*Field added to database*

5a. STAND LAYER TREE SPECIES

Database table name: pp_std_layer_tree_sp

Field	Description (Units)	Field Name	Format	Index	Not Null	
1	jurisdiction id	JURIS_ID	Char 2	Y	Y	
2	network label	NFI_PLOT	Num 7	Y	Y	
3	polygon identifier	POLY_ID	Char 20	Y	Y	
4	layer rank	LAYER_RK	Num 2	Y	Y	*Rule edit*
5	sampling date (yyyy-mon-dd)	SAMPLE_DATE	Date 11	Y	Y	
6	date of information (yyyy-mon-dd)	INFO_DATE	Date 11	N	Y	
7	source of information	INFO_SOURCE	Char 1	N	Y	
8	tree species number	SPECIES_NUM	Num 2	Y	Y	
9	tree genus	GENUS	Char 4	N	Y	
10	tree species	SPECIES	Char 3	N	Y	
11	tree variety	VARIETY	Char 3	N	N	
12	tree species percent (percent)	PERCENT	Dec 4.1	N	Y	
13	tree height (m)	HEIGHT	Dec 4.1	N	Y	*Rule edit*
14	age (years)	AGE	Num 4	N	Y	*Rule edit*
15	minimum age (years)	MIN_AGE	Num 4	N	Y	*Rule edit*
16	maximum age (years)	MAX_AGE	Num 4	N	Y	*Rule edit*
17	exotic species (y/n)	EXOTIC	Char 1	N	Y	
18	exotic species source	EXOTIC_SOURCE	Char 3	N	N	

5b. STAND LAYER ORIGIN

Database table name: pp_std_layer_origin

Field	Description (Units)	Field Name	Format	Index	Not Null	
1	jurisdiction id	JURIS_ID	Char 2	Y	Y	
2	network label	NFI_PLOT	Num 7	Y	Y	
3	polygon identifier	POLY_ID	Char 20	Y	Y	
4	layer rank	LAYER_RK	Num 2	Y	Y	*Rule edit*
5	sampling date (yyyy-mon-dd)	SAMPLE_DATE	Date 11	Y	Y	
6	date of information (yyyy-mon-dd)	INFO_DATE	Date 11	N	Y	
7	source of information	INFO_SOURCE	Char 1	N	Y	
8	vegetation cover origin	STAND_ORIG	Char 4	Y	Y	
9	type of regeneration	REGEN_TYPE	Char 3	Y	Y	
10	regeneration year (yyyy)	REGEN_YR	Num 4	Y	Y	*Rule edit*

6. STAND LAYER TREATMENT

Database table name: pp_std_layer_treatment

Field	Description (Units)	Field Name	Format	Index	Not Null	
1	jurisdiction id	JURIS_ID	Char 2	Y	Y	
2	network label	NFI_PLOT	Num 7	Y	Y	
3	polygon identifier	POLY_ID	Char 20	Y	Y	
4	layer rank	LAYER_RK	Num 2	Y	Y	*Rule edit*
5	sampling date (yyyy-mon-dd)	SAMPLE_DATE	Date 11	Y	Y	
6	date of information (yyyy-mon-dd)	INFO_DATE	Date 11	N	Y	
7	source of information	INFO_SOURCE	Char 1	N	Y	
8	treatment type	TREAT_TYPE	Char 2	Y	Y	*Definition clarification*
9	treatment year (yyyy)	TREAT_YR	Num 4	Y	Y	*Permitted value change*
10	treatment extent (percent)	TREAT_PERCT	Num 3	N	Y	

7. STAND LAYER DISTURBANCE

Database table name: pp_std_layer_disturbance

Field	Description (Units)	Field Name	Format	Index	Not Null	
1	jurisdiction id	JURIS_ID	Char 2	Y	Y	
2	network label	NFI_PLOT	Num 7	Y	Y	
3	polygon identifier	POLY_ID	Char 20	Y	Y	
4	layer rank	LAYER_RK	Num 2	Y	Y	*Rule edit*
5	sampling date (yyyy-mon-dd)	SAMPLE_DATE	Date 11	Y	Y	
6	date of information (yyyy-mon-dd)	INFO_DATE	Date 11	N	Y	
7	source of information	INFO_SOURCE	Char 1	N	Y	
8	natural disturbance agent	DIST_AGENT	Char 10	Y	Y	
9	disturbance year (yyyy)	DIST_YR	Num 4	Y	Y	*Permitted value change*
10	extent of disturbance (percent)	DIST_PERCT	Num 3	N	Y	
11	extent of tree mortality (percent)	MORT_PERCT	Num 3	N	Y	
12	mortality basis	MORT_BASIS	Char 2	N	N	
13	specific disturbance agent	AGENT_TYPE	Char 50	N	N	

Data Dictionary

Explanation of data formats:

- 'Num' indicates an integer format.
- 'Char' indicates a character format. Excess character spaces do not need to be filled in with blanks.
- 'Dec' indicates a decimal format where the first number denotes the width and the second number denotes the number of places in the decimal. An example of format 'Dec 6.2' would be 1234.56 (a six-digit value with a two-digit decimal place).
- 'Date' indicates a date format of YYYY-MON-DD where dashes must be included. For example, January 9, 2004 would be coded 2004-JAN-09.

1. LANDUSE POLYGON

CSV filename: xx_pp_lu.csv where xx is the juris_id code

Primary Key: JURIS_ID, NFI_PLOT, POLY_ID, SAMPLE_DATE

Attribute	Jurisdiction identifier
Variable name	**JURIS_ID**
Description	The Canada Post two-letter abbreviation for each province and territory.
Permitted values/range	AB, BC, SK, MB, ON, QC, NB, NS, PE, NL, YT, NT, NU
Format	Char 2
Rule(s)	Must have value.

Attribute	Network label
Variable name	**NFI_PLOT**
Description	The numeric National Forest Inventory label that identifies the point on the network associated with the photo plot. The NFI project office will provide network labels.
Permitted values/range	**1 to 1600000**
Format	Num 7
Rule(s)	Must have value.

Attribute	Polygon identifier
Variable name	**POLY_ID**
Description	The unique identifier assigned to each land use polygon delineated on the photo plot. No duplicate polygon numbers are allowed.
Permitted values/range	
Format	Char 20
Rule(s)	Must have value.

Attribute	Sampling date
Variable name	**SAMPLE_DATE**
Description	The date the NFI sample plot was populated.
Permitted values/range	**Last measurement date to present**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. SAMPLE_DATE ≥ last measurement date and SAMPLE_DATE ≤ Present Date

Attribute	Date of information
Variable name	**INFO_DATE**
Description	The date the image was taken (interpreted data) or the date the data was modeled to (modeled data).
Permitted values/range	**1900 to present.**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. 1900-JAN-01 ≤ INFO_DATE ≤ SAMPLE_DATE

Attribute	Source of information
Variable name	**INFO_SOURCE**
Description	The source of information.
Permitted values/range	The following codes must be used: **I** – Interpreted from aerial photography **S** – Data from ground survey **O** – Other
Format	Char 1
Rule(s)	Must have value.

Attribute	Land use area
Variable name	**POLY_AREA**
Description	Area of land use polygon in hectares (ha) according to provincial guidelines or the following: the recommended minimum area for polygons is 0.5 hectares (5,000 square metres). The recommended minimum width for a polygon is 1 mm at photo scale. Individual polygon area to be accurate to the nearest 1/10000 of a hectare (a square metre). Sum of all polygons to equal area of plot. Must be identical to the spatial data polygon area.
Permitted values/range	**0.0001 to 404.0000**
Format	Dec 7.4
Rule(s)	Must have a value

Attribute	Primary land use
Variable name	**LANDUSE1**
Description	Land-use classes as provided in the *NFI Land Use Classification* and included below. A 3 to 4 letter land use code will be used
Measurement criteria	Enter the 3-letter land use code followed by an optional modifier code, based on the land-use codes in the *NFI Land Use Classification*. For instances where more than one land use class is applicable, a primary or dominant land use category is specified followed by a secondary land use category and an optional modifier code. The primary land use is the overriding land use and must be listed first.
Permitted values/range	*See the codes and classification in Appendix 1*
Format	Char 4
Rule(s)	Must have a value. Each land use in the same polygon must be unique.

Attribute	Secondary land use
Variable name	**LANDUSE2**
Description	Land-use classes as provided in the *NFI Land Use Classification* and included below. A 3 to 4 letter land use code will be used
Measurement criteria	Enter the 3-letter land use code followed by an optional modifier code, based on the land-use codes in the *NFI Land Use Classification*. For instances where more than one land use class is applicable, a primary or dominant land use category is specified followed by a secondary land use category and an optional modifier code. The primary land use is the overriding land use and must be listed first.
Permitted values/range	*See the codes and classification in Appendix 1*
Format	Char 4
Rule(s)	LANDUSE1 ≠ LANDUSE2

2. OWNERSHIP POLYGON

CSV filename: xx_pp_ow.csv where xx is the juris_id code

Primary Key: JURIS_ID, NFI_PLOT, POLY_ID, SAMPLE_DATE.

Attribute	Jurisdiction identifier
Variable name	**JURIS_ID**
Description	The Canada Post two-letter abbreviation for each province and territory.
Permitted values/range	AB, BC, SK, MB, ON, QC, NB, NS, PE, NL, YT, NT, NU
Format	Char 2
Rule(s)	Must have value.

Attribute	Network label
Variable name	**NFI_PLOT**
Description	The numeric National Forest Inventory label that identifies the point on the network associated with the photo plot. The NFI project office will provide network labels.
Permitted values/range	**1 to 1600000**
Format	Num 7
Rule(s)	Must have value.

Attribute	Polygon identifier
Variable name	**POLY_ID**
Description	The unique identifier assigned to each ownership polygon delineated on the photo plot. No duplicate polygon numbers are allowed.
Permitted values/range	
Format	Char 20
Rule(s)	Must have value.

Attribute	Sampling date
Variable name	**SAMPLE_DATE**
Description	The date the NFI sample plot was populated.
Permitted values/range	**Last measurement date to present**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. SAMPLE_DATE ≥ last measurement date and SAMPLE_DATE ≤ Present Date

Attribute	Date of information
Variable name	**INFO_DATE**
Description	The date the image was taken (interpreted data) or the date the data was modeled to (modeled data).
Permitted values/range	**1900 to present.**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. 1900-JAN-01 ≤ INFO_DATE ≤ SAMPLE_DATE

Attribute	Source of information
Variable name	**INFO_SOURCE**
Description	The source of information.
Permitted values/range	The following codes must be used: **I** – Interpreted from aerial photography **S** – Data from ground survey **O** – Other
Format	Char 1
Rule(s)	Must have value.

Attribute	Ownership area
Variable name	**POLY_AREA**
Description	Area of ownership polygon in (ha) according to provincial guidelines or the recommended minimum area for polygons is 0.5 hectares (5,000 square metres). The recommended minimum width for a polygon is 1 mm at photo scale. Individual polygon area to be accurate to the nearest 1/10000 of a hectare (a square metre). Sum of all polygons to equal area of plot.
Permitted values/range	**0.0001 to 404.0000**
Format	Dec 7.4
Rule(s)	Must have a value

Attribute	Owner
Variable name	**OWNERSHIP**
Description	Ownership of the ground covered by the polygon.
Permitted values/range	**CL** – Land owned by the province **PR** – Privately-owned land **FED** – Land owned by the federal government **TERR** – Land owned by the territorial government **MUN** – Land owned by a municipality **ABOR** – Land owned by First Nations **M** – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary **S** – Ownership information is missing or not available for this polygon
Format	Char 4
Rule(s)	Must have value.

3. PROTECTION STATUS POLYGON

CSV filename: xx_pp_ps.csv where xx is the juris_id code

Primary Key: JURIS_ID, NFI_PLOT, POLY_ID, SAMPLE_DATE.

Attribute	Jurisdiction identifier
Variable name	**JURIS_ID**
Description	The Canada Post two-letter abbreviation for each province and territory.
Permitted values/range	AB, BC, SK, MB, ON, QC, NB, NS, PE, NL, YT, NT, NU
Format	Char 2
Rule(s)	Must have value.

Attribute	Network label
Variable name	**NFI_PLOT**
Description	The numeric National Forest Inventory label that identifies the point on the network associated with the photo plot. The NFI project office will provide network labels.
Permitted values/range	**1 to 1600000**
Format	Num 7
Rule(s)	Must have value.

Attribute	Polygon identifier
Variable name	**POLY_ID**
Description	The unique identifier assigned to each protection status polygon delineated on the photo plot. No duplicate polygon numbers are allowed.
Permitted values/range	
Format	Char 20
Rule(s)	Must have value.

Attribute	Sampling date
Variable name	**SAMPLE_DATE**
Description	The date the NFI sample plot was populated.
Permitted values/range	**Last measurement date to present**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. SAMPLE_DATE ≥ last measurement date and SAMPLE_DATE ≤ Present Date

Attribute	Date of information
Variable name	**INFO_DATE**
Description	The date the image was taken (interpreted data) or the date the data was modeled to (modeled data).
Permitted values/range	**1900 to present.**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. 1900-JAN-01 ≤ INFO_DATE ≤ SAMPLE_DATE

Attribute	Source of information
Variable name	**INFO_SOURCE**
Description	The source of information.
Permitted values/range	The following codes must be used: **I** – Interpreted from aerial photography **S** – Data from ground survey **O** – Other
Format	Char 1
Rule(s)	Must have value.

Attribute	Protection area size
Variable name	**POLY_AREA**
Description	Area of protection polygon in ha. Sum of all polygons to equal area of photo plot according to provincial guidelines or use the following: the recommended minimum area for polygons is 0.5 hectares (5,000 square metres). The recommended minimum width for a polygon is 1 mm at photo scale. Individual polygon area to be accurate to the nearest 1/10000 of a hectare.
Permitted values/range	**0.0001 to 404.0000**
Format	Dec 7.4
Rule(s)	Must have value.

Attribute	Protection status
Variable name	**STATUS**
Description	Polygon under some form of protection status. IUCN Categories I – VI.
Permitted values/range	**0**: Not protected (No IUCN category) **1**: Strict Nature Reserve: protected for science (IUCN category Ia). **2**: Wilderness Area: protected for wilderness (IUCN category Ib). **3**: National Park: for ecosystem protection and recreation. (IUCN category II) **4**: Natural Monument: for conservation of specific natural features (IUCN category III) **5**: Habitat/Species Management Areas: for maintaining habitats (IUCN category IV) **6**: Protected Landscape/Seascape: for conservation and recreation (IUCN category V) **7**: Managed Resource Protected Area: for sustainable use of natural ecosystems. (IUCN category VI) **8**: Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary **9**: Protection status information is missing or not available for this polygon
Format	Num 1
Rule(s)	Must have value.

4. LAND COVER POLYGON

CSV filename: xx_pp_lc.csv where xx is the juris_id code

Primary Key: JURIS_ID, NFI_PLOT, POLY_ID, SAMPLE_DATE.

Attribute	Jurisdiction identifier
Variable name	**JURIS_ID**
Description	The Canada Post two-letter abbreviation for each province and territory.
Permitted values/range	AB, BC, SK, MB, ON, QC, NB, NS, PE, NL, YT, NT, NU
Format	Char 2
Rule(s)	Must have value.

Attribute	Network label
Variable name	**NFI_PLOT**
Description	The numeric National Forest Inventory label that identifies the point on the network associated with the photo plot. The NFI project office will provide network labels.
Permitted values/range	**1 to 1600000**
Format	Num 7
Rule(s)	Must have value.

Attribute	Polygon identifier
Variable name	**POLY_ID**
Description	The unique identifier assigned to each land cover polygon delineated on the photo plot. No duplicate polygon numbers are allowed.
Permitted values/range	
Format	Char 20
Rule(s)	Must have value.

Attribute	Sampling date
Variable name	**SAMPLE_DATE**
Description	The date the NFI sample plot was populated.
Permitted values/range	**Last measurement date to present**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. SAMPLE_DATE ≥ last measurement date and SAMPLE_DATE ≤ Present Date

Attribute	Date of information
Variable name	**INFO_DATE**
Description	The date the image was taken (interpreted data) or the date the data was modeled to (modeled data).
Permitted values/range	**2007 to present.**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. 2007-JAN-01 ≤ INFO_DATE ≤ SAMPLE_DATE

Attribute	Source of information
Variable name	**INFO_SOURCE**
Description	The source of information.
Permitted values/range	The following codes must be used: **I** – Interpreted from aerial photography **M** – Modeled **U** – Updated from disturbance **S** – Data from ground survey **O** – Other
Format	Char 1
Rule(s)	Must have value.

Attribute	Modeled year
Variable name	**MODEL_YR**
Description	The original year of information used to initiate the modeling, e.g. year of original interpretation, year of update. Represents an actual year. -1: Missing Null: Not applicable.
Permitted values/range	**1900 to present** **-1** – Model year missing **Null** – Model year not applicable
Format	Num 4
Rule(s)	If INFO_SOURCE = 'M' then MODEL_YR must have a value and MODEL_YR < year of the INFO_DATE; or MODEL_YR = -1 (if not known) If INFO_SOURCE ≠ 'M' then MODEL_YR is null

Attribute	Land cover area
Variable name	**POLY_AREA**
Description	Area of land cover polygon in (ha) according to provincial guidelines or the following: the recommended minimum area for polygons is 0.5 hectares (5,000 square metres). The recommended minimum width for a polygon is 1 mm at photo scale. Individual polygon area to be accurate to the nearest 1/10000 of a hectare (a square metre). Sum of all polygons to equal area of plot.
Permitted values/range	**0.0001 to 404.0000**
Format	Dec 7.4
Rule(s)	Must have a value

Attribute	Land base
Variable name	**LAND_BASE**
Description	A unique identification letter for the first level of the *NFI Land Cover Classification System (see Appendix 2)*. This signifies the presence or absence of vegetation within the boundaries of a polygon.
Permitted values/range	**V** – Vegetated **N** – Non-vegetated **M** – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary **S** – Land base information is missing or not available for this polygon
Format	Char 1
Rule(s)	Must have a value. If LAND_BASE is coded M (out-of-province/territory/country) then all following fields must be coded as out-of-province/territory/country (M or MI) If LAND_BASE is coded S (missing or unavailable) then all following fields must be coded as missing or unavailable (S or SA)

Attribute	Landcover
Variable name	**LAND_COVER**
Description	A unique identification letter for the second level of the *NFI Land Cover Classification System (see Appendix 2)*. This signifies the presence or absence of trees for vegetated polygons, and land or water for non-vegetated polygons.
Permitted values/range	For vegetated polygons: **T** – Treed **N** – Non-treed For non-vegetated polygons: **L** – Land **W** – Water For unreported polygons **M** – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary **S** – Land base information is missing or not available for this polygon
Format	Char 1
Rule(s)	Must have a value If LAND_BASE is V then LAND_COVER must be one of T or N If LAND_BASE is N then LAND_COVER must be one of L or W If LAND_COVER is T, then there must exist 1 or more entries in Stand Layer Header table and 1 or more entries for other Stand Layer tables. If LAND_BASE is V and the sum of CLOSURE for all layers is at least 10 then LAND_COVER must be T If LAND_BASE is V and the sum of CLOSURE for all layers is less than 10 then LAND_COVER must be N

Attribute	Landscape position
Variable name	**LAND_POS**
Description	A unique identification letter for the third level of the *NFI Land Cover Classification System (see Appendix 2)*. This signifies the location of the polygon relative to drainage.
Permitted values/range	**W** – Wetland **U** – Upland **A** – Alpine For unreported:: **M** – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary **S** – Landscape position information is missing or not available for this polygon
Format	Char 1
Rules	Must have a value If LAND_COVER is T then LAND_POS cannot be A If LAND_COVER is W then LAND_POS must be W If LAND_COVER is M then LAND_POS must be M If LAND_COVER is S then LAND_POS must be S

Attribute	Vegetation type
Variable name	**VEG_TYPE**
Description	A unique identification letter for the fourth Level of the *NFI Land Cover Classification System (see Appendix 2)*. This signifies the distinct type of vegetation or non-vegetated condition of the landbase within the polygon Although there are no classes at this level of the Land Cover Classification System for water, a water code has been added to ensure all polygons are classified and have a value. When coded as treed coniferous, broadleaf, or mixed, this attribute is relationally checked with photo plot tree species percent.
Permitted values/range	For vegetated treed polygons: **TC** – Treed coniferous **TB** – Treed broadleaf **TM** – Treed mixed For vegetated non-treed polygons: **ST** – Tall shrubs **SL** – Low shrub **HE** – Herb **HF** – Forb **HG** – Graminoid **BY** – Bryoid **BM** – Moss **BL** – Lichen For non-vegetated polygons: **SI** – Snow/ice **RO** – Rock/rubble **EL** – Exposed land For water polygons: **WA** – Water For unreported polygons: **MI** – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary **SA** – Vegetation type information is missing or not available for this polygon
Format	Char 2
Rules	Must have a value If LAND_COVER is T then VEG_TYPE must be one of TC, TB, or TM If LAND_COVER is N, then VEG_TYPE must be one of ST, SL, HE, HF, HG, BY, BM, or BL If LAND_COVER is L then VEG_TYPE must be one of SI, RO, or EL If LAND_COVER is W then VEG_TYPE must be WA If LAND_COVER is M then VEG_TYPE must be MI If LAND_COVER is S then VEG_TYPE must be SA

Attribute	Density class
Variable name	**DENSITY_CL**
Description	A unique identification letter for the fifth level of the *NFI Land Classification System*. This signifies the vegetation densities for vegetated polygons and a further classification of non-vegetated polygons.
Permitted values/range	For vegetated polygons: **DE** – Dense **OP** – Open **SP** – Sparse **CL** – Closed For non-vegetated polygons: **GL** – Glacier **SC** – Snow cover **BR** – Bedrock **RT** – Rubble, talus, blockfield **MS** – Rubbly mine spoils **LB** – Lava bed **RS** – River sediments **ES** – Exposed soil **LS** – Pond or lake sediments **RM** – Reservoir margin **BE** – Beach **LL** – Landing **BU** – Burned area **RP** – Road surface **MU** – Mudflat sediment **CB** – Cutbank **MO** – Moraine **GP** – Gravel or borrow pit **TS** – Tailings **RR** – Railway surface **BP** – Buildings and parking **AP** – Airport **PM** – Open pit mine **OT** – Other For water polygons: **LA** – Lake **RE** – Reservoir **RI** – River/stream **SW** – Salt water **GW** –Water in the Great Lakes **SO** – Shallow/open water **BF** – Beaver pond or flowage For unreported: **MI** – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary **SA** – Density class information is missing or not available for this polygon
Format	Char 2

Rule(s)	Must have a value. If VEG_TYPE is one of TB, TC, TM, SL, ST, HE, HF, or HG then DENSITY_CL must be one of DE, OP, SP, or SA (if no density information) If VEG_TYPE is one of BY, BM, or BL then DENSITY_CL must be one of CL, OP, or SA (if no density information) If VEG_TYPE is SI then DENSITY_CL must be one of GL, SC If VEG_TYPE is RO then DENSITY_CL must be one of BR, RT, MS, or LB If VEG_TYPE is EL then DENSITY_CL must be one of RS, ES, LS, RM, BE, LL, BU, RP, MU, CB, MO, GP, TS, RR, BP, AP, PM, or OT If VEG_TYPE is WA then DENSITY_CL must be one of LA, RE, RI, SW, GW, SO or BF If VEG_TYPE is M then DENSITY_CL must be MI If VEG_TYPE is S then DENSITY_CL must be SA

Attribute	Stand structure
Variable name	**STAND_STRU**
Description	The structure of the prevailing forest cover in treed polygons.
Permitted values/range	For treed polygons: **SNGL** – Single-storied stand **MULT** – Two or more distinct canopy layers **COMP** – Complex, non-distinct layers **UNKN** – Stand structure is not known For non-vegetated or non-treed polygons: **NA** – Not Applicable For unreported: **MI** – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary. **SA** – Stand structure information is missing or not available for this polygon.
Format	Char 4
Rule(s)	Must have value. If LAND_COVER is T then STAND_STRU must be one of SNGL, MULT, or COMP If LAND_COVER is N or LAND_BASE is N then STAND_STRU must be NA If LAND_COVER is M then STAND_STRU must be MI If LAND_COVER is S then STAND_STRU must be SA

Attribute	Soil Moisture regime
Variable name	**SOIL_MOIST**
Description	The average amount of soil water annually available for evapotranspiration by vascular plants over several years.
Permitted values/range	For all polygons: **VD** – Very dry (Soil retains moisture for a negligible period following precipitation and water infiltration is extremely rapid; primary water source is precipitation) **D** – Dry (Soil retains moisture for brief periods following precipitation and water infiltration is very rapid; primary water source is precipitation) **F** – Fresh (Soil retains moisture for moderately short periods following precipitation and water infiltration is moderate; primary water source is precipitation with limited seepage in coarse textured soils) **M** – Moist (Soil is wet for a substantial part of the growing season; seepage is common) **W** – Wet (Water table is at or near soil surface (surface seepage) for most of the year) **VW** – Very wet (Water table is at or above the soil surface all year) **SA** – soil moisture regime information is missing or not available (*where data is extracted from a jurisdictional forest inventory database*) **NA** – Not Applicable (if LAND_BASE is N and density class is one of GL, SC, BR, RT, MS, LB, LL, RP, CB, GP, TS, RR, BP, AP, PM, or OT; or where LAND_COVER is W) For unreported: **MI** – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary.
Format	Char 2
Rule(s)	Must have value. If LAND_COVER is T then SOIL_MOIST must be one of VD, D, F, M, W, or VW (*or SA*) If LAND_BASE is N and DENSITY_CL is one of (GL, SC, BR, RT, MS, LB, LL, RP, CB, GP, TS, RR, BP, AP, PM, or OT) then SOIL_MOIST must be NA If LAND_BASE is V, then SOIL_MOIST <> NA If LAND_COVER is W then SOIL_MOIST must be NA If LAND_COVER is M then SOIL_MOIST must be MI If LAND_COVER is S then SOIL_MOIST must be SA

Attribute	Stand development stage
Variable name	**DEVEL_STAGE**
Description	A description of the changes of forest stand structure over time.(Source: https://sites.google.com/site/forestryencyclopedia/Home/Stand%20Development, http://forestry.sfasu.edu/faculty/stovall/silviculture/index.php/silviculture-textbook-sp-9418/157-stand-structure)
Permitted values/range	For treed polygons: **SI** – Stand initiation (the stage of stand development following a catastrophic disturbance when new individuals and species appear at a site. In this stage, stands consist of small trees and herbs with growing space available for all trees, and trees grow at roughly the same pace) **SE** – Stem exclusion (the stage of stand development occurring after several years, when new individuals cease to appear or appear infrequently, some existing individuals die, and other individuals grow larger and express differences in height and diameter. In this stage stands have a closed canopy and there is intense competition among trees and relatively little understorey vegetation) **UR** – Understorey reinitiation (the stage of stand development during which herbs, shrubs, and "advance regeneration" appear and survive in the understorey, but grow very little. These stands are beginning to develop increased structural complexity, provide habitat for species using shrubs and understorey trees, but are often lacking in large trees and snags) **CO** – Complex/old growth (the stage of stand development during which overstorey trees die in an irregular fashion, and some of the understorey trees begin growing in the overstorey; coniferous old-growth stands in the Pacific Northwest are typified by large diameter trees, large diameter snags, large diameter logs on the forest floor, and a multi-storied canopy. These stands have increased structural complexity for wildlife, habitat for species using shrubs and understorey trees, and habitat for species that need large trees and snags) **IN –** Intermediate-aged, low density (treed areas which are no longer young enough for Stand Initiation, nor sufficiently old or structurally complex to be described by the Complex/Old Growth development stage. These stands do not experience competition with other trees (low canopy closure/density), and are typically found on rock outcrops or wet conditions) For non-treed or non-vegetated polygons: **NA** – Not Applicable For unreported: **MI** – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary. **SA** – Development stage information is missing or not available for this polygon.
Format	Char 2
Rule(s)	Must have value. If LAND_COVER is T then DEVEL_STAGE must be one of SI, SE, UR, CO, or IN (or SA) If LAND_COVER is N or LAND_BASE is N then DEVEL_STAGE must be NA If LAND_COVER is M then DEVEL_STAGE must be MI If LAND_COVER is S then DEVEL_STAGE must be SA

5. STAND LAYER HEADER INFORMATION

CSV filename: xx_pp_std_lyr_head.csv where xx is the juris_id code

Primary Key: JURIS_ID, NFI_PLOT, POLY_ID, SAMPLE_DATE, LAYER_RK.

There will be a record in this table for each forested layer in a polygon.

Attribute	Jurisdiction identifier
Variable name	**JURIS_ID**
Description	The Canada Post two-letter abbreviation for each province and territory.
Permitted values/range	AB, BC, SK, MB, ON, QC, NB, NS, PE, NL, YT, NT, NU
Format	Char 2
Rule(s)	Must have value.

Attribute	Network label
Variable name	**NFI_PLOT**
Description	The numeric National Forest Inventory label that identifies the point on the network associated with the photo plot. The NFI project office will provide network labels.
Permitted values/range	**1 to 1600000**
Format	Num 7
Rule(s)	Must have value.

Attribute	Polygon identifier
Variable name	**POLY_ID**
Description	The unique identifier assigned to each land cover polygon delineated on the photo plot. No duplicate polygon numbers are allowed.
Permitted values/range	
Format	Char 20
Rule(s)	Must have value.

Attribute	Sampling date
Variable name	**SAMPLE_DATE**
Description	The date the NFI sample plot was populated.
Permitted values/range	**Last measurement date to present**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. SAMPLE_DATE ≥ last measurement date and SAMPLE_DATE ≤ Present Date

Attribute	Date of information
Variable name	**INFO_DATE**
Description	The date the image was taken (interpreted data) or the date the data was modeled to (modeled data).
Permitted values/range	**2007 to present.**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. 2007-JAN-01 ≤ INFO_DATE ≤ SAMPLE_DATE

Attribute	Source of information
Variable name	**INFO_SOURCE**
Description	The source of information.
Permitted values/range	The following codes must be used: **I** – Interpreted from aerial photography **U** – Updated from disturbance **M** – Modeled **S** – Data from ground survey **O** – Other
Format	Char 1
Rule(s)	Must have value.

Attribute	Modeled year
Variable name	**MODEL_YR**
Description	The year used to initiate the modeling (e.g. the year the original aerial photography was acquired). -1: Missing. Null: Not applicable.
Permitted values/range	**1900 to present** **-1** – Where model year is missing **Null** – Model year not applicable
Format	Num 4
Rule(s)	If INFO_SOURCE is M then MODEL_YR must have a value and MODEL_YR must be less than or equal to the year of INFO_DATE. If INFO_SOURCE is not M then MODEL_YR must be null Must have value.

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Attribute	Layer rank
Variable name	**LAYER_RK**
Description	The rank of the layer in terms of dominance. Rank 1 is the most dominant.
Permitted values/range	**1 to 10**
Format	Num 2
Rule(s)	If STAND_STRU is SNGL then LAYER_RK must be 1 If LAYER_RK is more than 1, then STAND_STRU must be one of COMP or MULT Must have value.

Attribute	Crown closure
Variable name	**CLOSURE**
Description	The percentage of ground area covered by the vertical projection of tree crown areas for each layer in the polygon. Crown closure of the layer in percent.
Permitted values/range	**1 to 100**
Format	Num 3
Rule(s)	If STAND_STR is SNGL then CLOSURE must be 5 or more. If LAND_BASE is Vegetated and VEG_TYPE is one of (SL, ST, HE, HF, HG, BY, BM, BL) then CLOSURE may be less than 5%. Must have value.

Attribute	Tree species criteria
Variable name	**LEAD_CRITR**
Description	Quantitative criteria used to rank species occurrence
Permitted values/range	**CA** – Crown area **VL** – Volume **BA** – Basal area **CT** – Stem count **Null** – May apply to vegetated non-treed
Format	Char 2
Rule(s)	If LAND_COVER is T then LEAD_CRITR must have value.

Attribute	Leading tree species age
Variable name	**LEAD_SP_AGE**
Description	Leading tree species age in the layer, in years
Permitted values/range	**1 to 2000** years **-1** – Age is missing **-9** – Age is not applicable (may apply to vegetated non-treed conditions)
Format	Num 4
Rule(s)	Must have value. LEAD_SP_AGE must be the same as SPECIES_NUM 1 age. If AGE = -1, then LEAD_SP_AGE = SPECIES_NUM 1 MAX_AGE.

Attribute	Age determination
Variable name	**AGE_DETM**
Description	Method used to determine age.
Permitted values/range	**CAL** – Calculated **OCC** – Photo interpreted estimate **REC** – Forest management records **GND** – Ground plot data **OTH** – Other historic evidence
Format	Char 3
Rule(s)	It must have a value if there is an associated record in Stand Layer Tree Species for which age, or min_age and max_age have values.

Attribute	Age definition
Variable name	**AGE_DEFN**
Description	Definition of age.
Permitted values/range	**ABH** – Age at breast height **AFS** – Age from seed **AES** – Age from establishment
Format	Char 3
Rule(s)	It must have a value if there is an associated record in Stand Layer Tree Species for which age, or min_age and max_age have values.

Attribute	Total layer volume
Variable name	**LAYER_VOL**
Description	Total volume in m^3 per hectare for all trees in the polygon (>1.3 m tall). Zero volume is only allowed where trees ≤ 1.3 m tall. Derived from photo estimates of species, height, basal area, etc. or appropriate volume equations/models. Can use relationship from ground plots to determine volume of smaller trees and windfalls. Report volume to the nearest 1 m^3/ha.
Permitted values/range	**0** – where trees are less than 1.3 m tall **1 to 3000**
Format	Num 4
Rule(s)	If LAND_COVER is T and max(HEIGHT) is more than 1.3 then LAYER_VOL must be greater than 0. -1 – LAYER_VOL is missing (for plots completed by NFI contractors) If CLOSURE < 10%, then LAYER_VOL *may* be 0 (permissible only for older Alberta Biodiversity Monitoring Institute data) Must have value.

The volume type field exists in the database but does not exist in the First Remeasurement stand layer header table submitted by the jurisdiction and NFI contractors. This field is populated in the database by the NFI project office.

<table>
<tr><td>Attribute</td><td>Volume type</td></tr>
<tr><td>Variable name</td><td>VOL_TYPE</td></tr>
<tr><td>Description</td><td>Specifies the type of volume in the LAYER_VOL column. The following provides the NFI definition for the three values permitted for this column; gross total volume (GTV), gross merchantable volume (GMV) and net merchantable volume (NMV). It also summarizes the main features of the volumes described in the Volume Survey completed by the jurisdictions and assigns the nearest equivalent volume type (vol_type) that applies.
<table>
<tr><th>Juris</th><th>Definition</th><th>Vol_type</th></tr>
<tr><td>NFI</td><td>Gross Total Volume (GTV) – all stemwood inside bark for trees >1.3m in ht (0.1cm dbh), including stump, top, fallen live, standing dead, fallen dead (roots attached) and non-commercial species (NC).</td><td>GTV</td></tr>
<tr><td>NFI</td><td>Gross Merchantable Volume (GMV)- all stemwood inside bark for trees to merchantable dbh limit, less stump and top, including fallen live, sound standing dead and sound fallen dead (roots attached).</td><td>GMV</td></tr>
<tr><td>NFI</td><td>Net Merchantable Volume (NMV) - all stemwood inside bark for trees to merchantable dbh limit, less stump and top, volume lost to decay, waste and breakage (DWB); including fallen live, sound standing dead and sound fallen dead (roots attached).</td><td>NMV</td></tr>
<tr><td>BC</td><td>Volume to 7.5 cm dbh, excluding stump, fallen live and fallen dead.</td><td>GMV</td></tr>
<tr><td>SK</td><td>Volume to 0.1 cm dbh, excluding fallen live, standing dead, fallen dead and NC.</td><td>GTV</td></tr>
<tr><td>ON</td><td>Volume outside bark to 1.5 cm dbh, excluding standing dead, fallen dead and NC.</td><td>GTV</td></tr>
<tr><td>NB</td><td>Volume outside bark to 0.1 cm dbh excluding fallen dead.</td><td>GTV</td></tr>
<tr><td>NL</td><td>Volume to 9 cm dbh, excluding standing dead, fallen dead and NC</td><td>GMV</td></tr>
<tr><td>AB</td><td>Volume to 10 cm dbh (15 cm DOB stump), excluding fallen live, standing dead, fallen dead and NC.</td><td>GMV</td></tr>
<tr><td>QC</td><td>Volume to 9.1 cm dbh, excluding standing dead, fallen dead and NC.</td><td>GMV</td></tr>
<tr><td>PE</td><td>Volume to 6 cm dbh, excluding fallen live, standing dead, fallen dead; including NC.</td><td>GMV</td></tr>
<tr><td>MB</td><td>Volume to 11 cm dbh, excluding standing dead, fallen dead, DWB, and NC</td><td>NMV</td></tr>
<tr><td>NS</td><td>Volume to 0.1 cm dbh, excluding fallen live, standing dead, fallen dead and NC.</td><td>GTV</td></tr>
<tr><td>NT</td><td>Volume to 7 cm dbh (13 cm DOB stump), excluding standing dead, fallen dead and NC.</td><td>GMV</td></tr>
</table></td></tr>
<tr><td>Permitted values/range</td><td>GTV, GMV, NMV</td></tr>
<tr><td>Format</td><td>Char 3</td></tr>
<tr><td>Rule(s)</td><td>May be blank if LAYER_VOL is -1</td></tr>
</table>

5a. STAND LAYER TREE SPECIES

CSV filename: xx_pp_std_lyr_tree_sp.csv where xx is the juris_id code
Primary Key: JURIS_ID, NFI_PLOT, POLY_ID, SAMPLE_DATE, LAYER_RK, SPECIES_NUM.

Attribute	Jurisdiction identifier
Variable name	**JURIS_ID**
Description	The Canada Post two-letter abbreviation for each province and territory.
Permitted values/range	AB, BC, SK, MB, ON, QC, NB, NS, PE, NL, YT, NT, NU
Format	Char 2
Rule(s)	Must have value.

Attribute	Network label
Variable name	**NFI_PLOT**
Description	The numeric National Forest Inventory label that identifies the point on the network associated with the photo plot. The NFI project office will provide network labels.
Permitted values/range	**1 to 1600000**
Format	Num 7
Rule(s)	Must have value.

Attribute	Polygon identifier
Variable name	**POLY_ID**
Description	The unique identifier assigned to each land cover polygon delineated on the photo plot. No duplicate polygon numbers are allowed.
Permitted values/range	
Format	Char 20
Rule(s)	Must have value.

Attribute	Layer rank
Variable name	**LAYER_RK**
Description	The rank of the layer in terms of dominance. Rank 1 is the most dominant.
Permitted values/range	**1 to 10**
Format	Num 2
Rule(s)	LAND_BASE must be V (vegetated); If STAND_STRU = 'SNGL' THEN LAYER_RK = 1 If LAYER_RK is more than 1, then STAND_STRU must be one of COMP or MULT Must have value.

Attribute	Sampling date
Variable name	**SAMPLE_DATE**
Description	The date the NFI sample plot was populated.
Permitted values/range	**Last measurement date to present**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. SAMPLE_DATE ≥ last measurement date and SAMPLE_DATE ≤ Present Date

Attribute	Date of information
Variable name	**INFO_DATE**
Description	The date the image was taken (interpreted data) or the date the data was modeled to (modeled data).
Permitted values/range	**2007 to present.**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. 2007-JAN-01 ≤ INFO_DATE ≤ SAMPLE_DATE

Attribute	Source of information
Variable name	**INFO_SOURCE**
Description	The source of information
Permitted values/range	**I** – Interpreted from aerial photography **U** – Updated from disturbance records **M** – Modeled **S** – Data from ground survey **O** – Other
Format	Char 1
Rule(s)	Must have value.

Attribute	Tree species number
Variable name	**SPECIES_NUM**
Description	Identifies species rank in the layer, based on the percentage of species abundance
Permitted values/range	**1** – Largest tree species percent value in the layer **10** – Smallest tree species percent value in the layer
Format	Num 2
Rule(s)	SPECIES_NUM must be in consecutive ascending order starting from 1, with 1 having the highest PERCENT, 2 the next highest PERCENT, etc. to the smallest PERCENT If there is an entry which SPECIES_NUM greater than 1, then there must be an entry which has SPECIES_NUM-1. Must have value.

Attribute	Tree genus
Variable name	**GENUS**
Description	For the purposes of this inventory attribute, a tree is defined as a woody plant, usually with a single stem and a definite crown that is capable of reaching a mature height of 5 m somewhere within its natural range. Use the first 4 letters of the scientific genus name. If unknown conifer use GENC, if unknown hardwood use GENH.
Permitted values/range	**Refer to *NFI Tree List* (Appendix 5) for the valid combinations of genus\species\variety**
Format	Char 4
Rule(s)	Must have value.

Attribute	Tree species
Variable name	**SPECIES**
Description	For the purposes of this inventory attribute, a tree is defined as a woody plant, usually with a single stem and a definite crown, which is capable of reaching a mature height of 5 m somewhere within its natural range. Use the first 3 letters of the scientific species name. If unknown, use code SPP.
Permitted values/range	**Refer to *NFI Tree List* (Appendix 5) for the valid combinations of genus\species\variety**
Format	Char 3
Rule(s)	Must have value.

Attribute	Tree variety
Variable name	**VARIETY**
Description	For the purposes of this inventory attribute, a tree is defined as a woody plant, usually with a single stem and a definite crown that is capable of reaching a mature height of 5 m somewhere within its natural range. Use the first 3 letters of the scientific subspecies name.
Permitted values/range	**Refer to *NFI Tree List* (Appendix 5) for the valid combinations of genus\species\variety**
Format	Char 3
Rule(s)	May be blank if there is no variety.

Attribute	Tree species percent
Variable name	**PERCENT**
Description	Percentage of species in the polygon by layer. Record to the nearest percent or tenth of a percent.
Permitted values/range	**0.1 to 100.0**
Format	Dec 4.1
Rule(s)	Must have value. Sum of tree species percent inside polygon (by layer) must be 100. Ranges: SPECIES_NUM=1, 10.0 <= PERCENT <= 100.0 SPECIES_NUM=2, 0.1 <= PERCENT <= 50.0 SPECIES_NUM=3, 0. 1 <= PERCENT <= 33.0 SPECIES_NUM=4, 0.1 <= PERCENT <= 25.0 SPECIES_NUM=5, 0.1 <= PERCENT <= 20.0 SPECIES_NUM=6, 0.1 <= PERCENT <= 16.0 SPECIES_NUM=7, 0.1 <= PERCENT <= 14.0 SPECIES_NUM=8, 0.1 <= PERCENT <= 12.0 SPECIES_NUM=9, 0.1 <= PERCENT <= 11.0 SPECIES_NUM=10, 0.1 <= PERCENT <= 10.0 The percent of each species must be greater than or equal to the next species (by species number).

Attribute	Tree height
Variable name	**HEIGHT**
Description	The average height by species. Recorded to the nearest 0.1 **m**.
Permitted values/range	**0.1 to 200.9**
Format	Dec 4.1
Rule(s)	Must have value. If CLOSURE < 10% then height may be -1 or -1.0 (permissible only for older Alberta Biodiversity Monitoring Institute data) Must fall within specified ranges.

Attribute	Age
Variable name	**AGE**
Description	The average age of the species in the layer (maximum of 10). Age is determined using local procedures. Sources could include ground plot data, ocular estimate, management records, or other historic evidence. Recorded to the nearest year. Age is estimated for each species in each layer.
Permitted values/range	**1 to 3000**. **-1** when AGE_MIN and AGE_MAX are used
Format	Num 4
Rule(s)	-1 if (MIN_AGE and MAX_AGE) both have values or (CLOSURE < 10% and age is unavailable – permissible only for older Alberta Biodiversity Monitoring Institute data) Should have value if (MIN_AGE and MAX_AGE) are both -1.

Attribute	Minimum Age
Variable name	**MIN_AGE**
Description	The minimum age of the species in the polygon layer. Minimum age is indicated by entering the age interval (minimum and maximum). Estimate minimum age of the species for each polygon layer.
Permitted values/range	**1 to 3000**. **-1** when AGE has a value
Format	Num 4
Rule(s)	If MIN_AGE has value, then MAX_AGE must have value MIN_AGE < MAX_AGE -1 if AGE has value or (CLOSURE < 10% and age is unavailable – permissible only for older Alberta Biodiversity Monitoring Institute data)

Attribute	Maximum age
Variable name	**MAX_AGE**
Description	The maximum age of the species in the polygon layer. Maximum age is indicated by entering the age interval (minimum and maximum). Estimate maximum age of the species for each polygon layer.
Permitted values/range	**1 to 3000**. **-1** when AGE has a value
Format	Num 4
Rule(s)	IF MAX_AGE has value, MIN_AGE must have value MAX_AGE > MIN_AGE -1 if AGE has value or (CLOSURE < 10% and age is unavailable – permissible only for older Alberta Biodiversity Monitoring Institute data)

Attribute	Exotic species
Variable name	**EXOTIC**
Description	Tree species that are outside of their natural vegetation zone, area or region. This also includes non-local seed sources. Exotic tree species could include those listed in section 3 (Exotics) of *NFI Tree List (Appendix 3)*, but could also include any tree species listed in section 1 or 2 (of the tree list), if the trees are exotic to the plot location.
Permitted values/range	**Y** – Yes, the species is exotic to the plot location **N**.- No, the species is not exotic to the plot location
Format	Char 1
Rule(s)	IF EXOTIC = Y, then EXOTIC_SOURCE must have value Must have a value

Attribute	Exotic species source
Variable name	**EXOTIC_SOURCE**
Description	Origin of exotic tree species and non-local provenances.
Permitted values/range	The provinces and territories will use their **two-letter variable names** and countries will use their internet country domain name preceded by a period (e.g., BC, AB, SK, .CA).
Format	Char 3
Rule(s)	IF EXOTIC = Y, then EXOTIC_SOURCE must have value Must be null if EXOTIC = N

5b. STAND LAYER ORIGIN

CSV filename: xx_pp_std_lyr_origin.csv where xx is the juris_id code

Primary Key: JURIS_ID, NFI_PLOT, POLY_ID, SAMPLE_DATE, LAYER_RK, STAND_ORIG, REGEN_TYPE, REGEN_YR.

Attribute	Jurisdiction identifier
Variable name	**JURIS_ID**
Description	The Canada Post two-letter abbreviation for each province and territory.
Permitted values/range	AB, BC, SK, MB, ON, QC, NB, NS, PE, NL, YT, NT, NU
Format	Char 2
Rule(s)	Must have value.

Attribute	Network label
Variable name	**NFI_PLOT**
Description	The numeric National Forest Inventory label that identifies the point on the network associated with the photo plot. The NFI project office will provide network labels.
Permitted values/range	**1 to 1600000**
Format	Num 7
Rule(s)	Must have value.

Attribute	Polygon identifier
Variable name	**POLY_ID**
Description	The unique identifier assigned to each land cover polygon delineated on the photo plot. No duplicate polygon numbers are allowed.
Permitted values/range	
Format	Char 20
Rule(s)	Must have value.

Attribute	Layer rank
Variable name	**LAYER_RK**
Description	The rank of the layer in terms of dominance. Rank 1 is the most dominant. Must be the same as the layer rank in stand layer header.
Permitted values/range	**1 to 10**
Format	Num 2
Rule(s)	IF STAND_STRU = 'SNGL' THEN LAYER_RK = 1 If LAYER_RK is more than 1, then STAND_STRU must be one of COMP or MULT Must have value.

Attribute	Sampling date
Variable name	**SAMPLE_DATE**
Description	The date the NFI sample plot was populated.
Permitted values/range	**Last measurement date to present**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. SAMPLE_DATE ≥ last measurement date and SAMPLE_DATE ≤ Present Date

Attribute	Date of information
Variable name	**INFO_DATE**
Description	The date the image was taken (interpreted data) or the date the data was modeled to (modeled data).
Permitted values/range	**2007 to present.**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. 2007-JAN-01 ≤ INFO_DATE ≤ SAMPLE_DATE

Attribute	Source of information
Variable name	**INFO_SOURCE**
Description	The source of information
Permitted values/range	**I** – Interpreted from aerial photography **U** – Updated from disturbance records **M** – Modeled **S** – Data from ground survey **O** – Other
Format	Char 1
Rule(s)	Must have value.

Attribute	Vegetation cover origin
Variable name	**STAND_ORIG**
Description	Origin of the vegetation cover in the layer
Permitted values/range	**FIRE** – Vegetation cover in the layer originated following fire **HARV** – Vegetation cover in the layer originated following harvest **DIST** – Vegetation cover in the layer originated following disturbance other than fire or harvesting **AFOR** – Vegetation cover in the layer originated due to afforestation **SUCC** – Vegetation cover in the layer originated following natural succession **UNKN** – Vegetation cover origin in the layer is not known
Format	Char 4
Rule(s)	Must have value.

Attribute	Regeneration type
Variable name	**REGEN_TYPE**
Description	The continuous renewal of a forest stand (i.e., establishment of new young trees) by natural or artificial means:
Permitted values/range	**NAT** – New young trees are the result of natural regeneration **SUP** – New young trees are the result of natural regeneration, supplemented with planting (less than 50% of the trees) **PLA** – New young trees are planted by human agents **SOW** – New young trees are from seeds spread by human agents
Format	Char 3
Rule(s)	Must have value.

Attribute	Regeneration year
Variable name	**REGEN_YR**
Description	An estimate of the year of regeneration in the polygon layer. Regeneration year must be related to tree cover origin.
Permitted values/range	**1400 to present year** **-1** – Regeneration year is not known
Format	Num 4 [YYYY]
Rule(s)	Must have value. Earliest REGEN_YR (in the layer) + [MAX(AGE (m)) OR MAX(MAX_AGE (m)) of stand layer tree species] = year of INFO_DATE. * (m) refers to all species in the same stand layer e.g. all stand layer tree species records which belong to the same stand layer.

6. STAND LAYER TREATMENT

CSV filename: xx_pp_std_lyr_treatment.csv where xx is the juris_id code
Primary Key: JURIS_ID, NFI_PLOT, POLY_ID, SAMPLE_DATE, LAYER_RK, TREAT_TYPE, TREAT_YR.

Attribute	Jurisdiction identifier
Variable name	**JURIS_ID**
Description	The Canada Post two-letter abbreviation for each province and territory.
Permitted values/range	AB, BC, SK, MB, ON, QC, NB, NS, PE, NL, YT, NT, NU
Format	Char 2
Rule(s)	Must have value.

Attribute	Network label
Variable name	**NFI_PLOT**
Description	The numeric National Forest Inventory label that identifies the point on the network associated with the photo plot. The NFI project office will provide network labels.
Permitted values/range	**1 to 1600000**
Format	Num 7
Rule(s)	Must have value.

Attribute	Polygon identifier
Variable name	**POLY_ID**
Description	The unique identifier assigned to each land cover polygon delineated on the photo plot. No duplicate polygon numbers are allowed.
Permitted values/range	
Format	Char 20
Rule(s)	Must have value.

Attribute	Layer rank
Variable name	**LAYER_RK**
Description	The rank of the layer in terms of dominance. Rank 1 is the most dominant.
Permitted values/range	**1 to 10**
Format	Num 2
Rule(s)	IF STAND_STRU = 'SNGL' THEN LAYER_RK = 1 If LAYER_RK is more than 1, then STAND_STRU must be one of COMP or MULT Must have value.

Attribute	Sampling date
Variable name	**SAMPLE_DATE**
Description	The date the NFI sample plot was populated.
Permitted values/range	**Last measurement date to present**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. SAMPLE_DATE ≥ last measurement date and SAMPLE_DATE ≤ Present Date

Attribute	Date of information
Variable name	**INFO_DATE**
Description	The date the image was taken (interpreted data) or the date the data was modeled to (modeled data).
Permitted values/range	**2007 to present.**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. 2007-JAN-01 ≤ INFO_DATE ≤ SAMPLE_DATE

Attribute	Source of information
Variable name	**INFO_SOURCE**
Description	The source of information
Permitted values/range	**I** – Interpreted from aerial photography **U** – Updated from disturbance records **S** – Data from ground survey **O** – Other
Format	Char 1
Rule(s)	Must have value.

Attribute	Treatment type
Variable name	**TREAT_TYPE**
Description	An activity or treatment that occurred in the specific layer of a forest stand
Permitted values/range	**CC** – Clear cut (stand has been harvested in full (more than 80% of the crown area of the previous forest cover has been removed)) **PC** – Partial cut (stand has been harvested in part (less than 80% of the crown area of the previous forest cover has been removed)) **DC** – Deforestation (stand has had 100% of the trees removed and the land has been converted or is undergoing conversion to non-forest use) **CL** – Cleaning (stand has been cleaned, brushed, or weeded) **SP** – Juvenile spacing (removing young trees to alter the number of stems in a stand **PR** – Pruning (individual stems have had lower branches removed) **PT** – Pre-commercial thinning (stand has had a thinning to improve crop spacing that does not yield trees of commercial value) **CT** – Commercial thinning (an older immature stand has been partially cut) **FT** – Fertilization (stand has been fertilized) **MP** – Mechanical site preparation (stand has undergone lopping and scattering, crushing, windrowing, ploughing, harrowing, or disc trenching to provide favourable conditions for planting or direct seeding) **PB** – Prescribed burning (stand has been burned in order to provide favourable conditions for planting or direct seeding, or to accomplish other predetermined forest management or other land use objectives) **OT** – Other activity (stand has undergone a silvicultural treatment not listed above)
Format	Char 2
Rule(s)	Must have value.

Attribute	Treatment year
Variable name	**TREAT_YR**
Description	An estimate of the year of treatment since last measurement. Treatment year must be related to treatment.
Permitted values/range	**Last measurement year to present year. At most 19 years before the year of the SAMPLE_DATE** unless the harvest event was not captured in the previous measurement.
Format	Num 4 [YYYY]
Rule(s)	Must have value. (Year of SAMPLE_DATE – 19) <= TREAT_YR <= Year of SAMPLE_DATE INFO_DATE >= TREAT_YR

Attribute	Treatment extent
Variable name	**TREAT_PERCT**
Description	Extent of treatment expressed as a percent of area.
Permitted values/range	**1 to 100**
Format	Num 3
Rule(s)	Must have value.

7. STAND LAYER DISTURBANCE

CSV filename: xx_pp_std_lyr_disturbance.csv where xx is the juris_id code
Primary Key: JURIS_ID, NFI_PLOT, POLY_ID, SAMPLE_DATE, LAYER_RK, DIST_AGENT, DIST_YR.

Attribute	Jurisdiction identifier
Variable name	**JURIS_ID**
Description	The Canada Post two-letter abbreviation for each province and territory.
Permitted values/range	AB, BC, SK, MB, ON, QC, NB, NS, PE, NL, YT, NT, NU
Format	Char 2
Rule(s)	Must have value.

Attribute	Network label
Variable name	**NFI_PLOT**
Description	The numeric National Forest Inventory label that identifies the point on the network associated with the photo plot. The NFI project office will provide network labels.
Permitted values/range	**1 to 1600000**
Format	Num 7
Rule(s)	Must have value.

Attribute	Polygon identifier
Variable name	**POLY_ID**
Description	The unique identifier assigned to each land cover polygon delineated on the photo plot. No duplicate polygon numbers are allowed.
Permitted values/range	
Format	Char 20
Rule(s)	Must have value.

Attribute	Layer rank
Variable name	**LAYER_RK**
Description	The rank of the layer in terms of dominance. Rank 1 is the most dominant.
Permitted values/range	**1 to 10**
Format	Num 2
Rule(s)	IF STAND_STRU = 'SNGL' THEN LAYER_RK = 1 If LAYER_RK is more than 1, then STAND_STRU must be one of COMP or MULT Must have value.

Attribute	Sampling date
Variable name	**SAMPLE_DATE**
Description	The date the NFI sample plot was populated.
Permitted values/range	**Last measurement date to present**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. SAMPLE_DATE ≥ last measurement date and SAMPLE_DATE ≤ Present Date

Attribute	Date of information
Variable name	**INFO_DATE**
Description	The date the image was taken (interpreted data) or the date the data was modeled to (modeled data).
Permitted values/range	**2007 to present.**
Format	Date 11 [YYYY-MON-DD]
Rule(s)	Must have value. 2007-JAN-01 ≤ INFO_DATE ≤ SAMPLE_DATE

Attribute	Source of information
Variable name	**INFO_SOURCE**
Description	The source of information
Permitted values/range	**I** – Interpreted from aerial photography **U** – Updated from disturbance records **S** – Data from ground survey **O** – Other
Format	Char 1
Rule(s)	Must have value.

Attribute	Natural disturbance agent
Variable name	**DIST_AGENT**
Description	Agents of natural disturbance. Disturbance: a discreet force that has caused significant change in structure and/or composition of the forest polygon (e.g. a change resulting in the normal growth pattern of the forest being significantly reduced).
Permitted values/range	**FIRE** – Layer has experienced a significant fire **WIND** – Vegetation in layer has experienced wind throw **SNOW** – Vegetation in layer had experienced significant snow damage **INSECT** – Vegetation in layer has experienced significant insect attack (note that it can take several years of defoliation to do permanent damage to a tree – the threshold for significant defoliation varies with pest) **DISEASE** – Vegetation in layer has experienced significant disease outbreak **EROSION** – Wearing away of soil by any natural process that causes a significant removal of tree cover over a large area, includes land slides, avalanches, and slumping **ICE** – Vegetation in layer has experienced ice damage **ANIMAL** – Vegetation in layer has experienced damage due to animals, such as beavers or racoons **FLOOD** – Vegetation in layer has experienced damage due to flooding (may be due to beaver dams) **OTHER** – Vegetation in layer has experienced other disturbances
Format	Char 10
Rule(s)	Must have value.

Attribute	Disturbance year
Variable name	**DIST_YR**
Description	An estimate of the year of the disturbance since last remeasurement. Disturbance year must be related to disturbance agent.
Permitted values/range	**Last measurement year to present year. At most 19 years before the year of the SAMPLE_DATE**, unless the disturbance was not captured in the previous measurement.
Format	Num 4 [YYYY]
Rule(s)	Must have value. (Year of SAMPLE_DATE – 19) <= DIST_YR <= Year of SAMPLE_DATE INFO_DATE >= DIST_YR

Attribute	Extent of disturbance
Variable name	**DIST_PERCT**
Description	Disturbance: a discreet force that has caused significant change in structure and/or composition of the forest polygon (e.g. a change resulting in the normal growth pattern of the forest being significantly reduced). Extent of disturbance measured in percentage of area.
Permitted values/range	**1 to 100**
Format	Num 3
Rule(s)	Must have value.

Attribute	Extent of tree mortality
Variable name	**MORT_PERCT**
Description	Extent of tree mortality, within disturbed area, in percent.
Permitted values/range	**0 to 100**
Format	Num 3
Rule(s)	Must have value

Attribute	Mortality basis
Variable name	**MORT_BASIS**
Description	Basis for mortality extent:
Permitted values/range	**VL** – Tree volume
	BA – Basal area
	CA – Crown area
	ST – Stem count
	AR – Area
Format	Char 2
Rule(s)	Must have value if MORT_PERCT > 0. Blank if MORT_PERCT = 0

Attribute	Specific disturbance agent
Variable name	**AGENT_TYPE**
Description	Significant event affecting more than 0.5 hectare in the polygon layer. Name of suspected disturbance agent (eg. Armillaria, spruce budworm)
Permitted values/range	**A field for comments – some values entered at baseline establishment include:**
	Flooding due to beaver activity
	Deforestation by forest fire
	Dead tops – unknown cause
	Disease – unknown agent
	Partial deforestation by forest fire
	Spruce budworm
	Wind
	Fire
	Weather – red belt
	Abandoned farmland, clearing
	Pine sawfly
	Armillaria
	Natural erosion caused by soil instability.
	Erosion caused by surface water runoff.
	Erosion caused by avalanche.
	Erosion caused by harvesting operations (including roads).
	Erosion caused by heavy equipment traffic.
	Erosion caused by road construction (other than harvest roads).
	Erosion caused by mining.
	Erosion caused by forest fire.
	Erosion caused by wind
	Other causes of erosion or cause not understood
Format	Char 50
Rule(s)	Could be blank.

Compiled Data

The following provides a list of the attributes in the compiled data tables that are created by the NFI photo plot compiler. Users of the data in these tables are referred to the Photo Plot Compilation Procedures document on the NFI website (nfi.nfis.org) for computation methods used to generate the compiled data.

Table Structure

8. POLYGON SUMMARY

Database table name: pp_poly_summ

	Description (Units)	Field Name	Format	Primary Key	Not Null
1	jurisdiction identifier	JURIS_ID	Char 2	Y	Y
2	network label	NFI_PLOT	Num 7	Y	Y
3	polygon identifier	POLY_ID	Char 20	Y	Y
4	total volume (m^3/ha)	VOL	Num 4	N	Y
5	merchantable volume (m^3/ha)	VOL_MERCH	Num 4	N	Y
6	crown closure (%)	CLOSURE	Num 3	N	Y
7	site age (years)	SITE_AGE	Num 4	N	Y
8	site height (metres)	SITE_HEIGHT	Dec 4.1	N	Y
9	site index (metres)	SITE_INDEX	Dec 4.1	N	N
10	stem wood biomass (tonnes/ha)	BIOMASS_STEM_WOOD	Dec 8.3	N	N
11	bark biomass (tonnes/ha)	BIOMASS_STEM_BARK	Dec 8.3	N	N
12	branch biomass (tonnes/ha)	BIOMASS_BRANCHES	Dec 8.3	N	N
13	foliage biomass (tonnes/ha)	BIOMASS_FOLIAGE	Dec 8.3	N	N
14	total live biomass (tonnes/ha)	BIOMASS_TOTAL_LIVE	Dec 8.3	N	N
15	total dead biomass (tonnes/ha)	BIOMASS_TOTAL_DEAD	Dec 8.3	N	N

9. DISTURBANCE SUMMARY

Database table name: pp_stand_disturbance

Field	Description (Units)	Field Name	Format	Primary Key	Not Null
1	jurisdiction identifier	JURIS_ID	Char 2	Y	Y
2	network label	NFI_PLOT	Num 7	Y	Y
3	polygon identifier	POLY_ID	Char 20	Y	Y
4	disturbance agent	DIST_AGENT	Char 10	Y	Y
5	area disturbed (ha)	DIST_AREA	Dec 7.4	N	Y
6	extent disturbed (%)	DIST_PERCT	Num 3	N	Y
7	extent of mortality (%)	SEVER_PERCT	Num 3	N	Y
8	year of disturbance	DIST_YR	Num 4	N	N

10. TREATMENT SUMMARY

Database table name: pp_stand_treatment

Field	Description (Units)	Field Name	Format	Primary Key	Not Null
1	jurisdiction identifier	JURIS_ID	Char 2	Y	Y
2	network label	NFI_PLOT	Num 7	Y	Y
3	polygon identifier	POLY_ID	Char 20	Y	Y
4	type of treatment	TREAT_TYPE	Char 2	Y	Y
5	area of treatment (ha)	TREAT_AREA	Dec 7.4	N	Y
6	year of treatment	TREAT_YR	Num 4	N	N

11. ORIGIN SUMMARY

Database table name: pp_stand_origin

Field	Description (Units)	Field Name	Format	Primary Key	Not Null
1	jurisdiction identifier	JURIS_ID	Char 2	Y	Y
2	network label	NFI_PLOT	Num 7	Y	Y
3	polygon identifier	POLY_ID	Char 20	Y	Y
4	afforestation origin (ha)	ORIG_AFOR	Dec 7.4	N	Y
5	succession origin (ha)	ORIG_SUCC	Dec 7.4	N	Y
6	harvest origin (ha)	ORIG_HARV	Dec 7.4	N	Y
7	other disturbance origin (ha)	ORIG_DIST	Dec 7.4	N	Y
8	natural regeneration origin (ha)	REGEN_NAT	Dec 7.4	N	Y
9	natural regeneration and supplemental planting origin (ha)	REGEN_SUP	Dec 7.4	N	Y
10	planting origin (ha)	REGEN_PLA	Dec 7.4	N	Y
11	seeding origin (ha)	REGEN_SOW	Dec 7.4	N	Y

12. TREE SPECIES SUMMARY

Database table name: pp_tree_species_comp

Field	Description (Units)	Field Name	Format	Primary Key	Not Null	
1	jurisdiction identifier	JURIS_ID	Char 2	Y	Y	
2	network label	NFI_PLOT	Num 7	Y	Y	
3	polygon identifier	POLY_ID	Char 20	Y	Y	
4	species number	SPECIES_NUM	Num 2	Y	Y	*New field*
5	tree genus	GENUS	Char 4	N	Y	
6	tree species	SPECIES	Char 3	N	Y	
7	tree variety	VARIETY	Char 3	N	N	
8	composition (%)	PERCENT	Num 3	N	Y	

Data Dictionary – Compiled Data Tables

8. POLYGON SUMMARY

Database table name: pp_poly_summ
Primary Key: JURIS_ID, NFI_PLOT, POLY_ID

Attribute	Jurisdiction identifier
Variable name	**JURIS_ID**
Description	The Canada Post two-letter abbreviation for the province or territory where the polygon is located.
Permitted values/range	BC, AB, SK, MB, ON, QC, NB, NS, PE, NL, YT, NT, NU
Format	Char 2
Rule(s)	Must have value.

Attribute	Network label
Variable name	**NFI_PLOT**
Description	The numeric National Forest Inventory label that identifies the point on the network associated with the photo plot. The NFI project office will provide network labels.
Permitted values/range	**1 to 1600000**
Format	Num 7
Rule(s)	Must have value.

Attribute	Polygon identifier
Variable name	**POLY_ID**
Description	The unique identifier assigned to each land cover polygon delineated on the photo plot. No duplicate polygon numbers are permitted.
Permitted values/range	
Format	Char 20
Rule(s)	Must have value.

Attribute	Total volume
Variable name	**VOL**
Description	Total volume (m^3/ha) of all trees greater than 1.3 metres tall, including volume of tops and stumps. If VOL_TYPE in the Stand Layer Header Table is GMV or NMV, then total volume is derived using NFI models.
Permitted values/range	**0 - 3000**
Format	Num 4
Rule(s)	Must have value.

Attribute	Merchantable volume
Variable name	**VOL_MERCH**
Description	Gross merchantable volume (m3/ha) of all live trees. This volume does not include stumps, tops or trees smaller than utilization limits. If VOL_TYPE in the Stand Layer Header Table is GTV or NMV, then merchantable volume is derived using NFI models.
Permitted values/range	**0 - 3000**
Format	Num 4
Rule(s)	Must have value.

Attribute	Crown closure
Variable name	**CLOSURE**
Description	The extent of ground area covered by the vertical projection of all tree crowns in the polygon (%)
Permitted values/range	**0 - 100**
Format	Num 3
Rule(s)	Must have value.

Attribute	Leading species age
Variable name	**SITE_AGE**
Description	Age of the leading species in the polygon
Permitted values/range	**-1 – missing value** **0 - 2000**
Format	Num 4
Rule(s)	Must have value.

Attribute	Leading species height
Variable name	**SITE_HEIGHT**
Description	Height (metres) of the leading species in the polygon
Permitted values/range	**-1 – missing value** **0.0 – 200.0**
Format	Dec 4.1
Rule(s)	Must have value.

Attribute	Site index
Variable name	**SITE_INDEX**
Description	Site quality expressed as the average height (metres) of dominant and co-dominant trees in the stand at a reference age of 50 years
Permitted values/range	**1.0 – 50.0**
Format	Dec 3.1
Rule(s)	May be blank

Attribute	Stem wood biomass
Variable name	**BIOMASS_STEM_WOOD**
Description	Total wood biomass of the stems (tonnes/ha) of live standing trees >1.3 metres tall. Derived from VOL_MERCH using models.
Permitted values/range	**0.000 – 1000.000**
Format	Dec 7.3
Rule(s)	May be blank

Attribute	Bark biomass
Variable name	**BIOMASS_STEM_BARK**
Description	Total bark biomass on the stems (tonnes/ha) of live standing trees >1.3 metres tall. Derived from VOL_MERCH using models.
Permitted values/range	**0.000 – 100.000**
Format	Dec 6.3
Rule(s)	May be blank

Attribute	Branch biomass
Variable name	**BIOMASS_BRANCHES**
Description	Total biomass of branches (tonnes/ha) on live standing trees >1.3 metres tall. Derived from VOL_MERCH using models.
Permitted values/range	**0.000 – 150.000**
Format	Dec 6.3
Rule(s)	May be blank

Attribute	Foliage biomass
Variable name	**BIOMASS_FOLIAGE**
Description	Foliage biomass (tonnes/ha) of live standing trees >1.3 metres tall. Derived from VOL_MERCH using models.
Permitted values/range	**0.000 – 125.000**
Format	Dec 6.3
Rule(s)	May be blank

Attribute	Total live biomass
Variable name	**BIOMASS_TOTAL_LIVE**
Description	Total biomass (tonnes/ha) of all live trees >1.3 metres tall. This is the sum of BIOMASS_STEM_WOOD, BIOMASS_STEM_BARK, BIOMASS_BRANCHES, BIOMASS_FOLIAGE
Permitted values/range	**0.000 – 1500.000**
Format	Dec 7.3
Rule(s)	Must have value

Attribute	Total dead biomass
Variable name	**BIOMASS_TOTAL_DEAD**
Description	Total biomass (tonnes/ha) of all dead trees >1.3 metres tall. Derived from VOL_MERCH using models.
Permitted values/range	**0.000 – 200.000**
Format	Dec 6.3
Rule(s)	Must have value

9. DISTURBANCE SUMMARY

Database table name: pp_stand_disturbance

Primary Key: JURIS_ID, NFI_PLOT, POLY_ID, DIST_AGENT

Attribute	Jurisdiction identifier
Variable name	**JURIS_ID**
Description	The Canada Post two-letter abbreviation for the province or territory where the polygon is located.
Permitted values/range	BC, AB, SK, MB, ON, QC, NB, NS, PE, NL, YT, NT, NU
Format	Char 2
Rule(s)	Must have value.

Attribute	Network label
Variable name	**NFI_PLOT**
Description	The numeric National Forest Inventory label that identifies the point on the network associated with the photo plot. The NFI project office will provide network labels.
Permitted values/range	**1 to 1600000**
Format	Num 7
Rule(s)	Must have value.

Attribute	Polygon identifier
Variable name	**POLY_ID**
Description	The unique identifier assigned to each land cover polygon delineated on the photo plot. No duplicate polygon numbers are permitted.
Permitted values/range	
Format	Char 20
Rule(s)	Must have value.

Attribute	Disturbance agent
Variable name	**DIST_AGENT**
Description	Disturbance agent that damaged vegetation in the polygon
Permitted values/range	**FIRE**: Vegetation has been damaged by a significant fire. **WIND**: Vegetation has been damaged by wind throw. **SNOW**: Vegetation has experienced significant snow damage. **INSECT**: Vegetation has been damaged by a significant insect attack. **DISEASE**: Vegetation has been damaged by a significant disease outbreak. **EROSION**: Soil has been removed by a natural process that in turn has caused a significant removal of tree cover over a large area. **ICE**: Vegetation has experienced ice damage. **OTHER**: Vegetation has been damaged by some other disturbance. OTHER may be replaced by a more precise term.
Format	Char 20
Rule(s)	Must have value

Attribute	Area disturbed
Variable name	**DIST_AREA**
Description	Area (ha) damaged by disturbance event
Permitted values/range	**0.000 – 404.000**
Format	Dec 6.3
Rule(s)	Must have value

Attribute	Extent disturbed
Variable name	**DIST_PERCT**
Description	Proportion (%) of the area of the polygon damaged by the disturbance agent
Permitted values/range	**1 - 100**
Format	Num 3
Rule(s)	Must have value

Attribute	Extent of mortality
Variable name	**SEVER_PERCT**
Description	Proportion of area (%) within the disturbed area showing signs of tree mortality attributed to the disturbance
Permitted values/range	**0 - 100**
Format	Num 3
Rule(s)	Must have value

Attribute	Year of disturbance
Variable name	**DIST_YR**
Description	Year in which the disturbance occurred
Permitted values/range	**-1 – missing** **1800 onwards**
Format	Num 4 (YYYY)
Rule(s)	Must have value

10. TREATMENT SUMMARY

Database table name: pp_stand_treatment

Primary Key: JURIS_ID, NFI_PLOT, POLY_ID, TREAT_TYPE

Attribute	Jurisdiction identifier
Variable name	**JURIS_ID**
Description	The Canada Post two-letter abbreviation for the province or territory where the polygon is located.
Permitted values/range	BC, AB, SK, MB, ON, QC, NB, NS, PE, NL, YT, NT, NU
Format	Char 2
Rule(s)	Must have value.

Attribute	Network label
Variable name	**NFI_PLOT**
Description	The numeric National Forest Inventory label that identifies the point on the network associated with the photo plot. The NFI project office will provide network labels.
Permitted values/range	**1 to 1600000**
Format	Num 7
Rule(s)	Must have value.

Attribute	Polygon identifier
Variable name	**POLY_ID**
Description	The unique identifier assigned to each land cover polygon delineated on the photo plot. No duplicate polygon numbers are permitted.
Permitted values/range	
Format	Char 20
Rule(s)	Must have value.

Attribute	Type of treatment
Variable name	**TREAT_TYPE**
Description	Type of silvicultural treatment applied to the polygon
Permitted values/range	**CC:** Stand has been harvested in full (>80% by crown area of the previous forest cover has been removed. **PC:** Stand has been harvested in part (<80% by crown area of the previous forest cover remains. **DC:** Deforestation **CL:** Cleaning, including brushing and weeding. **SP:** Juvenile spacing **PR:** Pruning **PT:** Pre-commercial thinning **CT:** Commercial thinning **FT:** Fertilization **MP:** Mechanical site preparation **PB:** Prescribed burning **OT:** Other
Format	Char 2
Rule(s)	Must have value

Attribute	Area of treatment
Variable name	**TREAT_AREA**
Description	Area (ha) of silviculture treatment
Permitted values/range	**0.000 – 404.000**
Format	Dec 6.3
Rule(s)	Must have value

Attribute	Year of treatment
Variable name	**TREAT_YR**
Description	The year the silvicultural treatment was applied to the polygon
Permitted values/range	**-1 – missing** **1800 onwards**
Format	Num 4 (YYYY)
Rule(s)	Must have value

11. ORIGIN SUMMARY

Database table name: pp_stand_origin
Primary Key: JURIS_ID, NFI_PLOT, POLY_ID

Attribute	Jurisdiction identifier
Variable name	**JURIS_ID**
Description	The Canada Post two-letter abbreviation for the province or territory where the polygon is located.
Permitted values/range	BC, AB, SK, MB, ON, QC, NB, NS, PE, NL, YT, NT, NU
Format	Char 2
Rule(s)	Must have value.

Attribute	Network label
Variable name	**NFI_PLOT**
Description	The numeric National Forest Inventory label that identifies the point on the network associated with the photo plot. The NFI project office will provide network labels.
Permitted values/range	**1 to 1600000**
Format	Num 7
Rule(s)	Must have value.

Attribute	Polygon identifier
Variable name	**POLY_ID**
Description	The unique identifier assigned to each land cover polygon delineated on the photo plot. No duplicate polygon numbers are permitted.
Permitted values/range	
Format	Char 20
Rule(s)	Must have value.

Attribute	Afforestation origin
Variable name	**ORIG_AFOR**
Description	Vegetated area (ha) originated from afforestation
Permitted values/range	**0.0000 – 404.0000**
Format	Dec 7.4
Rule(s)	Must have value

Attribute	Succession origin
Variable name	**ORIG_SUCC**
Description	Vegetated area (ha) originated from succession
Permitted values/range	**0.0000 – 404.0000**
Format	Dec 7.4
Rule(s)	Must have value

Attribute	Harvest origin
Variable name	**ORIG_HARV**
Description	Vegetated area (ha) originated from harvesting
Permitted values/range	**0.0000 – 404.0000**
Format	Dec 7.4
Rule(s)	Must have value

Attribute	Other disturbance origin
Variable name	**ORIG_DIST**
Description	Vegetated area (ha) originated after another type of disturbance
Permitted values/range	**0.0000 – 404.0000**
Format	Dec 7.4
Rule(s)	Must have value

Attribute	Natural regeneration origin
Variable name	**REGEN_NAT**
Description	Treed area (ha) originated as a result of natural regeneration
Permitted values/range	**0.0000 – 404.0000**
Format	Dec 7.4
Rule(s)	Must have value

Attribute	Natural regeneration and supplemental planting origin
Variable name	**REGEN_SUP**
Description	Treed area (ha) originated as a result of natural regeneration and supplemental planting
Permitted values/range	**0.0000 – 404.0000**
Format	Dec 7.4
Rule(s)	Must have value

Attribute	Planting origin
Variable name	**REGEN_PLA**
Description	Treed area (ha) originated as a result of planting
Permitted values/range	**0.0000 – 404.0000**
Format	Dec 7.4
Rule(s)	Must have value

Attribute	Sowing origin
Variable name	**REGEN_SOW**
Description	Treed area (ha) originated as a result of sowing seed
Permitted values/range	**0.0000 – 404.0000**
Format	Dec 7.4
Rule(s)	Must have value

12. TREE SPECIES SUMMARY

Database table name: pp_tree_species_comp

Primary Key: JURIS_ID, NFI_PLOT, POLY_ID, SPECIES_NUM

Attribute	Jurisdiction identifier
Variable name	**JURIS_ID**
Description	The Canada Post two-letter abbreviation for the province or territory where the polygon is located.
Permitted values/range	BC, AB, SK, MB, ON, QC, NB, NS, PE, NL, YT, NT, NU
Format	Char 2
Rule(s)	Must have value.

Attribute	Network label
Variable name	**NFI_PLOT**
Description	The numeric National Forest Inventory label that identifies the point on the network associated with the photo plot. The NFI project office will provide network labels.
Permitted values/range	**1 to 1600000**
Format	Num 7
Rule(s)	Must have value.

Attribute	Polygon identifier
Variable name	**POLY_ID**
Description	The unique identifier assigned to each land cover polygon delineated on the photo plot. No duplicate polygon numbers are permitted.
Permitted values/range	
Format	Char 20
Rule(s)	Must have value.

Attribute	Species number
Variable name	**SPECIES_NUM**
Description	Identifies species rank in the polygon, based on the percentage of species abundance
Permitted values/range	**1** – Largest tree species percent value in the polygon **10** – Smallest tree species percent value in the polygon
Format	Num 2
Rule(s)	SPECIES_NUM must be in consecutive ascending order starting from 1, with 1 having the highest PERCENT, 2 the next highest PERCENT, etc. to the smallest PERCENT If there is an entry which SPECIES_NUM greater than 1, then there must be an entry which has SPECIES_NUM-1. Must have value.

Attribute	Tree genus
Variable name	**GENUS**
Description	Genus of tree listed in this record. There is one record for each distinct species of tree in the polygon.
Permitted values/range	**As per NFI Tree List in Appendix 5**
Format	Char 4
Rule(s)	Must have value

Attribute	Species
Variable name	**SPECIES**
Description	Species of tree listed in this record.
Permitted values/range	**As per NFI Tree List in Appendix 5**
Format	Char 4
Rule(s)	Must have value

Attribute	Variety
Variable name	**VARIETY**
Description	Variety of tree listed in this record.
Permitted values/range	**As per NFI Tree List in Appendix 5**
Format	Char 4
Rule(s)	May have value

Attribute	Composition
Variable name	**PERCENT**
Description	Proportion (%) of the tree population in the polygon represented by the species listed in this record
Permitted values/range	**0 - 100**
Format	Num 3
Rule(s)	Must have value

Appendix 1: NFI Land Use Codes and Classification

LANDUSE1 & LANDUSE2
Land-use classes as provided in the *NFI Land Use Classification* and included below. A 3 to 4 letter land use code will be used
IND – Industrial (Land used for mineral, rock, soil, and petroleum exploration and extraction/processing activities encompassing both surface and subsurface operations, but where Exploration, Extraction, or Processing cannot be specified)
INDE – Industrial exploration (Areas where a mining or petroleum operation involves prospecting and/or exploring for evidence of a mineral or petroleum occurrence, including areas where evaluation of mineral or petroleum deposits takes place to determine if they have the potential for extraction (e.g., seismic lines))
INDT – Industrial extraction (Excavated areas that have undergone mining or extraction activities including areas associated with extraction activities and areas occupied by loading devices, equipment buildings, and spoil piles that do not have appreciable vegetative cover. Reclaimed areas are included within their appropriate post-mining land use.)
INDP – Industrial processing (Land used for the refinement and preparation of raw materials from petroleum, mineral, and metal ore extractive operations, including processes that convert raw materials, such as oil, ore, wood, stone, and phosphates into useable products for direct use or for other manufacturing stages.)
FOR – Forestry (Lands that support timber harvesting activities or managed tree plantations used for lumber or pulp production, but which cannot be further classified.)
FORI – Intensive forest management (Lands supporting active harvesting or thinning operations designed to obtain a high level of volume and/or quality of product per unit area)
FORE – Extensive forest management (Larger in extent, relating to the cultivation of vast areas of land, ideally with a minimum of labour and expense, including the protection of the forest from fire and insects, and relying on natural regeneration for provision of the next forest.)
FORU – Unallocated forest (This includes forest land areas with no apparent active or passive use, recent human modification, or those areas for which a use cannot be determined. May include natural, or not recently modified, shrub and forestland, wetlands, and other forest land unused or unmodified by humans.)
FORN – Forest nursery or seed orchard (Land used for the cultivation and production of tree seedlings and seeds, which will be used for the purpose of reforestation.)
FORP – Forest plantation (This includes areas that have been seeded or planted with trees for the purpose of reforestation, as well as young, immature plantations, including Christmas tree plantations.)
FORR – Forest research (This includes any forested land and associated facilities specifically used for research purposes, related to tree reforestation or growth, where the designation for research takes precedence over any timber harvesting, but does not include private plots used temporarily for research studies.)
FORW – Demonstration woodlot (This includes land used for woodlots that are designed to provide woodlot owners, forest contractors, and members of the general public with visible evidence of the results of forest management practices, often established to help increase the public awareness of forestry.)
AGR – Agriculture (Agricultural lands that cannot be further classified.)
AGRB – Agriculture buildings (Land used for buildings associated with agricultural production, including barns, implement storage buildings, grain storage buildings, and the family dwelling)
AGRC – Agriculture cultivated crops (Land used for the cultivation and harvesting of food and fibre crops, including grains, root crops, vegetables, and hay, as well as agricultural fields in rotation or lying fallow)
AGRP – Agriculture pasture (used for pastureland; land that produces graze for animal consumption, including areas of appreciable tree cover that are used for grazing)
AGRH – Agriculture ornamental horticulture (Land used for the production of sod, grass, flowers, ornamental trees, and shrubs)
AGRR – Agriculture research (Cultivated land and associated facilities where the designation for research takes precedence over the specific crops being cultivated)
AGRF – Agriculture bush fruits and vineyards (Land used for the production of bush and vine fruits, including berries, grapes, and melons)

AGRO – Agriculture orchards (Land used for the cultivation and production of fruit and nut trees)

CON – Conservation (Designated lands where conservation strategies are applied for the purpose of attaining specific conservation objectives, but which cannot be further classified)

CONA – Conservation parks (Area declared a national, provincial, territorial, or community park by legislation, regulation, or land-use policy)

CONS – Conservation special places (Areas of natural and ecological significance focusing on rare, outstanding, and unique natural features, such as rare plant habitats, old-growth forests, waterfowl breeding colonies, endangered species habitats, etc.)

CONE – Conservation ecological reserves (Legally protected natural areas where human influence is minimal, where the main functions are the preservation of genetic resources and scientific research)

CONW – Conservation wilderness areas (Areas established to conserve their natural ecological characteristics, in perpetuity, devoid of permanent development or human habitation)

CONR – Conservation research (Areas set aside to preserve representative ecosystems for scientific study and educational purposes)

CONU – Unmapped protected areas (for example, wildlife areas, water body buffers, steep slopes, erodible soils, and watershed protection)

INF – Infrastructure (Land used for facilities and services that provide the basic framework needed to sustain given types, levels, and patterns of land development, but which cannot be further classified.)

INFU – Infrastructure utilities (This includes land uses associated with the transport, storage, distribution, and collection of gas, oil, electricity, water, wastewater, or solid waste. Pumping stations, electric substations, transmission infrastructure, etc., still constitute the major components of this subcategory.)

INFT – Infrastructure transportation (This includes major transportation facilities, including those associated with ground, water, and air transportation)

INFC – Infrastructure communication (Land occupied by buildings and structures associated with radio, radar, television, telegraph, telephone, etc.)

SET – Settlement (Lands used for urban residential, correctional institutions, manufacturing/processing, educational facilities, religious sites, cemeteries, museums/historic sites, rural residential, and forest protection, but which cannot be further classified.)

SETU – Settlement urban residential (This is an area of settlement with a population density greater than 400 people per square kilometre, including cities, towns, villages, and hamlets.)

SETR – Settlement rural residential (This is an area of settlement with a population density less than 400 people per square kilometre.)

SETJ – Settlement correctional institutes (Land occupied by prisons, jails, and other correctional facilities, including any buildings, surrounding grounds, and parking lots associated with these facilities.)

SETM – Settlement manufacturing/processing (Land used for light and heavy manufacturing and for the processing and refinement of raw materials.)

SETE – Settlement educational facilities (This includes all public and private educational institutions, including pre-schools, elementary, and high schools, colleges, universities, trade and vocational schools, camps, and other educational institutions. Land occupied by the educational buildings and associated immediate grounds and parking areas are included in this category.)

SETP – Settlement public facilities (This includes police and fire stations and land occupied by the buidings and associated grounds and parking areas.)

SETC – Settlement religious sites/cemeteries (This includes land occupied by churches and related religious sites including public and private cemeteries, access roads, and all cemetery grounds, and maintenance and storage buildings. First Nations' burial areas are included in this category.)

SETH – Settlement museums/historic/archaeological sites (This includes any site occupied by a museum or other archaeological agency for the purpose of collecting and/or displaying objects having scientific, historical, or artistic value, or any site of historical significance.)

SETF – Settlement forest protection (An area occupied by that branch of forestry concerned with the prevention and control of damage to forests. This includes such facilities as lookouts and camps.)

REC – Recreation (Indoor and outdoor land and facilities developed to support assembly, recreational, cultural, or entertainment activities (amusement parks, planetariums, civic centres, theatres, auditoriums, indoor tennis

courts, field houses, botanical gardens, zoos, playing fields, golf courses, and stadiums), but which cannot be further classified)

RECC – Recreation commercial (This includes land used for recreational activities that produces a profit for a business or any type of commerce (e.g., fishing/hunting lodges, and pay-for-use areas/campgrounds)

RECN – Recreation non-commercial (This includes land used for recreational activities which is owned or managed by a public institution (or maintained through voluntary donation) and not meant to produce a profit for a business or any type of commerce. Examples are campgrounds/picnic areas, parks, trails, hunting, fishing, berry picking, and mushroom collecting.)

DND – National defence (Land occupied by military bases and defence installations, including military training grounds, storage depots, and military command centres, but which cannot be further classified.)

DNDB – National defence bases (This includes land occupied by military bases and defence installations, including storage depots and military command centres)

DNDE – National defence exercise area(This includes land occupied by military training grounds and exercise areas.)

UNK – Lands with no apparent active or passive use, recent human modification or those areas for which a use cannot be determined

M – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary

S – Land use information is missing or not available for this polygon

Appendix 2: NFI Land Use Classification Scheme

Canada's National Forest Inventory

Land Use Classification Scheme

September 26, 2006
Version 4.0

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Introduction

A land use classification system has been developed to meet the needs of Canada's National Forest Inventory (NFI). The goal was the development of a national classification scheme to serve as a useful and effective standard for land use classification. Present systems were found to be inadequate when used to assess integrated resource management options. It was from this perspective that the classification scheme was created. It is important to note that the term 'land use' describes *current* land use. Land use classification provides snapshots of land use that can be used as benchmarks for tracking global and local changes. The major land use classes recognized by the NFI are:

- Industrial
- Forestry
- Agriculture
- Conservation
- Infrastructure
- Settlement
- Recreation
- National Defence
- Unknown

This manual describes the classification system and provides a schematic of the structure of the land use classification scheme. Current land use is identified by a three-letter code, followed by an optional modifier code. Potential sub-category descriptions have been added for further clarification in the assignment of land use and modifier codes.

For instances where more than one land use class is applicable, a primary or dominant land use category is specified followed by an optional secondary land use classification. An example of this would be stand density management practices (pre-commercial or commercial thinning) that enhance wildlife habitat (as measured by indicators such as: number and size of snags, volume of shrubs and herbs and/or percent cover of understorey shrubs, etc.). In this case, the primary land use would be Forestry (intensive) and the secondary land use, Conservation (wildlife areas).

Primary land use is the overriding land use. It is not specifically defined in terms of a percent value but is delineated according to policy or management regimes. In the above example, the overriding land use is intensive Forestry. The secondary use, increased percent cover and volume of understorey shrubs and herbs, is a spin-off of the pre-commercial thin or intensive forestry practice. The resulting understorey shrubs then serve as wildlife habitat and forage.

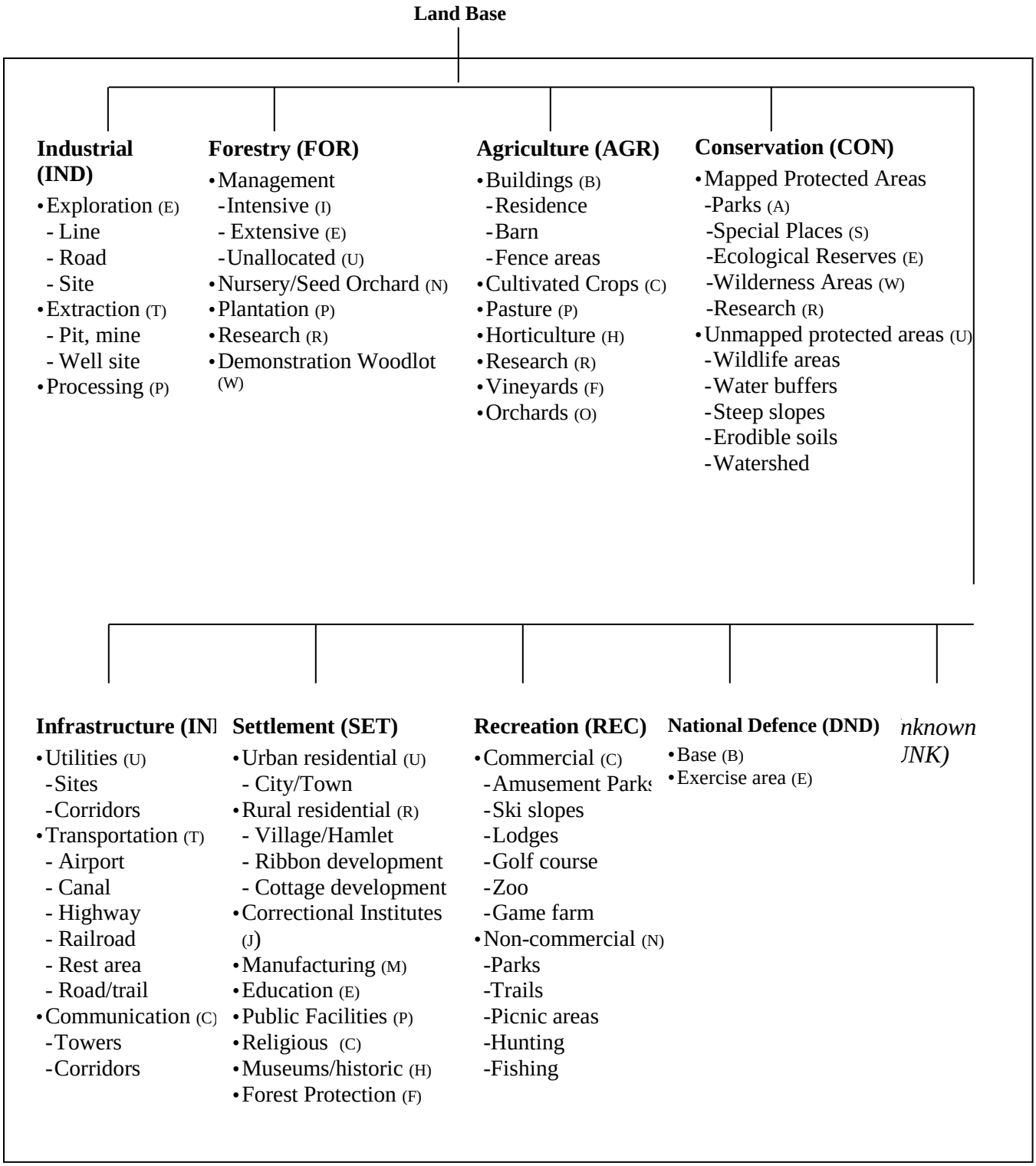

Figure 1. Structure of the National Forest Inventory Land Use Classification Scheme.

Land Use Classification Definitions

Industrial (IND)

The Industrial land use classification describes land used for mineral, rock, soil and petroleum exploration and extraction/processing activities encompassing both surface and subsurface operations, such as sand and gravel pits, stone quarries, oil and gas wells, and metallic and non-metallic mining. In size, these activities range from large surface or open pit mines covering vast areas to small gas well platforms. Areas occupied by surface structures and equipment in proximity to and associated with the extractive/processing operation are included in this category. Associated structures and equipment may include loading devices, vehicle parking areas, stockpiles, spoil areas, and equipment sheds. Abandoned pits and quarries are included in this category unless they are being used for another purpose.

Modifiers:

E = Exploration

Areas where a mining / petroleum operation involves prospecting and/or exploring for evidence of a mineral / petroleum occurrence. Also included are areas where evaluation of mineral / petroleum deposits takes place, to determine if they have the potential for extraction (e.g., seismic lines).

T = Extraction

Excavated areas that have undergone mining or extraction activities including areas associated with extraction activities and areas occupied by loading devices, equipment buildings, and spoil piles that do not have appreciable vegetative cover. Reclaimed areas are included within their appropriate post-mining land use.

P = Processing

Land used for the refinement and preparation of raw materials from petroleum, mineral, and metal ore extractive operations. Also included are processes that convert raw materials, such as oil, ore, wood, stone and phosphates into usable products for direct use or for other manufacturing stages.

Forestry (FOR)

The Forestry land use classification describes lands that support timber-harvesting activities or managed tree plantations used for lumber or pulp production. This includes tracts and their associated buildings, equipment, and stockpiles that are undergoing selective or clear-cut operations. Tree plantation areas are included in this category if the trees have not yet achieved a mature level of growth. Stands designated for future harvest are also included in this category. 'Forest land' is a general term usually applied in full or in part to describe the extraction of wood products for commercial purposes.

Management: This includes areas supporting active harvesting or thinning operations or other forested areas that are experiencing active management practices related to timber

harvesting. Also included are forest areas at a mature stage of growth for which future harvesting is planned or anticipated but which are not yet experiencing active management practices.

Modifiers:

I = Intensive Forest Management
Forestry practices designed to obtain a high level of volume and/or quality of product per unit area. They may include, but are not limited to: plantation espacement, pre-commercial thinning (juvenile spacing) and fertilization, commercial thinning, juvenile-stand improvement and the use of artificial regeneration. Intensive forestry requires greater inputs of labour and capital in terms of quantity, quality or frequency than extensive forestry practices.

E = Extensive Forest Management
Extensive forestry practices are larger in extent, and relate to the cultivation of vast areas of land, ideally with a minimum of labour or expense. Also included in this category are the protection of the forest from fire and insects, and relying on natural regeneration for provision of the next forest.

U = Unallocated
This category includes forest land areas with no apparent active or passive use, recent human modification, or those areas for which a use cannot be determined. These areas may include natural, or not recently modified, shrub and forestland, wetlands, and other forest land unused or unmodified by humans.

Other modifiers under the forestry land use classification heading include:

N = Nursery / Seed Orchard
Land used for the cultivation and production of tree seedlings and seeds, which will be used for the purpose of reforestation.

P = Plantation
This includes areas that have been seeded or planted with trees for the purpose of reforestation and young, immature plantations, including Christmas tree plantations.

R = Research
This is used for any forested land (mature or immature) and associated facilities specifically used for research purposes, related to tree reforestation or growth, where the designation for research takes precedence over any timber harvesting. Private plots used temporarily for research studies are not included.

W = Demonstration Woodlot
This includes land used for woodlots that are designed to provide woodlot owners, forest contractors and members of the general public with visible evidence of the results of forest management practices, often established to help increase public awareness of forestry. Open to the public, they exhibit many aspects of current forestry techniques, as well as information on natural history, wildlife management and forest ecology.

Agriculture / Horticulture (AGR)

The Agriculture / Horticulture land use classification describes land used primarily for the production of farm commodities, including land used for row crops, grain and forage crops, pasture land, and fallow fields in rotation to cultivated crops or pasture. Also included in this category are land and buildings used for the raising of livestock and poultry and other animal operations. Land used for the production of ornamental tree crops, specialty crops, horticultural products, and other agricultural activities are included in this category.

Modifiers:

B = Buildings
Land used for buildings associated with agricultural production, including barns, implement buildings, grain storage buildings, and the family dwelling.

C = Cultivated Crops
Land used for the cultivation and harvesting of food and fibre crops, including grains, root crops, vegetables, and hay, as well as agricultural fields in rotation or lying fallow.

P = Pasture
Land used for pastureland; land that produces grasses for animal consumption. Areas of appreciable tree cover that are used for grazing are included.

H = Ornamental Horticulture
Land used for the production of sod, grass, flowers, ornamental trees and shrubs.

R = Research
Cultivated land and associated facilities where the designation for research takes precedence over the specific crops being cultivated. Private plots used temporarily for research studies are not included.

F = Bush Fruits / Vineyards
Land used for the production of bush and vine fruits, including berries, grapes, and melons.

O = Orchards
Land used for the cultivation and production of fruit and nut trees.

Conservation (CON)

The Conservation land use classification is used to describe designated lands where conservation strategies are applied for the purpose of attaining specific conservation objectives. These include flora, fauna, landscapes, heritage, and cultural aspects.

Mapped Protected Areas: Mapped areas of land and/or water set aside for ecosystem protection, outdoor and tourism values, preservation of rare species, gene pool, wildlife protection etc., that are protected by legislation, regulation, or land-use policy to control human occupancy or activity.

Modifiers:

A = Parks

Areas declared a national, provincial, territorial, or community park by legislation, regulation, or land-use policy.

S = Special Places
Areas of natural and ecological significance focusing on rare, outstanding and unique natural features such as rare plant habitats, old-growth forests, waterfowl breeding colonies, endangered species habitats, etc.

E = Ecological Reserves
Legally protected natural areas where human influence is minimal. The main functions of an ecological reserve are the preservation of genetic resources and scientific research.

W = Wilderness areas
Areas established to conserve their natural ecological characteristics, in perpetuity, devoid of permanent development or human habitation. Wilderness areas are protected and managed to preserve their natural conditions so that alterations only occur by the forces of nature. The imprint of human activity should be substantially unnoticeable.

R = Research
Areas set aside to preserve representative ecosystems for scientific study and educational purposes.

Unmapped Protected Areas: Unmapped areas of land and/or water set aside for ecosystem protection, outdoor and tourism values, preservation of rare species, gene pool, wildlife protection etc., that are protected by land-use policy to control human occupancy or activity.

Modifiers:

U = Unmapped Protected Areas

Examples of an unmapped protected area include the following:

Wildlife - Designated land where wildlife conservation strategies are applied for the purpose of attaining specific wildlife conservation objectives.

Water Body Buffers - An area of trees, shrubs and/or other vegetation located adjacent to and up-gradient from water bodies, that restricts non-water dependent or non-water related development within the riparian area. Water body conservation strategies are applied for the purpose of attaining specific objectives, such as providing desired aesthetics, cultural, and recreation opportunities, and conserving significant riparian, wetland, and water body natural resources through the designation and protection of transition areas between the resource and other development and activities.

Steep slopes - An area with greater than 25% slope, where steep slope conservation strategies are applied for the purpose of attaining specific objectives

such as: minimizing erosion, flooding, landslide, upland slumping, and pollution protection.

Erodible soils - An area of land that is highly susceptible to erosion, where erodible soil conservation strategies are applied for the purpose of attaining specific objectives such as conserving water quality.

Watershed protection - Designated land where watershed protection conservation strategies are applied for the purpose of attaining specific objectives such as conserving water quality and fish habitat.

Infrastructure (INF)

The Infrastructure land use classification is used to describe lands used for facilities and services that provide the basic framework needed to sustain given types, levels and patterns of land development. This includes utilities, transportation and communication facilities/frameworks and drainage systems.

Modifiers:

U = Utilities

This category includes land uses associated with the transport, storage, distribution and collection of gas, oil, electricity, water, wastewater or solid waste. Pumping stations, electric substations, transmission infrastructures, etc., will constitute the major components of this subcategory. Small facilities, or those associated with an industrial, commercial, or extractive land use, are included within the appropriate category with which they are associated. Long-distance pipelines, etc., rarely constitute the dominant use of land over which they pass. If these uses meet the minimum width criteria, they may be identified as transportation uses. Areas of observable utility rights-of-way such as transmission line cuts through forested areas are included in this subcategory. Examples of utilities include the following:

Sites - Land uses associated with the storage, distribution and collection of gas, oil, electricity, water, wastewater or solid waste. Pumping stations, electric substations, etc., will constitute the major components. Small facilities, or those associated with an industrial, commercial, or extractive land use, are included within the appropriate category with which they are associated.

Corridors - Land uses associated with the transport of gas, oil, electricity, water, wastewater or solid waste. Long-distance pipelines, if they are the dominant use and meet the minimum width criteria, may be included. Areas of observable utility rights-of-way such as transmission line cuts through forested areas are included.

T = Transportation

Includes major transportation facilities, including those associated with ground, water, and air transportation. Interchanges, limited access right-of-way, and service and terminal facilities are characteristic of highways and railways. Rail facilities

include stations, parking lots, roundhouses, repair and switching yards, and related areas. Spur connections from an active line are included in the appropriate industrial or extractive category. Airports, seaports, and major lake ports are isolated areas of high utilization, usually with no well-defined intervening connections, although canals connect some water ports. Major port areas include the docks, shipyards, dry docks, locks, and water source-control structures. Airport facilities include the runways, intervening land, terminals, service buildings, navigation aids, fuel storage, parking lots, and a limited buffer zone.

C = Communication

Land occupied by buildings and structures associated with radio, radar, television, telegraph, telephone, etc. Small facilities, or those associated with an industrial, commercial, or extractive land use, are included within the larger category with which they are associated. Long-distance telephone or other transmission facilities rarely constitute the dominant use of land over which they pass. If these uses are dominant and meet the minimum width criteria, they may be identified as transportation uses.

Settlement (SET)

The Settlement land use classification is used to describe lands used for urban residential, correctional institutions, manufacturing / processing, educational facilities, religious sites, cemeteries, museums / historic sites, rural residential, and forest protection.

Modifiers:

U = Urban Residential

An area of settlement with a population density greater than 400 people per square km; includes cities, towns, villages, and hamlets.

R = Rural Residential

An area of settlement with a population density less than 400 people per square km.

J = Correctional Institutes

Land occupied by prisons, jails, and other correctional facilities, including any buildings, surrounding grounds, and parking lots associated with these facilities. Areas not specifically related to the purpose of the institution should be placed in another appropriate category.

M = Manufacturing / Processing

Land used for light and heavy manufacturing and for the processing and refinement of raw materials. Light manufacturing operations are focused on design, assembly, finishing, and packaging of products. Light manufacturing areas may be, but are not necessarily, directly in contact with urban areas. Many are now found at airports or in relatively rural areas. Heavy manufacturing operations use raw materials such as iron ore, lumber, or petroleum. Included are steel mills, pulp or lumber mills, electric power generating stations, oil refineries and tank farms, chemical plants, and brick-making plants. Stockpiles of raw materials, large power sources, and waste product disposal areas are usually visible, along with transaction facilities capable of handling heavy materials. Raw material processing includes operations devoted to on-site

storing and transporting of mined materials and petroleum, and the refinement and preparation of these products for direct use or for use in manufacturing.

E = Educational Facilities
All public and private educational institutions, including pre-schools, elementary and high schools, colleges, universities, trade and vocational schools, camps, and other educational institutions. Land occupied by the educational buildings and associated immediate grounds and parking areas are included in this category.

P = Public Facilities
Includes police and fire stations and land occupied by the buildings and associated grounds and parking areas.

C = Religious Sites / Cemeteries
Land occupied by churches and related religious site including public and private cemeteries, access roads and all cemetery grounds, and maintenance and storage buildings. First Nations' burial areas are included in this category.

H = Museums / Historic / Archaeological Sites
Any site occupied by a museum or other archaeological agency for the purpose of collecting and/or displaying objects having scientific, historical, or artistic value, or any site of historical significance.

F = Forest Protection
An area occupied by that branch of forestry concerned with the prevention and control of damage to forests. This includes such facilities as lookouts and camps.

Recreation (REC)

The Recreation land use classification is used to describe indoor and outdoor land and facilities developed to support assembly, recreational, cultural, or entertainment activities (amusement parks, planetariums, civic centres, theatres, auditoriums, indoor tennis courts, field houses, botanical gardens, zoos, playing fields, golf courses, and stadiums). Commercial operations and public facilities are included.

Modifiers:

C = Commercial
Land used for the aforementioned type of recreational activities, that produces a profit for a business or any type of commerce (e.g., fishing/hunting lodges, and pay-for-use areas/campgrounds).

N = Non-commercial
Land used for the aforementioned type of recreational activities, which is owned or managed by a public institution (or maintained through voluntary donation) and not meant to produce a profit for a business or any type of commerce. Also included is land used for non-profit, recreational activities where the fees support the upkeep of the area/facility. Examples of non-commercial recreation include: campgrounds/picnic areas, parks, trails, hunting, fishing, berry picking and mushroom collecting.

National Defence (DND)

The National Defence land use classification is used to describe lands occupied by military bases and defence installations, including military training grounds, storage depots, and military command centres.

Modifiers:

B = Bases
Land occupied by military bases and defence installations, including storage depots, and military command centres.

E = Exercise Area
Land occupied by military training grounds and exercise areas.

Unknown (UNK)

The Unknown land use classification is used to describe lands with no apparent active or passive use, recent human modification, or those areas for which a use cannot be determined.

Appendix 3: NFI Land Cover Codes and Classification

LAND_BASE
A unique identification letter for the first level of the *NFI Land Cover Classification System*. This signifies the presence or absence of vegetation within the boundaries of a polygon.
V – Vegetated (Total cover of trees, shrubs, herbs, and bryoids covers **5% or more** of the total surface area of the polygon).
N – Non-vegetated (Total cover of trees, shrubs, herbs, and bryoids covers **less than 5%** of the total surface area of the polygon)
M – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary
S – Land base information is missing or not available for this polygon

LAND_COVER
A unique identification letter for the second level of the *NFI Land Cover Classification System*. This signifies the presence or absence of trees for vegetated polygons, and land or water for non-vegetated polygons.
*Where **LAND_BASE** has been coded as **V** (Vegetated) the only permitted values are:*
T – Treed (A polygon is considered Treed if at least 10% of the polygon area, by crown cover, consists of tree species of any size. Refer to the *NFI Tree Species List* for a list of tree species)
N – Non-treed (A polygon is considered Non-Treed if less than 10%, by crown cover, of the polygon area consists of tree species of any size)
*Where **LAND_BASE** has been coded as **N** (Non-vegetated) the only permitted values are:*
L – Land (The portion of the landscape not covered by water (as defined below), based on the percentage cover area (more than 50% of polygon area))
W – Water (A naturally occurring, static body of water, two or more metres deep in some portion, or a watercourse formed when water flows between continuous, definable banks. These flows may be intermittent or perennial; but do not include ephemeral flows where a channel with no definable banks is present. Islands within streams that have definable banks are not part of the stream; gravel bars are part of the stream. Interpretation is based on the percentage area covered (more than 50% of polygon area))
*Where **LAND_BASE** has been coded as **M** (out-of-province/territory/country) the only permitted value is:*
M – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary
*Where **LAND_BASE** has been coded as **S** (Missing or unavailable information) the only permitted value is:*
S – Land cover information is missing or not available for this polygon

LAND_POS
A unique identification letter for the third level of the *NFI Land Cover Classification System*. This signifies the location of the polygon relative to drainage.
*For polygons with **LAND_BASE** coded as **V** or **N** (Vegetated or Non-vegetated) the only permitted values are:*
W – Wetland (Land having a water table near, at, or above the soil surface, or which is saturated for a long enough period to promote wetland or aquatic processes. These wetland processes are indicated by the presence of Organic or Gleysolic soils and hydrophytic vegetation)
U – Upland (A broad class that includes all non-wetland ecosystems that range from very xeric to hygric soil moisture regimes)
A – Alpine (A polygon is considered Alpine when it is treeless (for practical purposes less than 1% tree cover can be included within the Alpine category), with alpine vegetation dominated by shrubs, herbs, graminoids, bryoids, and lichens. Rock, ice, and snow dominate much of the Alpine. Alpine does not typically include the parkland and krummholz forest types. Alpine is a classification level of Non-Treed areas above the tree line only)
*Where **LAND_BASE** has been coded as **M** (out-of-province/territory/country) the only permitted value is:*
M – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary

*Where **LAND_BASE** has been coded as **S** (Missing or unavailable information) the only permitted value is:*
S – Land position information is missing or not available for this polygon

VEG_TYPE
A unique identification letter for the fourth Level of the *NFI Land Cover Classification System*. This signifies the distinct type of vegetation or non-vegetated condition of the landbase within the polygon Although there are no classes at this level of the Land Cover Classification System for water, a water code has been added to ensure all polygons are classified and have a value. When coded as treed coniferous, broadleaf, or mixed, this attribute is relationally checked with photo plot tree species percent.
*For polygons where **LAND_BASE** has been coded **V** (Vegetated) and **LAND_COVER** has been coded as **T** (Treed) and **LAND_POS** is **not A** (Alpine) the only permitted values are:*
TC – Treed coniferous – The polygon is classified as Treed Coniferous when trees cover a minimum of 10% of the total polygon area by crown cover, and coniferous trees are 75% or more of the total tree volume.
TB – Treed broadleaf – The polygon is classified as Treed Broadleaf when trees cover a minimum of 10% of the total polygon area by crown cover, and broadleaf trees are 75% or more of the total tree volume.
TM – Treed mixed – The polygon is classified as Treed Mixed when trees cover a minimum of 10% of the total polygon area by crown cover, and neither coniferous nor broadleaf trees account for 75% or more of the total tree volume.
*For polygons where **LAND_BASE** has been coded **V** (Vegetated) and **LAND_COVER** has been coded as **N** (Non-treed) the only permitted values are:*
ST – Tall shrubs (A polygon with a minimum of 10% ground cover of shrubs, or with shrubs more than 1/3 of the total vegetation cover, with average height greater than or equal to 2m)
SL – Low shrub (A polygon with a minimum of 10% ground cover of shrubs, or with shrubs more than 1/3 of the total vegetation cover, with average height less than 2m)
HE – Herb (Herbs are vascular plants without a woody stem, including ferns, fern allies, grasses, and grass-like plants, with no distinction between forbs and graminoids. If a polygon does not meet the definition of Shrub, then it can be classed as Herb if it has a minimum of 20% ground cover of herbs, or herbs constitute more than 1/3 of the total vegetation cover)
HF – Forb (Forbs are herbaceous plants other than graminoids, including ferns, club mosses, and horsetails. More than 50% of the herb cover consists of forbs)
HG – Graminoid (Graminoids are defined as herbaceous plants with long, narrow leaves characterized by linear venation; including grasses, sedges, rushes, and other related species. More than 50% of the herb cover consists of graminoids)
BY – Bryoid (Bryophytes (mosses, liverworts, and hornworts) and lichens (foliose or fruticose; not crustose) make up more than 50% of the vegetation cover, with herb and shrub cover each less than 20%)
BM – Moss (A Bryoid polygon with mosses, liverworts, and hornworts greater than 50% of the bryoid cover)
BL – Lichen (A Bryoid polygon with lichens (foliose or fruticose; not crustose) greater than 50% of the bryoid cover)
*For polygons where **LAND_BASE** has been coded **N** (Non-vegetated) and **LAND_COVER** has been coded as **L** (Land) the only permitted values are:*
SI – Snow/ice (Glacier or snow cover)
RO – Rock/rubble (bedrock or fragmented rock broken away from bedrock surfaces and moved into its present position by gravity or ice. Extensive deposits are found in and adjacent to alpine areas and are associated with steep rock walls and exposed ridges; canyons and cliff areas also contain these deposits)
EL – Exposed land (all other forms of Exposed Land identified by a range of subclasses)
*For polygons where **LAND_BASE** has been coded **N** (Non-vegetated) and **LAND_COVER** has been coded as **W** (Water) the only permitted values are:*
WA – Water (A naturally occurring, static body of water, two or more metres deep in some portion, or a watercourse formed when water flows between continuous, definable banks. These flows may be intermittent or perennial; but do not include ephemeral flows where a channel with no definable banks is present. Islands within streams that have definable banks are not part of the stream; gravel bars are part of the stream. Interpretation is based on the percentage area covered)

*For polygons where **LAND_BASE** has been coded as **M** (out-of-province/territory/country) the only permitted value is:*
M – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary
*For polygons where **LAND_BASE** has been coded as **S** (Missing or unavailable information) the only permitted value is:*
S – Vegetation type information is missing or not available for this polygon

DENSITY_CL
A unique identification letter for the fifth level of the *NFI Land Classification System*. This signifies the vegetation densities for vegetated polygons and a further classification of non-vegetated polygons.
*For polygons where **LAND_BASE** has been coded **V** (Vegetated) and **LAND_COVER** has been coded as **T** (Treed) or **N** (Non-treed) and **VEG_TYPE** has **not** been coded as **BY, BM,** or **BL** (bryoids), the only permitted values are:*
DE – Dense (Tree, shrub, or herb cover is between 61% and 100% crown closure for the polygon)
OP – Open (Tree, shrub, or herb cover is between 26% and 60% crown closure for the polygon)
SP – Sparse (Tree cover is between 10% and 25% crown closure for treed and shrub polygons or cover is between 20 and 25% for herb cover polygons)
SA – Density class information is missing or not available for this polygon
*For polygons where **LAND_BASE** has been coded **V** (Vegetated) and **LAND_COVER** has been coded as **N** (Non-treed), and **VEG_TYPE** has been coded as **BY, BM,** or **BL** (bryoids), the only permitted values are:*
CL – Closed (Cover of bryoids is greater than 50% of the polygon.)
OP – Open (Cover of bryoids is less than or equal to 50% of the polygon)
SA – Density class information is missing or not available for this polygon
*For polygons where **LAND_BASE** has been coded **N** (Non-vegetated) and **LAND_COVER** has been coded as **L** (Land), and **VEG_TYPE** has been coded as **SI** (snow/ice), the only permitted values are:*
GL – Glacier (A mass of perennial snow and ice with definite lateral limits, typically flowing in a particular direction)
SC – Snow cover (Snow or ice that is not part of a glacier, but is found during summer months on the landscape)
*For polygons where **LAND_BASE** has been coded **N** (Non-vegetated) and **LAND_COVER** has been coded as **L** (Land), and **VEG_TYPE** has been coded as **RO** (rock/rubble), the only permitted values are:*
BR – Bedrock (Unfragmented, consolidated rock contiguous with the underlying material)
RT – Rubble, talus, blockfield (Fragmented rock, broken away from bedrock surfaces and moved into its present position by gravity or ice)
MS – Rubbly mine spoils (Discarded overburden or waster rock moved to extract ore during a mining operation)
LB – Lava bed (An area where molten rock has flowed from a volcano or fissure and cooled and solidified to form rock)

*For polygons where **LAND_BASE** has been coded **N** (Non-vegetated) and **LAND_COVER** has been coded as **L** (Land), and **VEG_TYPE** has been coded as **EL** (exposed land), the only permitted values are:*
RS – River sediments (Silt, gravel, and sand bars associated with former river channels and present river edges)
ES – Exposed soil (Any exposed soil not covered by the other categories, such as areas of recent disturbance including mud slides, debris torrents, avalanches, or disturbances such as pipeline rights-of-way or cultivated fields, where **vegetation cover is less than 5%**)
LS – Pond or lake sediments (Exposed sediments related to dried-up lakes or ponds)
RM – Reservoir margin (Land exposed by a drained or fluctuating reservoir. It is found above "normal" water levels and may consist of a range of substrates including gravel, cobbles, fine sediments, or bedrock)
BE – Beach (An area with sorted sediments reworked in recent time by wave action. It may be formed at the edge of fresh or salt water bodies)
LL – Landing (A compacted area adjacent to a road used for sorting and loading logs)
BU – Burned area (Land showing evidence of recent burning, either natural or prescribed. Vegetation of less than 5% crown cover is present at the time of polygon description)
RP – Road surface (An area cleared and compacted for the purpose of transporting goods and services by vehicles. Older roads that are used infrequently or not at all may cease to be classified as non-vegetated)
MU – Mudflat sediment (Flat plain-like areas associated with lakes, ponds, rivers, or streams, dominated by fine-textured sediments. They can be associated with freshwater or estuarine sources)
CB – Cutbank (Part of a road corridor created upslope of the road surface by excavation into the hillside. "Natural" forces may also create Cutbanks)
MO – Moraine (An area of debris transported and deposited by a glacier)
GP – Gravel or borrow pit (An area exposed through the removal of sand and gravel)
TS – Tailings (An area containing the solid waste material produced by the mining and milling of ore)
RR – Railway surface (A roadbed with fixed rails, may contain single or multiple rail lines)
BP – Buildings and parking (Building and associated developments such as roads and parking areas)
AP – Airport (A permanently paved or gravelled area, and associated buildings and parking, used by airplanes)
PM – Open pit mine (An exposed area used to extract ore during a mining operation. This may contain associated buildings and any tailings produced by the mining and milling process)
OT – Other (A non-vegetated polygon where none of the other exposed land categories can be reliably chosen)
*For polygons where **LAND_BASE** has been coded **N** (Non-vegetated) and **LAND_COVER** has been coded as **W** (Water), and **VEG_TYPE** has been coded as **WA** (water), the only permitted values are:*
LA – Lake (A naturally occurring static body of water more than two metres deep in some portion. The boundary for the lake is the natural high water mark)
RE – Reservoir (An artificial basin affected by impoundment of water behind a human-fabricated structure such as a dam, berm, dyke, or wall)
RI – River/stream (A watercourse formed when water flows between continuous, definable banks. Flow may be intermittent or perennial, but does not include ephemeral flow where a channel with no definable banks is present. Gravel bars are part of a stream, while islands within a stream that have definable banks are not)
SW – Salt water (A naturally occurring body of water containing salt or generally considered to be salty. The boundary for the saltwater polygon is the high tide line)
GW –Water in the Great Lakes
SO – Shallow/open water (Permanent, shallow (less than 2 metre midsummer levels), standing water that lacks extensive *emergent* plant cover)
BF – Beaver pond or flowage (A water body formed by the damming of a stream or creek by beavers)
*For polygons where **LAND_BASE** has been coded as **M** (out-of-province/territory/country) the only permitted value is:*
MI – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary
*For polygons where **LAND_BASE** has been coded as **S** (Missing or unavailable information) the only permitted value is:*
SA – Density class information is missing or not available for this polygon

STAND_STRU
The structure of the prevailing forest cover in treed polygons.
*For polygons where **LAND_COVER** has been coded as **T** (Treed) the only permitted values are:*
SNGL – Single-storey stand
MULT – Two or more distinct canopy layers
COMP – Complex, non-distinct layers
UNKN – Stand structure is not known
*For polygons where **LAND_BASE** has been coded N (Non-vegetated) or **LAND_COVER** has been coded **N** (Non-treed), the only permitted values are:*
NA – Not Applicable
*For polygons where **LAND_BASE** has been coded as **M** (out-of-province/territory/country) the only permitted value is:*
M – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary.
*For polygons where **LAND_BASE** has been coded as **S** (Missing or unavailable information) the only permitted value is:*
S – Stand structure information is missing or not available for this polygon.

SOIL_MOIST
The average amount of soil water annually available for evapotranspiration by vascular plants over several years.
*For polygons where **LAND_COVER** has been coded as **T** (Treed) the only permitted values are:*
VD – Very dry (Soil retains moisture for a negligible period following precipitation and water infiltration is extremely rapid; primary water source is precipitation)
D – Dry (Soil retains moisture for brief periods following precipitation and water infiltration is very rapid; primary water source is precipitation)
F – Fresh (Soil retains moisture for moderately short periods following precipitation and water infiltration is moderate; primary water source is precipitation with limited seepage in coarse textured soils)
M – Moist (Soil is wet for a substantial part of the growing season; seepage is common)
W – Wet (Water table is at or near soil surface (surface seepage) for most of the year)
VW – Very wet (Water table is at or above the soil surface all year)
SA – Soil moisture regime not available (*where data is extracted from a jurisdictional forest inventory database*)
*For polygons where **LAND_BASE** has been coded N (Non-vegetated) or **LAND_COVER** has been coded **N** (Non-treed), the only permitted values are:*
NA – Not Applicable
*For polygons where **LAND_BASE** has been coded as **M** (out-of-province/territory/country) the only permitted value is:*
MI – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary.
*For polygons where **LAND_BASE** has been coded as **S** (Missing or unavailable information) the only permitted value is:*
SA – Soil moisture regime information is missing or not available for this polygon.

DEVEL_STAGE
A description of the changes in forest stand structure over time (Source: https://sites.google.com/site/forestryencyclopedia/Home/Stand%20Development, http://forestry.sfasu.edu/faculty/stovall/silviculture/index.php/silviculture-textbook-sp-9418/157-stand-structure)
*For polygons where **LAND_COVER** has been coded as **T** (Treed) the only permitted values are:*
SI – Stand initiation (the stage of stand development following a catastrophic disturbance when new individuals and species appear at a site. In this stage, stands consist of small trees and herbs with growing space available for all trees, and trees grow at roughly the same pace)
SE – Stem exclusion (the stage of stand development occurring after several years, when new individuals cease to appear or appear infrequently, some existing individuals die, and other individuals grow larger and express differences in height and diameter. In this stage stands have a closed canopy and there is intense competition among trees and relatively little understorey vegetation)
UR – Understorey reinitiation (the stage of stand development during which herbs, shrubs, and "advance regeneration" appear and survive in the understorey, but grow very little. These stands are beginning to develop increased structural complexity, provide habitat for species using shrubs and understorey trees, but are often lacking in large trees and snags)
CO – Complex/old growth (the stage of stand development during which overstorey trees die in an irregular fashion, and some of the understorey trees begin growing in the overstorey; coniferous old-growth stands in the Pacific Northwest are typified by large diameter trees, large diameter snags, large diameter logs on the forest floor, and a multi-storied canopy. These stands have increased structural complexity for wildlife, habitat for species using shrubs and understorey trees, and habitat for species that need large trees and snags)
IN – Intermediate-aged, low density (treed areas which are no longer young enough for Stand Initiation, nor sufficiently old or structurally complex to be described by the Complex/Old Growth development stage. These stands do not experience competition with other trees (low canopy closure/density), and are typically found on rock outcrops or wet conditions)
SA – Stand development stage information is missing or not available for this polygon
*For polygons where **LAND_BASE** has been coded N (Non-vegetated) or **LAND_COVER** has been coded **N** (Non-treed), the only permitted values are:*
NA – Not Applicable
*For polygons where **LAND_BASE** has been coded as **M** (out-of-province/territory/country) the only permitted value is:*
MI – Polygon within NFI plot boundary falls outside of the provincial/territorial or national boundary.
*For polygons where **LAND_BASE** has been coded as **S** (Missing or unavailable information) the only permitted value is:*
SA – Stand development stage information is missing or not available for this polygon.

Appendix 4: NFI Land Cover Classification Scheme

Canada's National Forest Inventory

Land Cover Classification Scheme

September 21, 2017
Version 4.0.2

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The following was adopted from the B.C. Land Cover Classification Scheme, 1999.

Classifying Land Cover

The Land Cover Classification Scheme is based on current cover. Cover may be vegetated or non-vegetated. Vegetated cover is either treed or non-treed; non-vegetated cover is either land or water. In most cases, uniform areas (polygons) are delineated on mid-scale aerial photographs (1:10 000 to 1:20 000). Each polygon is then assessed using hierarchical classes, first into Vegetated or Non-Vegetated, then by cover type, landscape position, and so on, to the lowest level identifiable.

Below is a decision chart for the classification scheme. Figure 1 illustrates the classification scheme structure for vegetated and non-vegetated areas.

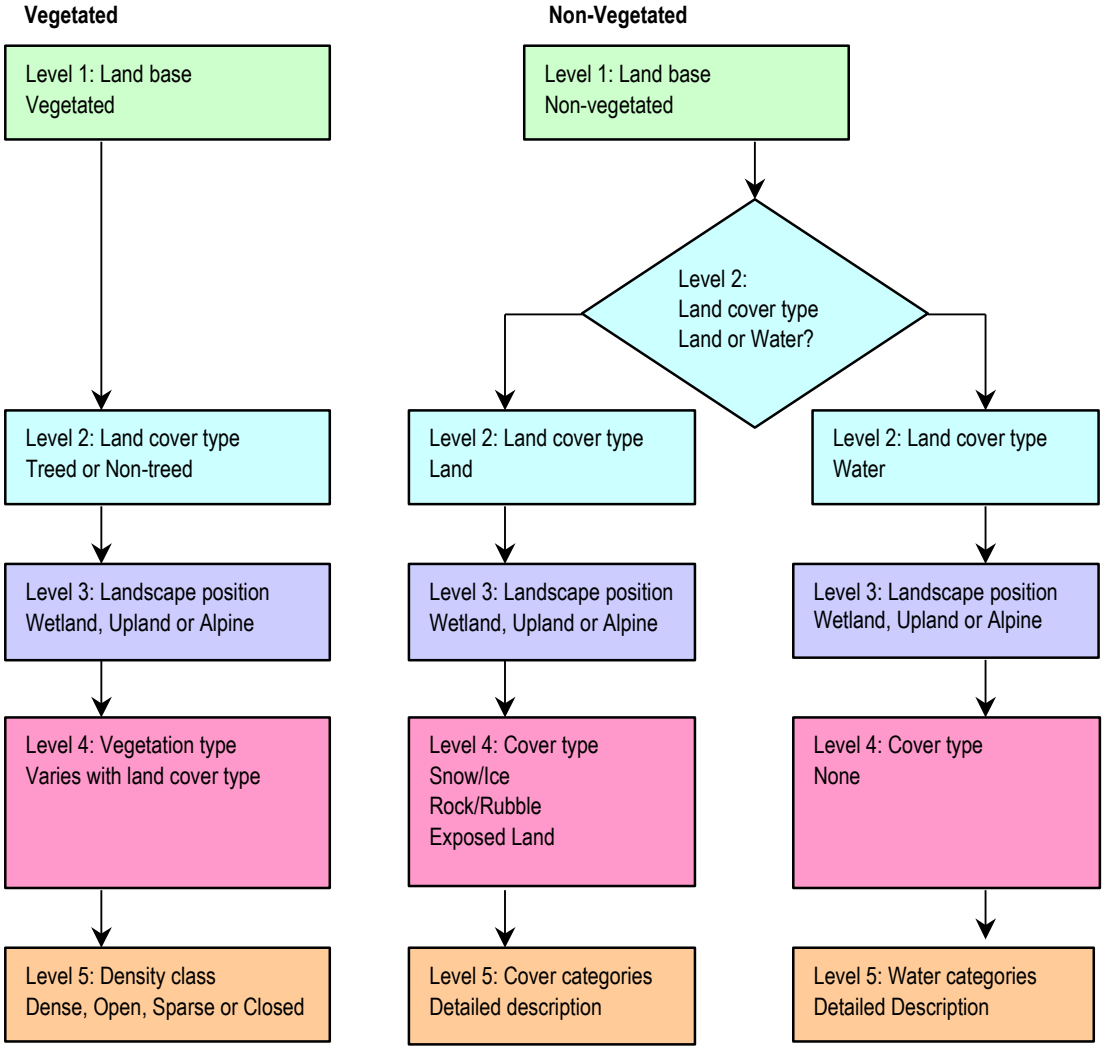

Figure 2. The Land Cover Classification Scheme Process Map.

Application of the Land Cover Classification Scheme provides a land cover designation based on the categories described below. The cover for each polygon is derived from polygon attributes estimated by photo interpretation and calibrated based on air and ground surveys.

The land cover designation provides a categorization of the polygon based on the Land Cover Classification Scheme. Lower layer (such as shrubs, herbs, and bryoids) vegetation information is not provided when a higher layer (such as trees) exists.

The Coding System

The land classification of each polygon is summarized as a seven-letter code to facilitate broad land classification reporting. Code letters are given in the detailed descriptions that follow.

The following is an example of the derivation of the seven-letter Land Cover Class Code:

Level	Estimated attributes	Code assigned
1	Vegetated crown closure ≥5%	V (Vegetated)
2	Tree crown closure ≥10%	T (Treed)
3	Not Alpine or Wetland	U (Upland)
4	Coniferous ≥75% of total Crown Closure	TC (Coniferous)
5	Tree crown closure = 80%	DE (Dense)

The Land Cover Class code for this polygon would be VTUTCDE.

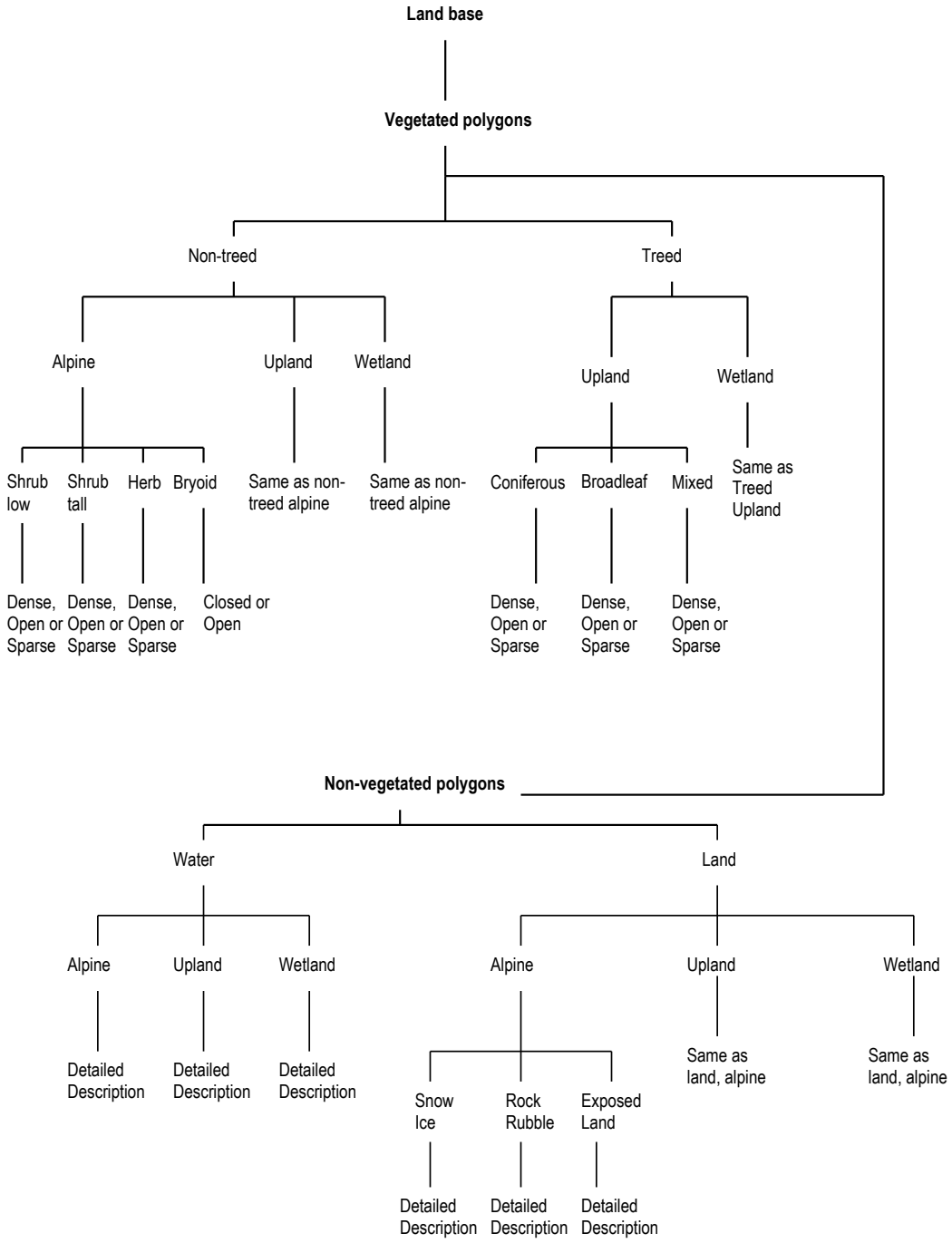

Figure 3. Structure of the Land Cover Classification Scheme.

Level 1 - Land Base

The first level of the classification scheme classifies the presence or absence of vegetation, as Vegetated or Non-Vegetated.

V = Vegetated
A polygon is considered Vegetated when the total cover of trees, shrubs, herbs, and bryoids (other than crustose lichens) covers at least 5% of the total surface area of the polygon.

N = Non-Vegetated
A polygon is considered Non-Vegetated when the total cover of trees, shrubs, herbs, and bryoids covers less than 5% of the total surface area of the polygon. Bodies of water are to be classified as Non-Vegetated.

Classifying Vegetated Polygons

If the polygon is classed as Vegetated the following levels apply.
(If classified as Non-Vegetated see *Classifying Non-Vegetated Polygons* for a description of further levels.)

Level 2 - Land Cover Type

The first determination for Vegetated polygons is whether they are Treed or Non-Treed.

T = Treed
A polygon is considered Treed if at least 10% of the polygon area, by crown cover, consists of tree species of any size. Refer to the *NFI Tree Species List* for a list of tree species.

N = Non-Treed
A polygon is considered Non-Treed if less than 10%, by crown cover, of the polygon area consists of tree species of any size.

Level 3 - Landscape Position

Once the polygon has been classified as Treed or Non-Treed, the location relative to elevation and drainage is determined.

W = Wetland
Wetland has numerous definitions in the literature. The definition used for the classification is taken from Fraser et al. (1995):

Wetland is defined as land having the water table at, near or above the soil surface, or which is saturated for a long enough period of time to promote wetland or aquatic processes. These wetland processes are indicated by the presence of Organic or Gleysolic soils and hydrophytic vegetation. See wetland definitions later in this document for a more complete description.

U = Upland
A broad class that includes all non-wetland ecosystems that range from very xeric to hygric soil moisture regimes.

A = Alpine
A polygon is considered Alpine when it is treeless (for practical purposes less than 1% tree cover can be included within the Alpine category), with alpine vegetation dominated by shrubs, herbs, graminoids, bryoids, and lichens. Rock, ice, and snow dominate much of the Alpine. Alpine does not typically include the parkland and krummholz forest types. Alpine is a classification level of Non-Treed areas above the tree line only.

Level 4 - Vegetation Type

Once the polygon is classed as Treed or Non-Treed and determined to be Wetland or Upland, it is further classified by the type of vegetation within the unit:

Vegetated Treed

Treed units can be Coniferous, Broadleaf, or Mixed.

TC = Coniferous
Defined as those trees classified botanically as Coniferae; cone-bearing trees having needles or scale-like leaves, usually evergreen. These species are commonly referred to as conifer or softwoods. Refer to the *NFI Tree Species List* for a list of species and species codes.

The polygon is classified as Coniferous when trees cover a minimum of 10% of the total polygon area by crown cover, and coniferous trees are 75% or more of the total tree volume.

TB = Broadleaf
Defined as those trees classified botanically as Angiospermae in the subclass Dicotyledoneae. These species are commonly referred to as deciduous or hardwoods. Refer to the *NFI Tree Species List* for a list of species and species codes.

The polygon is classified as Broadleaf when trees cover a minimum of 10% of the total polygon area by crown cover, and broadleaf trees are 75% or more of the total tree volume.

TM = Mixed
The polygon is classified as Mixed when trees cover a minimum of 10% of the total polygon area by crown cover, but neither coniferous nor broadleaf trees account for 75% or more of the total tree volume.

Vegetated Non-Treed Units

Non-Treed units can be Shrub, Herb, or Bryoid.

Shrub

Shrubs are defined as woody perennial plants, both evergreen and deciduous, that have a relatively low growth habit, and are generally multi-stemmed, rather than having one bole. They differ from a tree by their low stature (generally less than 10 m) and non-treelike form. A reporting break is made between Tall (greater than or equal to 2 m) and Low (less than 2 m) for wildlife management interpretation purposes. Other breaks may be used if preferred, as height data are estimated as a continuous variable.

For a polygon to be classed as Shrub, it must have a minimum of 10% ground cover of shrubs, or shrubs must constitute more than 1/3 of the total vegetation cover.

ST = Shrub Tall
A Shrub polygon with average height greater than or equal to 2 m.

SL = Shrub Low
A Shrub polygon with average shrub height less than 2 m.

Herb

Herbs are defined, for this system, as vascular plants without a woody stem, including ferns, fern allies, grasses, and grass-like plants.

The Herb class has two further subdivisions based on the proportion of forbs and graminoid plants. The subclasses Forbs and Graminoids are used when any one group accounts for greater than 50% of the herb cover.

Graminoids are defined as herbaceous plants with long, narrow leaves characterized by linear venation; including grasses, sedges, rushes, and other related species.

Forbs are defined as herbaceous plants other than graminoids, including ferns, club mosses, and horsetails.

If a polygon does not meet the definition of Shrub, then it can be classed as Herb if it has a minimum of 20% ground cover of herbs, or herbs constitute more than 1/3 of the total vegetation cover.

HE = Herb
A Herb polygon with no distinction between forbs and graminoids.

HF = Herb – Forbs
A Herb polygon with forbs greater than 50% of the herb cover.

HG = Herb – Graminoids
A Herb polygon with graminoids greater than 50% of the herb cover.

Bryoid

Bryoids are defined as bryophytes (mosses, liverworts, and hornworts) and lichens (foliose or fruticose; not crustose).

If a polygon does not meet the definition of Shrub or Herb, then it can be classed as Bryoid if it has greater than 50% of the vegetation cover in bryoids, and herb and shrub cover must each constitute less than 20%.

The Bryoid class has two further subdivisions based on the proportion of bryophytes and lichens. The class is subdivided into Bryophyte or Lichen when any one group accounts for greater than 50% of the bryoid cover.

BY = Bryoids
A Bryoid polygon with no distinction between mosses and lichens by cover.

BM = Bryoid – Moss
A Bryoid polygon with mosses, liverworts, and hornworts greater than 50% of the bryoid cover.

BL = Bryoid – Lichens
A Bryoid polygon with lichens (foliose or fruticose; not crustose) greater than 50% of the bryoid cover.

Level 5 - Density Class

Once a Vegetated polygon is classed up to Level 4, density is reported using the following density classes available by vegetation type. Note that these are reporting breaks only; interpreters can estimate density in a continuous manner (from 0% to 100%).

The density classes for Treed, Shrub, or Herb polygons are as follows:

DE = Dense
Tree, shrub, or herb cover is between 61% and 100% crown closure for the polygon.

OP = Open
Tree, shrub, or herb cover is between 26% and 60% crown closure for the polygon.

SP = Sparse
Tree cover is between 10% and 25% crown closure for treed and shrub polygons or cover is between 20 and 25% for herb cover polygons.

The density classes for Bryoid polygons are as follows:

CL = Closed
Cover of bryoids is greater than 50% of the polygon.

OP = Open
Cover of bryoids is less than or equal to 50% of the polygon.

Classifying Non-Vegetated Polygons

A polygon is considered Non-Vegetated when the total cover of trees, shrubs, herbs, and bryoids covers less than 5% of the total surface area of the polygon.

Level 2 - Land Cover Type

The first decision is whether a polygon is considered to be Land or a Water body. The cover type occupying greater than 50% of the polygon area is the cover type assigned.

L = Land
The portion of the landscape not covered by water (as defined below), based on the percentage cover area.

W = Water
A naturally occurring, static body of water, two or more metres deep in some portion, or a watercourse formed when water flows between continuous, definable banks. These flows may be intermittent or perennial; but do not include ephemeral flows where a channel with no definable banks is present. Islands within streams that have definable banks are not part of the stream; gravel bars are part of the stream. Interpretation is based on the percentage area covered.

Classifying Non-Vegetated Land Polygons

If the polygon is classed as Land the following steps and levels apply.
(If classed as Water see Land Cover Type - Water for a description of further levels.)

Level 3 - Landscape Position (Land)

This level describes the location of the polygon relative to drainage, and is described as Wetland or Upland.

W = Wetland
Land having a water table near, at, or above the soil surface, or which is saturated for a long enough period to promote wetland or aquatic processes.

These wetland processes are indicated by the presence of Organic or Gleysolic soils and hydrophytic vegetation. See wetland definitions later in this document for a more complete description.

U = Upland
A broad class that includes all non-wetland ecosystems that range from very xeric to hygric soil moisture regimes.

A = Alpine
A polygon is considered Alpine when it is treeless (for practical purposes less than 1% tree cover can be included within the Alpine category), with alpine vegetation dominated by shrubs, herbs, graminoids, bryoids, and lichens. Rock, ice, and snow dominate much of the Alpine. Alpine does not typically include the parkland and krummholz forest types. Alpine is a classification level of Non-Treed areas above the tree line only.

Level 4 - Non-Vegetated Cover Type (Land)

Once the polygon is classed as Non-Vegetated and determined whether it is Wetland, Upland or Alpine, it is further classified by the type of non-vegetated condition within the unit. Non-Vegetated polygons are divided into three groups: Snow/Ice, Rock/Rubble, and Exposed Land.

SI = Snow/Ice
Defined as either glacier or snow cover.

RO = Rock/Rubble
Defined as bedrock or fragmented rock broken away from bedrock surfaces and moved into its present position by gravity or ice. Extensive deposits are found in and adjacent to alpine areas and are associated with steep rock walls and exposed ridges; canyons and cliff areas also contain these deposits.

EL = Exposed Land
Contains all other forms of Exposed Land identified by a range of subclasses.

Level 5 - Non-Vegetated Categories (Land)

The dominant material or feature of the non-vegetated area defines classes.

Snow/Ice has two subclasses - **Glacier** and **Snow Cover**:

GL = Glacier
A mass of perennial snow and ice with definite lateral limits, typically flowing in a particular direction.

SC = Snow Cover
Snow or ice that is not part of a glacier, but is found during summer months on the landscape.

Rock/Rubble has four subclasses:

BR = Bedrock
Unfragmented, consolidated rock contiguous with the underlying material.

RT = Rubble, Talus, Blockfield
Fragmented rock, broken away from bedrock surfaces and moved into its present position by gravity or ice.

MS = Rubbly Mine Spoils
Discarded overburden or waste rock moved to extract ore during a mining operation.

LB = Lava Bed
An area where molten rock has flowed from a volcano or fissure and cooled and solidified to form rock.

Exposed Land has 16 subclasses:

RS = River Sediments
Silt, gravel, and sand bars associated with former river channels and present river edges.

ES = Exposed Soil
Any exposed soil not covered by the other categories, such as areas of recent disturbance including mud slides, debris torrents, avalanches, or disturbances such as pipeline rights-of-way or cultivated fields, where vegetation cover is less than 5%.

LS = Pond or Lake Sediments
Exposed sediments related to dried-up lakes or ponds.

RM = Reservoir Margin
Land exposed by a drained or fluctuating reservoir. It is found above "normal" water levels and may consist of a range of substrates including gravel, cobbles, fine sediments, or bedrock.

BE = Beach
An area with sorted sediments reworked in recent time by wave action. It may be formed at the edge of fresh or salt water bodies.

LL = Landing
A compacted area adjacent to a road used for sorting and loading logs.

BU = Burned Area
Land showing evidence of recent burning, either natural or prescribed. Vegetation of less than 5% crown cover is present at the time of polygon description.

RP = Road Surface
An area cleared and compacted for the purpose of transporting goods and services by vehicles. Older roads that are used infrequently or not at all may cease to be classified as non-vegetated.

MU = Mudflat Sediment
Flat plain-like areas associated with lakes, ponds, rivers, or streams, dominated by fine-textured sediments. They can be associated with freshwater or estuarine sources.

CB = Cutbank
Part of a road corridor created upslope of the road surface by excavation into the hillside. "Natural" forces may also create Cutbanks.

MO = Moraine
An area of debris transported and deposited by a glacier.

GP = Gravel or Borrow Pit
An area exposed through the removal of sand and gravel.

TS = Tailings
An area containing the solid waste material produced by the mining and milling of ore.

RR = Railway Surface
A roadbed with fixed rails, may contain single or multiple rail lines.

BP = Buildings and Parking
Buildings and associated developments such as roads and parking areas.

AP = Airport
A permanently paved or gravelled area, and associated buildings and parking, used by airplanes.

PM = Open Pit Mine
An exposed area used to extract ore during a mining operation. This may contain associated buildings and any tailing produced by the mining and milling process.

OT = Other
A Non-Vegetated polygon where none of the other exposed land categories can be reliably chosen.

Classifying Non-Vegetated Water Polygons

If the polygon is classed as Water the following categories apply:

Level 3 - Landscape Position (Water)

The landscape position relative to drainage is determined.

W = Wetland
Land having a water table near, at, or above the soil surface, or which is saturated for a long enough period to promote wetland or aquatic processes. These wetland processes are indicated by the presence of Organic or Gleysolic soils and hydrophytic vegetation. See wetland definitions later in this Appendix for a more complete description.

U = Upland
A broad class that includes all non-wetland ecosystems that range from very xeric to hygric soil moisture regimes.

A = Alpine
A polygon is considered Alpine when it is treeless (for practical purposes less than 1% tree cover can be included within the Alpine category), with alpine vegetation dominated by shrubs, herbs, graminoids, bryoids, and lichens. Rock, ice, and snow dominate much of the Alpine. Alpine does not typically include the parkland and krummholz forest types. Alpine is a classification level of Non-Treed areas above the tree line only.

Level 4 - Water

WA = Water
A naturally occurring, static body of water, two or more metres deep in some portion, or a watercourse formed when water flows between continuous, definable banks. These flows may be intermittent or perennial; but do not include ephemeral flows where a channel with no definable banks is present.

Islands within streams that have definable banks are not part of the stream; gravel bars are part of the stream. Interpretation is based on the percentage area covered.

Level 5 - Water Categories

Four categories have been identified: Lake, Reservoir, River/Stream, and Salt Water.

LA = Lake
A naturally occurring static body of water more than two metres deep in some portion. The boundary for the lake is the natural high water mark.

RE = Reservoir
An artificial basin affected by impoundment of water behind a human fabricated structure such as a dam, berm, dyke, or wall.

RI = River/Stream
A watercourse formed when water flows between continuous, definable banks. Flow may be intermittent or perennial, but does not include ephemeral flow where a channel with no definable banks is present. Gravel bars are part of a stream, while islands within a stream that have definable banks are not.

SW = Salt Water
A naturally occurring body of water containing salt or generally considered to be salty. The boundary for salt water is the natural high tide line.

1. Definitions

The following terms are defined for use in the Land Cover Classification Scheme.

Vegetated Land Definitions

Alpine: Treeless (for practical purposes less than 1% tree cover can be included within the Alpine category), with alpine vegetation dominated by shrubs, herbs, graminoids, bryoids, and lichens. Rock, ice, and snow dominate much of the Alpine. Alpine does not typically include the parkland and krummholz forest types. Alpine is, by definition, treeless, therefore there is no further classification level of Treed/Non-Treed under this category.

Broadleaf: trees classified botanically as Angiospermae in the subclass Dicotyledoneae (Bones 1993). These species are referred to as hardwoods. These species are commonly referred to as deciduous or hardwoods.

Bryoids: are defined as bryophytes (mosses, liverworts, and hornworts) and lichens (foliose or fruticose; not crustose).

Coniferous: trees classified botanically as Coniferae; cone-bearing trees having needles or scale-like leaves, usually evergreen. These species are commonly referred to as conifer or softwoods.

Forbs are defined as herbaceous plants other than graminoids, including ferns, club mosses, and horsetails.

Graminoids are defined as herbaceous plants with long, narrow leaves characterized by linear venation; including grasses, sedges, rushes, and other related species.

Herbs: vascular plants without a woody stem, including ferns, fern allies, grasses, and grass-like plants.

Krummholz: scrubby, stunted growth form of trees, often forming a characteristic zone at the limit of tree growth at high elevations.

Non-Treed: a polygon is considered Non-Treed if less than 10%, by crown cover, of the polygon area consists of tree species of any size.

Parkland: landscape characterized by strong clumping of trees due to environmental factors.

Shrubs: woody perennial plants, both evergreen and deciduous, that have a relatively low growth habit, and are generally multi-stemmed, rather than having one bole. It differs from a tree by its low stature (generally less than 10 m) and non-treelike form. A reporting break is made between Tall (greater than or equal to 2 m) and Low (less than 2 m) for wildlife management interpretation purposes. Other breaks may be used if preferred, as height data are estimated as a continuous variable.

Treed: a polygon is considered Treed if 10% or more of the polygon area, by crown cover, consists of tree species of any size.

Upland: a broad class that includes all non-wetland ecosystems that range from very xeric to hygric soil moisture regimes.

Vegetated: a polygon is considered Vegetated when the total cover of trees, shrubs, herbs, and bryoids (other than crustose lichens) covers at least 5% of the total surface area of the polygon.

Wetland: is defined as land having the water table at, near, or above the soil surface, or which is saturated for a long enough period to promote wetland or aquatic processes. These wetland processes are indicated by the presence of Organic or Gleysolic soils and

hydrophytic vegetation. See Wetland definitions later in this section for a more complete description.

Non-Vegetated Land Definitions

Beach (Exposed Land): an area with sorted sediments reworked in recent time by wave action. It may be formed at the edge of fresh or salt-water bodies.

Bedrock (Rock/Rubble): unfragmented, consolidated rock contiguous with the underlying material.

Buildings and Parking (Exposed Land): buildings and associated developments such as roads and parking areas.

Burned Area (Exposed Land): land showing evidence of recent burning, either natural or prescribed. Vegetation of less than 5% crown cover is present at the time of polygon description.

Cutbank (Exposed Land): part of a road corridor created upslope of the road surface by excavation into the hillside. "natural" processes may also create Cutbanks.

Exposed Land: contains all other forms of exposed land identified by a range of 16 subclasses: Beach; Buildings and Parking; Burned Area; Cutbank; Exposed Soil; Gravel Pit; Landing; Moraine; Mudflat Sediment; Other; Pond or Lake Sediments; Railway Surface; Reservoir Margin; River Sediments; Road Surface; Tailings.

Exposed Soil (Exposed Land): any exposed soil not covered by the other categories (e.g., areas of recent disturbance including mud slides, debris torrents, avalanches, or disturbances such as pipeline rights-of-way or cultivated fields) where vegetation cover is less than 5%.

Glacier (Snow/Ice): a mass of perennial snow and ice with definite lateral limits, typically flowing in a particular direction.

Gravel Pit (Exposed Land): an area exposed through removal of sand and gravel.

Lake: a naturally occurring static body of water more than two metres deep in some portion. The boundary for the lake is the natural high water mark.

Land: the portion of the landscape not covered by water (as defined below) based on the percentage area cover.

Landing (Exposed Land): a compacted area adjacent to a road used for sorting and loading logs.

Lava Bed: an area where molten rock has flowed from a volcano or fissure and cooled and solidified to form rock.

Moraine (Exposed Land): an area of debris transported and deposited by a glacier.

Mudflat Sediment (Exposed Land): flat plain-like areas associated with lakes, ponds, rivers, or streams, dominated by fine-textured sediments. They can be associated with freshwater or estuarine sources.

Non-Vegetated: A polygon is considered Non-Vegetated when the total cover of trees, shrubs, herbs, and bryoids covers less than 5% of the total surface area of the polygon. Bodies of water are to be classified as Non-Vegetated.

Other (Exposed Land): a Non-Vegetated polygon where none of the other exposed land categories can be reliably chosen.

Pond or Lake Sediments (Exposed Land): exposed sediments related to dried-up lakes or ponds.

Railway Surface (Exposed Land): a roadbed with fixed rails; may contain single or multiple rail lines.

Reservoir: an artificial basin affected by impoundment of water behind a human fabricated structure such as a dam, berm, dyke, or wall.

Reservoir Margin (Exposed Land): land exposed by a drained or fluctuating reservoir. It is found above "normal" water levels, and may consist of a range of substrates including gravel, cobbles, fine sediments, or bedrock.

River/Stream: a watercourse formed when water flows between continuous, definable banks. Flow may be intermittent or perennial, but does not include ephemeral flow where a channel with no definable banks is present. Gravel bars are part of a stream, while islands within a stream that have definable banks are not.

River Sediments (Exposed Land): silt, gravel, and sand bars associated with former river channels and present river edges.

Road Surface (Exposed Land): an area cleared and compacted for the purpose of transporting goods and services by vehicles. Older roads that are used infrequently or not at all may cease to be classified as non-vegetated.

Rock/Rubble: bedrock or fragmented rock broken away from the bedrock surface and moved into its present position by gravity or ice. Extensive deposits are found in and adjacent to alpine areas and are associated with steep rock walls and exposed ridges. Canyons and cliff areas also contain these deposits.

Rubble, Talus, Blockfield (Rock/Rubble): fragmented rock, broken away from the bedrock surface, and moved into its present position by gravity or ice.

Rubbly Mine Spoils (Rock/Rubble): discarded overburden or waste rock moved to extract ore during a mining operation.

Salt Water: a naturally occurring body of water containing salt or generally considered to be salty. The boundary for salt water is the natural high tide line.

Snow Cover (Snow/Ice): snow or ice that is not part of a glacier, but is found during summer months on the landscape.

Tailings (Exposed Land): an area containing the solid waste material produced by the mining and milling of ore.

Water: a naturally occurring, static body of water, two or more metres deep in some portion, or a watercourse formed when water flows between continuous, definable banks. These flows may be intermittent or perennial; but do not include ephemeral flows where a channel with no definable banks is present. Islands within a stream with definable banks are not part of the stream; gravel bars are part of the stream. Interpretation is based on the percentage area covered.

Wetland Definitions

This section is taken from Fraser et al. (1995). The wetland classification was under review at the time of this report.

Wetland: Land having a water table at, near, or above the soil surface, or which is saturated for a long enough period to promote wetland or aquatic processes. These wetland processes are indicated by the presence of Organic or Gleysolic soils and hydrophytic vegetation. Sites with subhydric soil moisture regime and wetter are generally considered to be wetlands; sites with deeper waters are aquatic ecosystems. Wetlands must have one of the following four attributes (adapted from Cowardin et al. 1979):

1. At least periodically, the land supports predominantly hydrophytic plant species.

2. The substrate is predominantly poorly drained subhydric or wetter soil. Soils may be organic or mineral; in mineral soils, gleying occurs within the top 30 cm.

3. The substrate is non-soil and is saturated with water covered by shallow water at some time during the growing season.

4. A water body less than two metres in depth.

Wetlands can be bogs, swamps, marshes, fens, hot springs and hot pools, alkali ponds, shrub carrs, swamps, shallow (less than 2 m) open water, and includes both forested and non-forested ecosystems. As an example, the wetland realm can be subdivided into a number of classes.

Bogs: a peat-dominated class of wetland. They are wetlands covered or filled with poorly to moderately decomposed Sphagnum-derived peats. They are nutrient poor. Soils are usually Fibrisols, Mesisols, or Humisols. In the Fort Nelson Lowlands, bogs can have Organic Cryosolic soils.

Swamps: wooded wetlands dominated by 25% or greater cover of trees or tall shrubs and characterized by periodic flooding and nearly permanent subsurface water flow through various mixtures of mineral sediments and peat. Swamps, like fens, are rich in minerals and nutrients, but the characteristic water movement through swamps tends to make them better aerated than fens. Swamp waters thus have sufficient levels of dissolved oxygen to support either tall shrubs or trees.

Marshes: wetlands that are permanently or seasonally inundated with nutrient-rich water, and support extensive cover of emergent herbaceous vegetation rooting in a mineral-rich substrate. The water level of marshes varies seasonally, and from marsh to marsh. Marshes that dry by late summer expose matted vegetation and non-vegetated mudflats or sandflats, but saturation persists near the surface. The substrate ranges from dominantly mineral materials to shallow, well-decomposed peat, derived primarily from marsh vegetation. The substrate is strongly influenced by water chemistry, which in turn reflects basin geology and regional climate.

Fens: wetlands composed of accumulations of well to poorly decomposed, non-sphagnum peats. Most fens have more than 40 cm of peat accumulation. Fen waters come mostly from groundwater and runoff from adjacent mineral uplands. As a result, fens are less acid and more mineral-rich than are bogs. Fen peat is well to moderately decomposed. Associated soils are Mesisols and Humisols. Fen vegetation can be dominated by grasses, sedges, rushes, low shrubs, or trees, and often underlain by mosses.

Wet Meadows: seasonally inundated wetlands, dominated by grasses, sedges, or rushes. They generally occur on mineral soils and have little or no peat accumulation. Tree cover is less than 10%.

Shrub Carrs: wetlands that are seasonally flooded, but dry out at the soil surface during the growing season. They occur on mineral soils that are typically gleyed within the top 30 cm.

Shallow Open Water: permanent, shallow (less than 2 m midsummer levels), standing water that lacks extensive emergent plant cover. Vegetation can be absent or emergent plants can cover up to 10% of the surface. Shallow Open Waters often include various submerged and floating aquatic macrophytes. Submerged aquatic plants are common. Shallow Open Water is also found around the edges of many lakes.

2. References

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States, U.S. Fish and Wildlife Service, Washington, DC. FWS/OBS-79/31.

Fraser, D.F., A. Banner, and A. Harcombe. 1995. A framework for ecological classification in British Columbia (V. 13 – February 20 1995) Draft report for the Aquatic and Terrestrial Task Force of RIC, Victoria, B.C.

Appendix 5: NFI Tree List

Canada's National Forest Inventory Tree Species List

September, 2014
Version 4.5

NATIVE CONIFERS

Common Name		Scientific Name	Code			
English	French		Genus	Species	Var	Form
amabilis fir	sapin gracieux	Abies amabilis	ABIE	AMA		
balsam fir	sapin baumier	Abies balsamea	ABIE	BAL		
Rocky Mountain alpine fir	sapin bifolié	Abies bifolia	ABIE	BIF		
grand fir	sapin grandissime	Abies grandis	ABIE	GRA		
subalpine fir	sapin subalpin	Abies lasiocarpa	ABIE	LAS		
unidentified fir	sapin non identifié	Abies spp.	ABIE	SPP		
yellow-cedar	chamaecyparis jaune	Chamaecyparis nootkatensis	CHAM	NOO		
unidentified cypress	chamaecyparis non identifié	Chamaecyparis spp.	CHAM	SPP		
unidentified softwood	conifères non identifié		GENC	SPP		
Rocky mountain juniper	genévrier des Rocheuses	Juniperus scopulorum	JUNI	SCO		TS
unidentified juniper	genévrier non identifié	Juniperus spp.	JUNI	SPP		
Eastern redcedar	genévrier de Virginie	Juniperus virginiana	JUNI	VIR		TS
Tamarack	mélèze laricin	Larix laricina	LARI	LAR		
subalpine larch	mélèze subalpin	Larix lyallii	LARI	LYA		
Western larch	mélèze de l'Ouest	Larix occidentalis	LARI	OCC		
unidentified larch	mélèze non identifié	Larix spp.	LARI	SPP		
Engelmann spruce	épinette d'Engelmann	Picea engelmannii	PICE	ENG		
Engelmann x white	hybride épinette d'Engelmann et épinette blanche	Picea engelmannii x glauca	PICE	ENG	GLA	
white spruce	épinette blanche	Picea glauca	PICE	GLA		
Sitka x white	hybride épinette de Sitka et épinette blanche	Picea xlutzii	PICE	LUT	X	
black spruce	épinette noire	Picea mariana	PICE	MAR		
red spruce	épinette rouge	Picea rubens	PICE	RUB		
Sitka spruce	épinette de Sitka	Picea sitchensis	PICE	SIT		
Sitka x unidentified	hybride épinette de Sitka et épinette non identifié	Picea sitchensis xunknown	PICE	SIT	X	
unidentified spruce	épinette non identifié	Picea spp.	PICE	SPP		
whitebark pine	pin à blanche écorce	Pinus albicaulis	PINU	ALB		
jack pine	pin gris	Pinus banksiana	PINU	BAN		
lodgepole pine	pin tordu	Pinus contorta	PINU	CON		
shore pine	pin tordu	Pinus contorta var. contorta	PINU	CON	CON	

Common Name		Scientific Name	Code			
English	French		Genus	Species	Var	Form
lodgepole pine	pin tordu latifolié	Pinus contorta var. latifolia	PINU	CON	LAT	
limber pine	pin flexible	Pinus flexilis	PINU	FLE		
Western white pine	pin argenté	Pinus monticola	PINU	MON		
lodgepole x jack pine	pin tordu x pin gris	Pinus xmurraybanksiana	PINU	MUR		
Ponderosa pine	pin ponderosa	Pinus ponderosa	PINU	PON		
red pine	pin rouge	Pinus resinosa	PINU	RES		
pitch pine	pin rigide	Pinus rigida	PINU	RIG		
unidentified pine	pin non identifié	Pinus spp.	PINU	SPP		
eastern white pine	pin blanc	Pinus strobus	PINU	STR		
Douglas-fir	Douglas vert	Pseudotsuga menziesii	PSEU	MEN		
Interior Douglas-fir	Douglas bleu	Pseudotsuga menziesii var. glauca	PSEU	MEN	GLA	
Coastal Douglas-fir	Douglas vert	Pseudotsuga menziesii var. menziesii	PSEU	MEN	MEN	
western yew	if de l'Ouest	Taxus brevifolia	TAXU	BRE		
unidentified yew	if non identifié	Taxus spp.	TAXU	SPP		
eastern white-cedar	thuya occidental	Thuja occidentalis	THUJ	OCC		
western redcedar	thuya géant	Thuja plicata	THUJ	PLI		
unidentified thuja	thuja non identifié	Thuja spp.	THUJ	SPP		
eastern hemlock	pruche du Canada	Tsuga canadensis	TSUG	CAN		
western hemlock	pruche de l'Ouest	Tsuga heterophylla	TSUG	HET		
mountain hemlock	pruche subalpine	Tsuga mertensiana	TSUG	MER		
mountain x western hemlock hybrid	hybride pruche subalpine et pruche de l'Ouest	Tsuga mertensiana x heterophylla	TSUG	MER	HET	
unidentified hemlock	pruche non identifié	Tsuga spp.	TSUG	SPP		

Notes: 'x' denotes hybridization.* ***Form:* *TS = Very small tree or shrubby tree, shrub on some sites according to Farrar's* Trees in Canada*.*

NATIVE HARDWOODS

Common Name		Scientific Name	Code			
English	French		Genus	Species	Var	Form
vine maple	érable circiné	Acer circinatum	ACER	CIR		TS
Freeman maple	érable Autumn Blaze	Acer x freemanii (Acer rubrum × Acer saccharinum)	ACER	FRE		
Douglas maple	érable nain	Acer glabrum var. douglasii	ACER	GLA	DOU	TS

Common Name		Scientific Name	Code			
English	French		Genus	Species	Var	Form
bigleaf maple	érable à grandes feuilles	Acer macrophyllum	ACER	MAC		
Manitoba maple (box-elder)	érable négondo (à Giguère)	Acer negundo	ACER	NEG		
black maple	érable noir	Acer nigrum	ACER	NIG		
striped maple	érable de Pennsylvanie	Acer pensylvanicum	ACER	PEN		
red maple	érable rouge	Acer rubrum	ACER	RUB		
silver maple	érable argenté	Acer saccharinum	ACER	SAC		
sugar maple	érable à sucre	Acer saccharum	ACER	SAH		
sugar maple	érable à sucre	Acer saccharum var. saccharum	ACER	SAH	SAC	
mountain maple	érable à épis	Acer spicatum	ACER	SPI		TS
unidentified maple	erable non identifié	Acer spp.	ACER	SPP		
Ohio buckeye	marronnier glabre	Aesculus glabra	AESC	GLA		
gray alder	aulne rugueux	Alnus incana	ALNU	INC		TS
speckled alder	aulne rugueux	Alnus incana ssp. rugosa	ALNU	INC	RUG	TS
mountain alder	aulne à feuilles minces	Alnus incana ssp. tenuifolia	ALNU	INC	TEN	
red alder	aulne rouge	Alnus rubra	ALNU	RUB		
speckled alder	aulne rugueux	Alnus rugosa	ALNU	RUG		TS
Hazel alder	aulne blanc	Alnus serrulata	ALNU	SER		TS
Sitka alder	aulne de Sitka	Alnus sinuata	ALNU	SIN		TS
unidentified alder	aulne non identifié	Alnus spp.	ALNU	SPP		
Siberian alder	aulne de Sibérie	Alnus viridis ssp. fruticosa	ALNU	VIR	FRU	TS
Sitka alder	aulne de Sitka	Alnus viridis ssp. sinuata	ALNU	VIR	SIN	TS
Saskatoon-berry	amélanchier à feuilles d'aulne	Amelanchier alnifolia	AMEL	ALN		TS
downy serviceberry	amélanchier aborescent	Amelanchier arborea	AMEL	ARB		TS
mountain serviceberry	amélanchier de Bartram	Amelanchier bartramiana	AMEL	BAR		TS
Pacific serviceberry	amélanchier de l'Ouest	Amelanchier florida	AMEL	FLO		TS
smooth juneberry	amélanchier glabre	Amelanchier laevis	AMEL	LAE		TS
roundleaf juneberry	amélanchier sanguin	Amelanchier sanguinea	AMEL	SAN		TS
Gaspé serviceberry	amélanchier de Gaspésie	Amelanchier sanguinea	AMEL	SAN	GAS	TS
unidentified serviceberry	amélanchier non identifié	Amelanchier spp.	AMEL	SPP		
arbutus	arbousier d'Amérique	Arbutus menziesii	ARBU	MEN		

Common Name		Scientific Name	Code			
English	French		Genus	Species	Var	Form
unidentified asimina	asiminier non identifié	Asimina	ASIM	SPP		
pawpaw	asiminier trilobé	Asimina triloba	ASIM	TRI		
Alaska paper birch	bouleau d'Alaska	Betula alaskana	BETU	ALA		
yellow birch	bouleau jaune	Betula alleghaniensis	BETU	ALL		
blueleaf birch	bouleau bleu	Betula xcaerulea	BETU	CAE		
mountain paper birch	bouleau à feuilles cordées	Betula cordifolia	BETU	COR		
Kenai birch	bouleau Kenai	Betula kenaica	BETU	KEN		
cherry birch	bouleau flexible	Betula lenta	BETU	LEN		
Alaska paper birch	bouleau d'Alaska	Betula neoalaskana	BETU	NEO		
water birch	bouleau fontinal	Betula occidentalis	BETU	OCC		
white birch	bouleau à papier (blanc)	Betula papyrifera	BETU	PAP		
Alaska paper birch	bouleau d'Alaska	Betula papyrifera var. neoalaskana	BETU	PAP	NEO	
white birch	bouleau à papier (blanc)	Betula papyrifera var. papyrifera	BETU	PAP	PAP	
gray birch	bouleau gris	Betula populifolia	BETU	POP		
unidentified birch	bouleau non identifié	Betula spp.	BETU	SPP		
Alaska x paper birch hybrid	x hybride du bouleau de l'Alaska	Betula xwinteri	BETU	WIN		
blue-beech	charme de Caroline	Carpinus caroliniana	CARP	CAR		
American hornbeam	charme de la Caroline de Virginie	Carpinus caroliniana ssp. virginiana	CARP	CAR	VIR	
unidentified hornbeam	charme non identifié	Carpinus spp.	CARP	SPP		
bitternut hickory	caryer cordiforme	Carya cordiformis	CARY	COR		
red hickory	caryer glabre	Carya glabra var. odorata	CARY	GLA	ODO	
shellbark hickory	caryer lacinié	Carya liciniosa	CARY	LAC		
shagbark hickory	caryer ovale	Carya ovata	CARY	OVA		
shagbark hickory	caryer ovale	Carya ovata var. ovata	CARY	OVA	OVA	
unidentified hickory	caryer non identifié	Carya spp.	CARY	SPP		
mockernut	caryer blanc	Carya tomentosa	CARY	TOM		
American chestnut	châtaignier d'Amérique	Castanea dentata	CAST	DEN		
unidentified chestnut	châtaignier non identifié	Castanea spp.	CAST	SPP		
hackberry	micocoulier occidental	Celtis occidentalis	CELT	OCC		

Common Name		Scientific Name	Code			
English	French		Genus	Species	Var	Form
unidentified hackberry	micocoullier non identifié	Celtis spp.	CELT	SPP		
dwarf hackberry	micocoulier rabougri	Celtis tenuifolia	CELT	TEN		TS
button-bush	céphalante occidental	Cephalanthus occidentalis	CEPH	OCC		TS
redbud	gainier rouge	Cercis canadensis	CERC	CAN		
alternate-leaf dogwood	cornouiller à feuilles alternes	Cornus alternifolia	CORN	ALT		TS
eastern flowering dogwood	cornouiller fleuri	Cornus florida	CORN	FLO		TS
Pacific dogwood	cornouiller de Nuttall	Cornus nuttallii	CORN	NUT		
unidentified dogwood	cornouiller non identifié	Cornus spp.	CORN	SPP		
redosier dogwood	cornouiller stolonifère	Cornus stolonifera	CORN	STO		TS
fireberry hawthorn	aubépine dorée	Crataegus chrysocarpa	CRAT	CHR		
dotted hawthorn	aubépine ponctuée	Crataegus punctata	CRAT	PUN		
hawthorn	aubépine	Crataegus spp.	CRAT	SPP		TS
silverberry	chalef argenté	Elaeagnus commutata	ELAE	COM		TS
burning-bush euonymus	fusain pourpre	Euonymus atropurpureus	EUON	ATR		TS
American beech	hêtre à grandes feuilles	Fagus grandifolia	FAGU	GRA		
unidentified beech	hêtre non identifié	Fagus spp.	FAGU	SPP		
glossy buckthorn	nerprun bourdaine	Frangula alnus	FRAN	ALN		
white ash	frêne blanc	Fraxinus americana	FRAX	AME		
black ash	frêne noir	Fraxinus nigra	FRAX	NIG		
red ash	frêne rouge	Fraxinus pennsylvanica	FRAX	PEN		
northern red ash	frêne d'Austin	Fraxinus pennsylvanica var. austini	FRAX	PEN	AUS	
green ash	frêne vert	Fraxinus pennsylvanica var. subintegerrima	FRAX	PEN	SUB	
blue ash	frêne anguleux	Fraxinus quadrangulata	FRAX	QUA		
unidentified ash	frêne non identifié	Fraxinus spp.	FRAX	SPP		
unidentified hardwood	feuillus non identifié		GENH	SPP		
honey-locust	févier épineux	Gleditsia triacanthos	GLED	TRI		
Kentucky coffetree	chicot févier	Gymnocladus dioicus	GYMN	DIO		
witch-hazel	hamamélis de Virginie	Hamamelis virginiana	HAMA	VIR		TS
unidentified holly	houx non identifié	Ilex spp.	ILEX	SPP		TS
mountain holly	faux houx	Ilex mucronata	ILEX	MUC		TS
common winterberry	houx verticillé	Ilex verticillata	ILEX	VER		TS

Common Name		Scientific Name	Code			
English	French		Genus	Species	Var	Form
butternut	noyer cendré	Juglans cinerea	JUGL	CIN		
black walnut	noyer noir	Juglans nigra	JUGL	NIG		
unidentified walnut	noyer non identifié	Juglans spp.	JUGL	SPP		
unidentified liriodendron	tulipier de Virginie	Liriodendron spp.	LIRI	SPP		
tulip-tree	tulipier de Virginie	Liriodendron tulipifera	LIRI	TUL		
cucumber-tree	magnolia acuminé	Magnolia acuminata	MAGN	ACU		
wild crab apple	pommier odorant	Malus coronaria	MALU	COR		
Pacific crab apple	pommier du Pacifique	Malus fusca	MALU	FUS		
unidentified apple	pommier non identifié	Malus spp.	MALU	SPP		
red mulberry	mûrier rouge	Morus rubra	MORU	RUB		
Pacific bayberry	myrique du Pacifique	Myrica californica	MYRI	CAL		TS
mountain-holly	némopanthe mucroné	Nemopanthus mucronatus	NEMO	MUC		TS
unidentified nemopanthus	Némopanthe mucroné	Nemopanthus spp.	NEMO	SPP		TS
tupelo	nyssa	Nyssa spp.	NYSS	SPP		
black-gum	nyssa sylvestre	Nyssa sylvatica	NYSS	SYL		
unidentified hop-hornbeam	ostryer non identifié	Ostrya spp.	OSTR	SPP		
ironwood (hop-hornbeam)	ostryer de Virginie	Ostrya virginiana	OSTR	VIR		
sycamore	platane occidental	Platanus occidentalis	PLAT	OCC		
unidentified sycamore	platane non identifié	Platanus spp.	PLAT	SPP		
narrowleaf cottonwood	peuplier à feuilles étroites	Populus angustifolia	POPU	AGU		
balsam poplar	peuplier baumier	Populus balsamifera	POPU	BAL		
balsam poplar	peuplier baumier	Populus balsamifera ssp balsamifera	POPU	BAL	BAL	
eastern cottonwood	peuplier deltoïde	Populus deltoides	POPU	DEL		
eastern cottonwood	peuplier deltoïde	Populus deltoides ssp. deltoides	POPU	DEL	DEL	
southern (or plains) cottonwood	peuplier deltoïde de l'Ouest	Populus deltoides ssp. monilifera	POPU	DEL	MON	
largetooth aspen	peuplier à grandes dents	Populus grandidentata	POPU	GRA		
Jack's hybrid poplar	peuplier hybride de Jack	Populus xjackii	POPU	JAC		
hybrid poplars	peuplier non identifié	Populus spp.	POPU	SPP		
unidentified poplar	peuplier non identifié	Populus spp.	POPU	SPP		

Common Name		Scientific Name	Code			
English	French		Genus	Species	Var	Form
trembling aspen	peuplier faux-tremble	Populus tremuloides	POPU	TRE		
black cottonwood	peuplier de l'Ouest	Populus trichocarpa	POPU	TRI		
bitter cherry	cerisier amer	Prunus emarginata	PRUN	EMA		
Canada plum	prunier noir	Prunus nigra	PRUN	NIG		
pin cherry	cerisier de Pennsylvanie	Prunus pensylvanica	PRUN	PEN		
black cherry	cerisier tardif	Prunus serotina	PRUN	SER		
unidentified cherry	prunier non identifié	Prunus spp.	PRUN	SPP		
choke cherry	cerisier de Virginie	Prunus virginiana	PRUN	VIR		TS
choke cherry	cerisier de Virginie	Prunus virginiana var. virginiana	PRUN	VIR	VIR	TS
common hoptree	ptéléa trifolié	Ptelea trifoliata	PTEL	TRI		
white oak	chêne blanc	Quercus alba	QUER	ALB		
swamp white oak	chêne bicolore	Quercus bicolor	QUER	BIC		
northern pin oak	chêne ellipsoïdal	Quercus ellipsoidalis	QUER	ELL		
Garry oak	chêne de Garry	Quercus garryana	QUER	GAR		
bur oak	chêne à gros fruits	Quercus macrocarpa	QUER	MAC		
Chinquapin oak	chêne jaune	Quercus muehlenbergii	QUER	MUE		
pin oak	chêne des marais	Quercus palustris	QUER	PAL		
dwarf Chinquapin oak	chêne nain	Quercus prinoides	QUER	PRI		TS
red oak	chêne rouge	Quercus rubra	QUER	RUB		
Shumard oak	chêne de Shumard	Quercus shumardii	QUER	SHU		
unidentified oak	chêne non identifié	Quercus spp.	QUER	SPP		
black oak	chêne noir	Quercus velutina	QUER	VEL		
glossy buckthorn	nerprun bourdaine	Rhamnus frangula	RHAM	FRA		
cascara buckthorn	nerprun cascara	Rhamnus purshiana	RHAM	PUR		
unidentified buckthorn	nerprun non identifié	Rhamnus spp.	RHAM	SPP		
unidentified sumac	sumac non identifié	Rhus spp.	RHUS	SPP		TS
staghorn sumac	sumac vinaigrier	Rhus typhina	RHUS	TYP		TS
black locust	robinier faux-acacia	Robinia pseudoacacia	ROBI	PSE		
unidentified robinia	robinier non identifié	Robinia spp.	ROBI	SPP		
peachleaf willow	saule à feuilles de pêcher	Salix amygdaloides	SALI	AMY		
Bebb willow	saule de Bebb	Salix bebbiana	SALI	BEB		TS
pussy willow	saule discolore	Salix discolor	SALI	DIS		TS
shining willow	saule brillant	Salix lucida	SALI	LUC		TS
Pacific willow	saule du Pacifique	Salix lucida ssp. lasiandra	SALI	LUC	LAS	TS
shining willow	saule brillant	Salix lucida ssp. lucida	SALI	LUC	LUC	TS

Common Name		Scientific Name	Code			
English	French		Genus	Species	Var	Form
black willow	saule noir	Salix nigra	SALI	NIG		
Balsam willow	saule baumier	Salix pyrifolia	SALI	PYR		TS
Scouler willow	saule de Scouler	Salix scouleriana	SALI	SCO		TS
Sitka willow	saule de Sitka	Salix sitchensis	SALI	SIT		TS
unidentified willow	saule non identifié	Salix spp.	SALI	SPP		TS
red-berry elder	sureau rouge du Pacifique	Sambucus callicarpa	SAMB	CAL		TS
american elder	sureau blanc	Sambucus canadensis	SAMB	CAN		TS
blue-berry elder	sureau bleu	Sambucus cerulea	SAMB	CER		TS
red elderberry	sureau rouge	Sambucus racemosa	SAMB	RAC		TS
Sassafras	sassafras officinale	Sassafras albidum	SASS	ALB		
unidentified sassafras	sassafras non identifié	Sassafras	SASS	SPP		
silver buffalo-berry	shépherdie argentée	Shepherdia argentea	SHEP	ARG		TS
American mountain-ash	sorbier d'Amérique	Sorbus americana	SORB	AME		TS
showy mountain-ash	sorbier des montagnes	Sorbus decora	SORB	DEC		
mountain-ash	sorbier	Sorbus spp.	SORB	SPP		
Basswood	tilleul d'Amérique	Tilia americana	TILI	AME		
unidentified linden	tilleul non identifié	Tilia spp.	TILI	SPP		
poison-sumac	sumac à vernis	Toxicodendron vernix	TOXI	VER		TS
white elm	orme d'Amérique	Ulmus americana	ULMU	AME		
red elm	orme rouge	Ulmus rubra	ULMU	RUB		
unidentified elm	orme non identifié	Ulmus spp.	ULMU	SPP		
rock elm	orme liège	Ulmus thomasii	ULMU	THO		
Nannyberry	viorne flexible	Viburnum lentago	VIBU	LEN		TS
Viburnum	viorne	Viburnum spp.	VIBU	SPP		TS
common prickly-ash	clavalier d'Amérique	Zanthoxylum americanum	ZANT	AME		TS

Notes: 'x' denotes hybridization.* ***Form:* *TS = Very small tree or shrubby tree, shrub on some sites according to Farrar's* Trees in Canada*.*

EXOTICS

Common Name		Scientific Name	Code			
English	French		Genus	Species	Var	Form
white fir	sapin argenté	Abies concolor	ABIE	CON		
red fir	sapin rouge	Abies magnifica	ABIE	MAG		
Shasta red fir	sapin rouge	Abies magnifica var. shastensis	ABIE	MAG	SHA	

Common Name		Scientific Name	Code			
English	French		Genus	Species	Var	Form
Nordmann fir	sapin de Nordmann	Abies nordmanniana	ABIE	NOR		
Spanish fir	sapin d'Espagne	Abies pinsapo	ABIE	PIN		
noble fir	sapin noble	Abies procera	ABIE	PRO		
Amur maple	érable ginnala	Acer ginnala	ACER	GIN		TS
Japanese maple	érable palmé	Acer palmatum	ACER	PAL		TS
Norway maple	érable de Norvège	Acer platanoides	ACER	PLA		
sycamore maple	érable sycomore	Acer pseudoplatanus	ACER	PSE		
red horsechestnut	marronnier rouge	Aesculus xcarnea	AESC	CAR		
horsechestnut	marronier d'Inde	Aesculus hippocastanum	AESC	HIP		
ailanthus	ailante glanduleux	Ailanthus altissima	AILA	ALT		
European black alder	aulne glutineux	Alnus glutinosa	ALNU	GLU		
Japanese angelica-tree	angélique du Japon	Aralia elata	ARAL	ELA		
monkey puzzle	araucaria du Chili	Araucaria araucana	ARAU	ARA		
European white birch	bouleau verruqueux	Betula pendula	BETU	PEN		
silver (downy) birch	bouleau pubescent	Betula pubescens	BETU	PUB		
incense cedar	cèdre à encens	Calocedrus decurrens	CALO	DEC		
Siberian pea-tree	caragana arborescent	Caragana arborescens	CARA	ARB		TS
Chinese chestnut	châtaignier de Chine	Castanea mollissima	CAST	MOL		
southern catalpa	catalpa commun	Catalpa bignonioides	CATA	BIG		
northern catalpa	catalpa à feuilles cordées	Catalpa speciosa	CATA	SPE		
Atlas cedar	cèdre de l'Atlas	Cedrus atlantica	CEDR	ATL		
Deodar cedar	cèdre de l'Himalaya	Cedrus deodara	CEDR	DEO		
Cedar-of-Lebanon	cèdre du Liban	Cedrus libani	CEDR	LIB		
Katsura-tree	cercidiphyllum du Japon	Cercidiphyllum japonicum	CERC	JAP		
Port-Orford-cedar	chamaecyparis de Lawson	Chamaecyparis lawsoniana	CHAM	LAW		
Hinoki-cypress	chamaecyparis du Japon	Chamaecyparis obtusa	CHAM	OBT		
Sawara-cypress	chamaecyparis de Sawara	Chamaecyparis pisifera	CHAM	PIS		
Yellow-wood	virgilier à bois jaune	Cladrastis lutea	CLAD	LUT		
Kousa dogwood	cornouiller de Kousa	Cornus kousa	CORN	KOU		
Cornelian cherry	cornouiller mâle	Cornus mas	CORN	MAS		
European beech	hêtre commun	Fagus sylvatica	FAGU	SYL		
Oregon ash	frêne de l'Orégon	Fraxinus latifolia	FRAX	LAT		
unidentified exotic	les espèces exotiques non identifié		GENX	SPP		

Common Name		Scientific Name	Code			
English	French		Genus	Species	Var	Form
Ginkgo	ginkgo bilobé	Ginkgo biloba	GINK	BIL		
European larch	mélèze d'Europe	Larix decidua	LARI	DEC		
Japanese larch	mélèze du Japon	Larix kaempferi	LARI	KAE		
Siberian larch	mélèze de Sibérie	Larix sibirica	LARI	SIB		
Norway spruce	épicéa commun	Picea abies	PICE	ABI		
Colorado spruce	épinette du Colorado	Picea pungens	PICE	PUN		
sugar pine	pin à sucre	Pinus lambertiana	PINU	LAM		
Austrian pine	pin noir d'Autriche	Pinus nigra	PINU	NIG		
Monterey pine	pin de Monterey	Pinus radiata	PINU	RAD		
Scots pine	pin sylvestre	Pinus sylvestris	PINU	SYL		
European white poplar	peuplier blanc	Populus alba	POPU	ALB		
Lombardy poplar	peuplier noir d'Italie	Populus nigra	POPU	NIG		
sweet cherry	cerisier sauvage	Prunus avium	PRUN	AVI		
common pear	poirier commun	Pyrus communis	PYRU	COM		
English oak	chêne pédonculé	Quercus robur	QUER	ROB		
Weeping willow	saule pleureur doré	Salix alba var. vitellina	SALI	ALB	VIT	
giant sequoia	séquoia géant	Sequoiadendron giganteum	SEQU	GIG		
coast redwood	séquoia toujours vert	Sequoia sempervirens	SEQU	SEM		
European mountain-ash	sorbier des oiseleurs	Sorbus aucuparia	SORB	AUC		
Common lilac	lilas commun	Syringa vulgaris	SYRI	VUL		TS
English yew	if commun	Taxus baccata	TAXU	BAC		
Siberian elm	orme de Sibérie	Ulmus pumila	ULMU	PUM		
European cranberry viburnum	viorne obier	Viburnum opulus	VIBU	OPU		TS

Notes: 'x' denotes hybridization.* ***Form:* *TS = Very small tree or shrubby tree, shrub on some sites according to Farrar's* Trees in Canada*.*

Appendix 6: Change tracking

Changes/Updates From Version 4.2.4 to Version 5.1

Table	Attribute	Change	Comment
All Tables	JURIS_ID	Added to all tables	Changed data structure
All tables	SAMPLE_DATE	Changed range of values to range from the last measurement date to present	Changed permitted values range
Table 2. Land use	LANDUSE_NUM	Removed this item, to be replaced by primary and secondary land use	Changed data structure
Table 2. Land use	LANDUSE1	Added new item to hold the primary land use of a polygon	Changed data structure
Table 2. Land use	LANDUSE2	Added new item to hold the secondary land use of a polygon	Changed data structure
Table 2. Land use	INFO_SOURCE	Removed permitted value U (updated from disturbance) as this item in this table does not get updated from disturbance records)	Removed codes
Table 3. Ownership	INFO_SOURCE	Removed permitted value U (updated from disturbance) as this item in this table does not get updated from disturbance records)	Removed codes
Table 4. Protection status	INFO_SOURCE	Removed permitted value U (updated from disturbance) as this item in this table does not get updated from disturbance records)	Removed codes
Table 5. Land cover	INFO_SOURCE	Added code M – modeled	Added code
	MODEL_YEAR	Allow MODEL_YEAR to be null (instead of -9) when data is not modeled	Changed code
	LAND_BASE	Rules text slightly revised for clarity	
	LAND_COVER	Rules text slightly revised for clarity – added the word 'Header' after '1 or more entries in Stand Layer'	
	DENSITY_CL	Added codes: GW to cover water in the Great Lakes (as Ontario did not provide data for plots entirely in Great Lakes); BF to cover beaver ponds or flowages	Added code
	STAND_STRU	Changed the codes for unreported from 1 character to 2 characters (M becomes MI and S becomes SA)	Changed code
	SOIL_MOIST	Added soil moisture field and codes	Changed data structure

	DEVL_STAGE	Added stand development field and codes	Changed data structure
Table 6. Exotics header	Entire table	Table removed – status of species as exotic or not is captured instead in stand layer tree species table in a new field	Changed data structure
Table 6a. Exotics tree species	Entire table	Table removed – status of species as exotic or not is captured instead in stand layer tree species table in a new field	Changed data structure
Table 7. Stand layer header	MODEL_YEAR	Allow MODEL_YEAR to be null (instead of -9) when data is not modeled	Changed code
	LAYER_ID	Field removed, as it was never specified in the data dictionary on what to base the numbering of layers. This can be calculated when needed based on the height of the leading species (as that was the intended numbering – tallest 1 to shortest 10)	Changed data structure
	CLOSURE	Added "for each layer in the polygon" to the description for more clarity	
	LEAD_CRITR	Changed "Blank" permitted value to NULL	Changed permitted value
	LEAD_SP_AGE	- Added "in years" to the description. - Changed the permitted values range from 0 to 9999 to 1 to 2000 years, since an age of zero is not allowed and 2000 is larger than used in the baseline data, and gives a better error check than 9999 does - Added to rules (since this is how it's checked in QA): "LEAD_SP_AGE must be the same as SPECIES1 age LEAD_SP_AGE must be equal to the year of the INFO_DATE minus REGEN_YR"	Changed code range and rules
	LAYER_VOL	Changed permitted values upper range from 9999 to 3000, which is larger than any layer volume from the establishment data, and a better error check than 9999, and removed -1 as allowed where volume is missing (missing volume is not allowed)	Changed permitted values range
Table 7a. Stand layer tree species	SPECIES_NUM	Added "with 1 having the highest PERCENT, 2 the next highest PERCENT, etc. to the smallest PERCENT" to the rules, for clarity	Changed rules text

	HEIGHT	Changed upper limit of permitted values range to 200.9 from 999.9, since 200.9 is larger than any value from the establishment, and is a better error check than 999.9	Changed permitted values upper limit
	AGE	- Changed upper limit of permitted values range to 3000 from 9999, since 3000 is larger than any value from the establishment, and is a better error check than 9999. - Add -1 code when using AGE_MIN and AGE_MAX	Changed permitted values upper limit Added code
	MIN_AGE	- Changed upper limit of permitted values range to 3000 from 9999, since 3000 is larger than any value from the establishment, and is a better error check than 9999. - Add -1 code when using AGE	Changed permitted values upper limit Added code
	MAX_AGE	- Changed upper limit of permitted values range to 3000 from 9999, since 3000 is larger than any value from the establishment, and is a better error check than 9999. - Add -1 code when using AGE	Changed permitted values upper limit Added code
	EXOTIC	Added field to replace exotic header and tree species tables	Changed data structure
	EXOTIC_SOURCE	Added field to replace exotic header and tree species tables	Changed data structure
Table 7b. Stand layer origin	STAND_ORIG	Added permitted value FIRE, and modified description for SUCC to "Vegetation cover in the layer originated following natural succession"	Changed permitted values
	REGEN_YR	Modified rule text to "REGEN_YR + [MAX (AGE (m) OR MAX_AGE (m)) of stand layer tree species] ≤ year of INFO_DATE. *Or, the REGEN_YR subtracted from the year of the INFO_DATE must be equal to (or less than) the maximum AGE or between AGE_MIN and AGE_MAX of the species with the highest age for the layer*"	Changed rule text

Table 8. Stand layer treatment	INFO_SOURCE	Removed permitted value M (modelled) as this item in this table does not from modelling	Removed codes
	TREAT_YR	Changed description to add "since last measurement". Changed permitted values to remove -1 as treatment year is an estimate, and changed rule text to "Last measurement year to present year. At most 19 years before the year of the SAMPLE_DATE". Changed rules to add "last measurement year"	Changed permitted values and rules
Table 9. Stand layer disturbance	INFO_SOURCE	Removed permitted value M (modelled) as this item in this table does not from modelling	Removed codes
	DIST_AGENT	Added text "includes land slides, avalanches, and slumping" to definition of erosion, added new permitted values and definitions "animal" and "flood"	Changed permitted values and rule
	DIST_YR	Changed description to add "since last measurement". Changed permitted values to remove -1 as treatment year is an estimate, and changed rule text to "Last measurement year to present year. At most 19 years before the year of the SAMPLE_DATE". Changed rules to add "last measurement year"	Changed permitted values and rules

Changes/Updates From Version 4.2.3 to Version 4.2.4

Table	Attribute	Change	Comment
Table 4: Protection status	POLY_ID	Updated description to replace "landuse" with "protection status"	
Table 5. Land cover	STAND_STRU	M: unreported (this covers the condition where the sample overlaps into another country, territory or province, or ocean), S: unreported (this covers the condition where data is missing)	Added codes.
Table 6. Exotics header	ORIGIN	Added a period to the country code: "country domain name preceded by a period (e.g., BC, AB, SK, .CA)."	
Table 7a. Stand layer tree species	PERCENT	Added "or tenth of a percent" to the description. Also correspondingly modified the Rules so that the ranges included the decimal place.	Changed data structure.

	AGE	Changed the Rules to make them clearer (and correct): Can be blank if and only if (MIN_AGE and MAX_AGE) both have values; Must have value if and only if (MIN_AGE and MAX_AGE) are both null.	
	MIN_AGE	Change Rule wording "Must be blank if AGE has value."	
	MAX_AGE	Change Rule wording "Must be blank if AGE has value."	
Table 9. Stand layer disturbance	DIST_YR	Added Rule: INFO_DATE >= DIST_YR	Added rule.

Changes/Updates From Version 4.2.1 to Version 4.2.3

Table	Attribute	Change	Comment
Table 2 – Table 9	SAMPLE_DATE	Updated definition of sample date, "The date the NFI sample plot was populated."	
Table 5. Land cover	MODEL_YR STAND_STRU	-1: Missing, -9: Not Applicable NA: Not Applicable, UNKN: unknown	Added codes.
	STAND_STRU	Added/modified rules: If LAND_COVER = 'T' then STAND_STRU = 'SNGL', 'MULT' or 'COMP'; If LAND_COVER = 'N' or LAND_BASE = 'N' then STAND_STRU = 'NA'; If LAND_COVER = 'M' or LAND_BASE = 'M' then STAND_STRU = 'M'; If LAND_COVER = 'S' or LAND_BASE = 'S' then STAND_STRU = 'S'.	
Table 6. Exotics header	MODEL_YR	-1: Missing, -9: Not Applicable	Added codes.
Table 7. Stand layer header	MODEL_YR LEAD_SP_AGE LAYER_VOL	-1: Missing, -9: Not Applicable -1: Missing, -9: Not Applicable -1: Missing	Added codes.
	LAYER_VOL	Added to description: Zero volume is only allowed where trees ≤ 1.3 m tall.	
Table 7b. Stand layer origin	STAND_ORIG REGEN_YR	UNKN: Unknown -1: Missing	Added codes.
Table 8. Stand layer treatment	TREAT_YR	-1: Missing	Added code.
	TREAT_YR	Added rule: INFO_DATE >= TREAT_YR >= 1800.	
Table 9. Stand layer disturbance	DIST_YR	-1: Missing	Added code.
Tables: 3, 4, 5, 6, 6a, 7, 7a, 7b, 8, and 9.	INFO_DATE INFO_SOURCE and POLY_AREA	Repeated and indexed attributes have full attribute descriptions for each table.	

Table 7c to 10d.		Renumbered tables from 7c onwards. Stand layer treatment and stand layer disturbance are now at the same level as stand layer header (see p. 3).	This change was made in order to accommodate clear cut stands with no stand layer header, tree species, or origin information.
Tables: 2 – 9.	INFO_DATE	Updated definition of date of information, "The date the image was taken (interpreted data); the date the data was modeled to (modeled data).	Added clarification of definition.

Changes/Updates From Version 4.1 to Version 4.2.1

Table	Attribute	Change	Comment
1. NFI photo plot	CALCPLOT_SIZE	Removed this attribute.	This attribute will be compiled and maintained internally. It will be checked in the spatial data.
2. Landuse poly 3. Ownership 4. Protection status poly 5. Land cover	POLY_AREA	Permitted values/range = 0.0000 to 400.0400 ha.	Minimum POLY_AREA set to 0.0 ha to accommodate very small polygons resulting from data drilling exercise. Maximum POLY_AREA set to 400.04 ha to account for the area tolerance.
6a. Exotics tree species info.	GENUS, SPECIES, VARIETY, ORIGIN	Index = 'Y'.	
7. Stand layer header info.	LEAD_CRITR	Not Null = 'N'.	
7a. Stand layer tree species info.	SPECIES_NUM	Index = 'Y'.	
	PERCENT	Format = Dec 4.1	
7b. Stand layer origin	INFO_DATE, INFO_SOURCE	Index = 'N'.	
7c. Stand layer treatment	INFO_DATE, INFO_SOURCE	Index = 'N'.	
8. Polygon level summaries		Changed the structure of the polygon-level summary tables.	
2. Land use, 3. Ownership, 4. Protection, 5. Land cover	POLY_AREA	Rule removed: POLY_AREA≤CALCPLOT_SIZE	This rule was removed in response to the removal of the attribute CALCPLOT_SIZE.