

Appendix 1A

FGDC Guiding Principles for Vegetation Classification

The guiding principles for the NVCS (FGDC 1997) are listed below. Italics indicate goals that have not been fully achieved to date. Revision of the physiognomic classification standard and completion of the floristic classification methodology standard will address most of these goals.

1. The classification is applicable over extensive areas.
2. *The vegetation classification standard is compatible, wherever possible, with other Earth cover/land cover classification standards.*
3. The classification will avoid developing conflicting concepts and methods through cooperative development with the widest possible range of individuals and institutions.
4. *Application of the classification must be repeatable and consistent.*
5. When possible, the classification standard will use common terminology (*i.e.*, terms should be understandable and jargon should be avoided).
6. For classification and mapping purposes, the classification categories were designed to be mutual exclusive and additive to 100% of an area when mapped within any of the classification's hierarchical levels (Division, Order, Class, Subclass, [Group], Subgroup, Formation, Alliance, or Association). *Guidelines have been developed for those instances where placement of a floristic unit into a single physiognomic classification category is not clear. Additional guidelines will be developed as other such instances occur.*
7. The classification standard will be dynamic, allowing for refinement as additional information becomes available.
8. The NVCS is of existing, not potential, vegetation and is based upon vegetation condition *at the optimal time during the growing season*. The vegetation types are defined on the basis of inherent attributes and characteristics of the vegetation structure, growth form and cover.
9. The NVCS is hierarchical (*i.e.*, aggregatable) to contain a small number of generalized categories at the higher level and an increasingly large number of more detailed categories at the lower levels. The categories are intended to be useful at a range of scales.
10. The upper levels of the NVCS are based primarily on the physiognomy (life form, cover, structure, leaf type) of the vegetation (not individual species). The life forms (*e.g.*, herb, shrub, or tree) in the dominant or uppermost stratum will predominate in the classification of the vegetation type. *Climate and other environmental variables are used to help organize the standard, but physiognomy is the driving factor.*
11. The lower levels of the NVCS are based on actual floristic (vegetation) composition. The data used to describe Alliance and Association types must be collected in the field using standard and documented sampling methods. The Alliance and Association units are derived from these field data. *These floristically based classes will be nested under the physiognomic classes of the hierarchy.*

Appendix 1B

Overview of the NVCS Physiognomic Hierarchy

The FGDC (1997) NVCS establishes a hierarchical vegetation classification with nine levels. The top seven levels are primarily based on physiognomy. The two lowest levels, alliance and association, are based on floristic attributes. The seven physiognomic levels are described below. These descriptions include the FGDC definition of the level, classification criteria, and any issues implementation that have hampered implementation of the physiognomic classification standard.

1. Division: “The first level in the classification standard separating Earth cover into either vegetated or non-vegetated categories” (FGDC 1997).

Classification Criteria: The Vegetated Division is defined as “Areas having equal to or greater than 1% or more of the land or water surface with live vegetation cover at the peak of the growing season” (FGDC 1997). Areas with less than 1% live vegetation comprise the Non-vegetated Division. The Non-vegetated Division is subdivided no further. The remaining levels of the physiognomic hierarchy are all subdivisions of the Vegetated Division.

Implementation Issues: Detection of 1% vegetation through remote sensing is not feasible. The MRLC 2000 proposed landcover classes define Barren as less than 20% vegetation cover.

2. Order: “The next level in the hierarchy under Division. The Orders within the Vegetated Division are generally defined by dominant life form (tree, shrub, dwarf shrub, herbaceous, non-vascular)” (FGDC 1997).

Classification Criteria: Orders are classified based on the dominant life form or tallest life form with at least 25% canopy cover. They are based predominantly on vegetation structure.

Implementation Issues: The Nonvascular Dominated Order does not include crustose lichens, which are essentially regarded on non-living at this level of the classification. This has no ecological meaning and appears to represent a bias toward what can be detected through remote sensing.

3. Class: “A level in the classification hierarchy defined by the relative percent canopy cover of the tree, shrub, dwarf shrub, herb, and nonvascular life forms in the uppermost strata during the peak of the growing season” (FGDC 1997).

Classification Criteria: Classes are based on the following structural attributes:

- Tree canopy cover
- Shrub height and canopy cover
- Herbaceous vs non-vascular canopy cover

Implementation Issues: Only two of the five orders are subdivided at the class level, the Tree Dominated and Shrub Dominated Orders. These divisions, based on tree canopy cover and shrub height, have proved impractical in several classification and mapping projects. Thus, the Order and Class levels may be merged when the physiognomic hierarchy is revised (FGDC 2001a).

4. Subclass: “A level in the classification determined by the predominant leaf phenology of woody plants or the leaf type and periodicity of herbaceous plants” (FGDC 1997).

Classification Criteria: Subclasses are based on the following life form attributes:

- Leaf phenology (e.g. evergreen vs deciduous)
- Gross morphology (e.g. graminoid vs forb)
- Herb periodicity (e.g. annual vs perennial)

5. Group: “A level of the classification defined by a combination of climate, leaf morphology, and leaf phenology” (FGDC 1997).

Classification Criteria: Groups are based on the following life form, structural, and abiotic attributes:

- Climatic Regime (e.g. temperate, tropical, subpolar)
- Leaf morphology (e.g. extremely xeromorphic)
- Leaf phenology (e.g. cold- vs drought-deciduous)
- Presence of a sparse woody layer in grasslands.

Implementation Issues: Climatic regime is not a vegetation attribute, so its use violates FGDC guiding principle number 8 (see Appendix 1A). Additionally, climatic regime cannot be assessed in a one –time visit to a plot.

6. Subgroup: “A level of the hierarchy that splits Natural/Semi-Natural vegetation types from the Planted/Cultivated vegetation types” (FGDC 1997).

Classification Criteria: Subgroups are based on the following definitions:

Natural/Semi-Natural - Areas dominated by native or established vegetation that has not been cultivated or treated with any annual management or manipulation regime. In cases where it cannot be assessed whether the vegetation was planted or cultivated by humans, the vegetation is considered "Natural/Semi-Natural."

Planted/Cultivated - Areas dominated with vegetation which has been planted in its current location by humans and/or is treated with annual tillage, a modified conservation tillage, or other intensive management or manipulation. The majority of vegetation in these areas is planted and/or maintained for the production of food, feed, fiber, or seed.

Implementation Issues: These definitions have proved problematic, particularly in forest plantations of native tree species. The ESA Vegetation Classification Panel has deferred on this issue, stating, "...at this time, no standards for defining naturalness are proposed" (Jennings *et al.* 2002).

7. Formation: "A level of the hierarchy based on ecological groupings of vegetation units with broadly defined environmental and additional physiognomic factors in common. This level is subject to revision as the vegetation Alliances and Associations are organized under the upper levels of the hierarchy" (FGDC 1997).

Classification Criteria: Formations are based on the following life form, structural, and abiotic attributes:

- Elevation zone (e.g. alpine, submontane)
- Flooding regime (Cowardin 1979).
- Leaf morphology (e.g. xeromorphic)
- Tree crown shape (e.g. cylindrical)
- Presence of sparse tree layer in shrublands
- Leaf phenology and morphology of sparse tree layer in shrublands
- Leaf phenology and morphology of sparse woody layer in grasslands
- Shrub growth form (e.g. suffruticose, cushion, mat)
- Presence of succulents in shrublands
- Leaf phenology of shrubs (e.g. facultative-deciduous)
- Plant height in herbaceous vegetation
- Graminoid rooting habit (e.g. sod-forming vs bunch)

Implementation Issues: The plethora of attributes used to define formations has produced many types that are not mutually exclusive based on their names. Since no diagnostic key has been written for formations, it is impossible to consistently assign plots or associations to formations.

Elevation zones and flooding regime cannot be determined during a one-time plot visit. Recognition of elevation zones as defined by the FGDC (1997) requires a spatial analysis of vegetation patterns following completion of the classification of associations and alliances. Thus, it is impractical to use elevation zone as a top-down classification criterion. Flooding regimes reflect average or modal growing season conditions over several years, which cannot be practically evaluated in the field.

Appendix 1C

Draft Key to FGDC Physiognomic Subclass

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This key is not a product of, nor is it endorsed by, the FGDC Vegetation Subcommittee. It was written to improve the author's understanding of the FGDC physiognomic hierarchy and to facilitate comparison of SAF and SRM cover types to the FGDC Vegetation Classification Standard (FGDC-STD-005). FGDC-STD-005 indicates that a simple dichotomous key to the standard will be developed as part of testing and validating the physiognomic levels, but such a key has not yet been completed. It is hoped that this key can serve as a starting point for achieving that objective.

This key identifies the following levels of the 1997 FGDC vegetation hierarchy: Division, Order, Class, and Subclass. It is designed to be used in conjunction with the Vegetation Classification Standard (FGDC-STD-005) published by the Vegetation Subcommittee of the Federal Geographic Data Committee in June, 1997. That document should be used together with this key to identify physiognomic vegetation types. The key is followed by a list of the natural/semi-natural vegetation types in the physiognomic hierarchy, by level, from Division to Subclass.

Instructions for Using the Key

The key is arranged by physiognomic hierarchy level. Divisions (Vegetated and Non-Vegetated) are identified first. The rest of the key pertains only to the Vegetated Division. Orders within the Vegetated Division are keyed out first, followed by Classes within each Order and Subclasses within each Class.

The key is dichotomous, with couplets of two leads each (for example, 1a and 1b). Choose the couplet which best fits the plot or stand you are trying to assign to a physiognomic type. Each choice will lead you to either the name of a vegetation type or to another couplet. Names of Orders and Classes are followed by a number in parentheses. This number indicates the couplet where the key to the next level of the hierarchy begins. For example, Shrub Dominated Order is followed by (12) in lead 5a, indicating that the key to Classes within the Shrub Dominated Order begins at couplet 12. The code for each vegetation type is listed at the right-hand margin of the key. However, no codes have been established for the Division and Order levels of the hierarchy.

Terminology in the key follows the FGDC Vegetation Classification Standard (FGDC 1997) cited above. The glossary in that document should be consulted when using the key.

List of FGDC Vegetation Types

The List of FGDC Vegetation Types (p. 10) uses the following conventions:

The list is arranged by hierarchy level and code. All Divisions are listed first, followed by all the orders, *etc.*

Italicized codes and names indicated types that have not yet been identified in the U.S. (Example: *IVC Mixed evergreen-deciduous dwarf-shrubland* Subclass on p. 10)

Caveats and Disclaimers

As noted above, this key has not been produced or approved by the FGDC Vegetation Subcommittee. The author accepts sole responsibility for any errors in this key.

Key to FGDC Existing Vegetation Hierarchy

Code

- 1a. Vegetation cover <1% Non-Vegetated Division
- 1b. Vegetation cover >1% Vegetated Division (2)

KEY TO ORDERS (within the Vegetated Division)

- 2a. Vegetation cover excluding crustose lichens \leq 10% No Dominant Life Form Order
= Sparse Vegetation Class (27) VII
- 2b. Vegetation cover excluding crustose lichens >10% 3
 - 3a. Total tree (woody plants \geq 5m tall) canopy cover \geq 25% Tree Dominated Order (11)
 - 3b. Total tree canopy cover < 25% 4
- 4a. Shrub (woody plants \geq 0.5m tall), dwarf-shrub (woody plants < 0.5m tall),
herb, and nonvascular plant cover each less than tree cover Tree Dominated Order (11)
- 4b. Shrub, dwarf-shrub, herb, and/or nonvascular plant cover greater than tree cover 5
 - 5a. Total shrub (woody plants \geq 0.5m tall) canopy cover \geq 25% Shrub Dominated Order (12)
 - 5b. Total shrub canopy cover <25% 6
- 6a. Dwarf-shrub (woody plants <0.5m tall), herb, and nonvascular plant
cover each less than shrub cover Shrub Dominated Order (12)
- 6b. Dwarf-shrub, herb, and/or nonvascular plant cover greater than shrub cover 7
 - 7a. Total dwarf-shrub (woody plants <0.5m tall) canopy cover \geq 25% Shrub Dominated Order (12)
 - 7b. Total dwarf-shrub cover < 25% 8
- 8a. Herb and nonvascular plant cover each less than dwarf-shrub cover Shrub Dominated Order (12)
- 8b. Herb and/or nonvascular plant cover greater than dwarf-shrub cover 9
 - 9a. Total herb cover \geq 25% Herb Dominated Order
= Herbaceous Vegetation Class (22) V
 - 9b. Total herb Cover < 25% 10
- 10a. Herb cover greater than total cover of bryophytes, noncrustose lichens, and alga Herb Dominated Order
= Herbaceous Vegetation Class (22) V
- 10b. Herb cover less than total cover of bryophytes, noncrustose lichens, and alga Nonvascular Dominated Order
= Nonvascular Vegetation Class (25) VI

KEYS TO CLASSES

Key to Classes within the Tree Dominated Order

- 11a. Total tree canopy cover \geq 61% Closed Tree Canopy Class (14) I
- 11b. Total tree canopy cover < 61% Open Tree Canopy Class (16) II

Key to Classes within the Shrub Dominated Order

- 12a. Total shrub (woody plants \geq 0.5m tall) canopy cover \geq 25% Shrubland Class (18) III
- 12b. Total shrub canopy cover < 25% 13

	<u>Code</u>
13a. Shrub canopy cover > dwarf-shrub (woody plants < 0.5m tall) canopy cover Shrubland Class (18)	III
13b. Shrub canopy cover < dwarf-shrub canopy cover Dwarf-shrubland Class (20)	IV

KEYS TO SUBCLASSES

Key to Subclasses within the Closed Tree Canopy Class

14a. Evergreen species contribute > 75% of the total tree cover Evergreen Closed Tree Canopy (29)	IA
14b. Evergreen species contribute ≤ 75% of the total tree cover 15	
15a. Deciduous species contribute > 75% of the total tree cover Deciduous Closed Tree Canopy (37)	IB
15b. Deciduous species contribute ≤ 75% of the total tree cover Mixed Evergreen-Deciduous Closed Tree Canopy (39)	IC

Key to Subclasses within the Open Tree Canopy Class

16a. Evergreen species contribute > 75% of the total tree cover Evergreen Open Tree Canopy (42)	IIA
16b. Evergreen species contribute ≤ 75% of the total tree cover 17	
17a. Deciduous species contribute > 75% of the total tree cover Deciduous Open Tree Canopy (46)	IIB
17b. Deciduous species contribute ≤ 75% of the total tree cover Mixed Evergreen-Deciduous Open Tree Canopy (49)	IIC

Key to Subclasses within the Shrubland Class

18a. Evergreen species contribute > 75% of the total shrub cover Evergreen Shrubland (51)	IIIA
18b. Evergreen species contribute ≤ 75% of the total shrub cover 19	
19a. Deciduous species contribute > 75% of the total shrub cover Deciduous Shrubland (55)	IIIB
19b. Deciduous species contribute ≤ 75% of the total shrub cover Mixed Evergreen-Deciduous Shrubland (57)	IIIC

Key to Subclasses within the Dwarf-Shrubland Class

20a. Evergreen species contribute > 75% of the total dwarf-shrub cover Evergreen Dwarf-Shrubland (59)	IVA
20b. Evergreen species contribute ≤ 75% of the total shrub cover 21	
21a. Deciduous species contribute > 75% of the total dwarf-shrub cover Deciduous Dwarf-Shrubland (60)	IVB
21b. Deciduous species contribute ≤ 75% of the total dwarf-shrub cover Mixed Evergreen-Deciduous Dwarf-Shrubland (62)	IVC

Key to Subclasses within the Herbaceous Vegetation Class (Herb Dominated Order)

22a. Non-emergent herbs structurally supported by water and rooted in substrate contribute > 50% of total herbaceous canopy Hydromorphic Rooted Vegetation (75)	VC
22a. Non-emergent herbs structurally supported by water and rooted in substrate contribute ≤ 50% of total herbaceous canopy 23	
23a. Perennial graminoids contribute > 50% of total herbaceous canopy Perennial Graminoid Vegetation (64)	VA
23b. Perennial graminoids contribute ≤ 50% of total herbaceous canopy 24	
24a. Perennial forbs, including ferns and biennials, contribute > 50% of total herbaceous canopy Perennial Forb Vegetation (74)	VB
24b. Perennial forbs, including ferns and biennials, contribute ≤ 50% of total herbaceous canopy Annual Graminoid or Forb Vegetation (76)	VD

Key to Subclasses within the Nonvascular Vegetation Class (Nonvascular Dominated Order)

	<u>Code</u>
25a. Bryophytes generally dominate the nonvascular plant cover Bryophyte Vegetation (77)	VIA
25b. Bryophytes do not dominate the nonvascular plant cover 26	
26a. Foliose or fruticose lichens generally dominate the nonvascular plant cover Lichen Vegetation (78)	VIB
26b. Foliose or fruticose lichens do not dominate the nonvascular plant cover Alga Vegetation (79)	VIC

Key to Subclasses within the Sparse Vegetation Class (Vegetation Not Dominant Order)

27a. Vegetation characterized by plants growing in fissures of , or growing adnate on; cliffs, level to gently sloping bedrock, or pahoehoe lava flows Consolidated Rock Sparse Vegetation (80)	VIIA
27b. Vegetation not characterized by plant growing on consolidated rock substrates 28	
28a. Vegetation characterized by plants growing in or on boulder to gravel-sized substrates Boulder, Gravel, Cobble, or Talus Sparse Vegetation (81)	VIIB
28b. Vegetation not characterized by plants growing on gravel-sized or larger substrates Unconsolidated Material Sparse Vegetation (82)	VIIC

List of FGDC Vegetation Types by Hierarchical Level

Italics indicate a type that has not yet been identified in U.S.

Level	Code	Name
Division	--	Non-vegetated
	--	Vegetated
Order	--	Tree Dominated
	--	Shrub Dominated
	--	Herbaceous Dominated
	--	Nonvascular Dominated
	--	No dominant life form
Class	I	Closed Tree Canopy
	II	Open Tree Canopy
	III	Shrubland
	IV	Dwarf Shrubland
	V	Herbaceous Vegetation
	VI	Nonvascular Vegetation
	VII	Sparse Vegetation
Subclass	IA	Evergreen closed tree canopy
	IB	Deciduous closed tree canopy
	IC	Mixed evergreen – deciduous closed tree canopy
	IIA	Evergreen open tree canopy
	IIB	Deciduous open tree canopy
	IIC	Mixed evergreen – deciduous open tree canopy
	IIIA	Evergreen shrubland
	IIIB	Deciduous shrubland
	IIIC	Mixed evergreen – deciduous shrubland
	IVA	Evergreen dwarf-shrubland
	IVB	Deciduous dwarf-shrubland
	<i>IVC</i>	<i>Mixed evergreen – deciduous dwarf-shrubland</i>
	VA	Perennial graminoid vegetation
	VB	Perennial forb vegetation
	VC	Hydromorphic rooted vegetation
	VD	Annual graminoid or forb vegetation
	VIA	Bryophyte vegetation
	VIB	Lichen vegetation
	VIC	Alga vegetation
	VIIA	Consolidated rock sparse vegetation
VIIIB	Boulder, gravel, cobble, or talus sparse vegetation	
VIIIC	Unconsolidated material sparse vegetation	

Appendix 2A

Example Field Forms and Instructions

This appendix includes examples of forms for recording plot metadata, environmental attributes, and vegetation data for ocular macroplots.

2A.1 Instructions for General Site Data Form

Collect the following data elements at all sample sites. **R** = Required, **O** = Optional.

Field Name	Instructions
Site ID	R Record a plot number or site identifier that is unique within the project.
Project Name	R Record the name of the project.
Date	R Record the month, day, and year in the format MMDDYYYY.
Sample Type(s)	R Record the type(s) of data collected on the plot using the following codes: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>OCMA = Ocular Macroplot</p> <p>FLCO = Flora Cover/Frequency</p> <p>FLTR = Flora Tree Data (Individual tree measurements)</p> </div> <div style="width: 45%;"> <p>FLLI = Flora Line Intercept</p> <p>FLPO = Flora Point Cover</p> <p>SOPE = Soil Pedon</p> </div> </div>
Examiner(s)	R Record the last name, first name, and middle initial of all crewmembers. Record the name of the principal investigator first.
Plot Location Type	R Record the approach used to locate the plot using the following codes: P = Preferential R = Random S = Stratified Random (or systematic) See Section 2.3 for a discussion of sampling strategies.
Species List Type	R Record the completeness of the plant species list for the plot using the following codes: C = Complete – All plant species present at time of sampling are recorded. R = Reduced – Not all plant species are recorded. The list may be limited by a cover threshold (e.g. $\geq 5\%$ cover) or relative abundance (e.g. 5 most abundant species). S = Selected – Not all plant species recorded. A protocol- or project-specific list of species are recorded whenever they are present on a plot. L = Lifeform Only – No species are recorded. Cover is only recorded for life forms, and usually by layer or size class within life form. A complete species list is required for developing and describing new associations and alliances. See Section 2.43 for more information.
Plot Area	R Record the area of the macroplot or belt transect in either acres or square meters, and the unit of measure (UOM) used. See Section 2.41 for guidelines for determining plot size.
Plot Size	R Record actual plot dimensions. Radius for circular plots; width and length for rectangular plots. Also record the unit of measure (UOM) used.
Vegetation Classification	R Record as much classification information as known at the time of sampling including the PNV series, association, and reference; existing vegetation alliance, association and

	reference; ecological type; and FGDC Subclass. Subclass is determined in the field using the key in Appendix 1C.
GPS Location	R Record the location of the sample site using latitude-longitude or UTM with zone.
Field Name	Instructions
Aerial Photo ID	O Record the photo identification number.
Flight Line	O Record the three-digit photo flight line.
Roll #	O Record the three-digit roll number and contract fiscal year. For example, "189" identifies roll 1 taken in fiscal year 1989.
Plot Photo Label	O Record a descriptive alpha/numeric label to track photos. Example is roll number followed by exposure # "2-14" to help label and track photos after processing.
Photo Description	O Record a description of the photo subject.
Film Type	O Record the type of film when a film camera is used.
Digital Photo File Name	O Record the filename of the photo when a digital camera is used.
Elevation	R Record the sample site elevation, in feet, to the nearest 10 feet.
Slope	R Record the sample site average slope, in percent.
Aspect	R Record the sample site aspect, in degrees. For slopes that have no aspect, record a zero. For due north, record 360.
Horizontal Slope Shape	O Record the horizontal shape of the plot. See Section 2A.11 and Figure 2A.1 for values and codes.
Vertical Slope Shape	O Record the vertical shape of the plot. See Section 2A.11 and Figure 2A.1 for values and codes.
Slope Complexity	O Record the slope complexity of the plot using the following codes: S = Simple = Linear, convex, or concave in shape. C = Complex = Broken, undulating, or patterned in shape.
Slope Position	R Record the two-dimensional position of the plot on the landform using the following codes: SU = Summit SH = Shoulder BS = Backslope FS = Foothlope TS = Toeslope
Slope Position Modifier	R Record the modifier which best describes the primary slope position using the following codes: LR = Lower MD = Mid UP = Upper
Ground Surface Cover Type	R Record each ground surface cover type present in the plot. See Sections 2A.12 and 2A.13 for types, descriptions, and codes.
Ground Surface Cover Percent	R Record an ocular estimate of the percentage of the plot covered by each ground surface cover type.
Disturbance Type	O Record major disturbance events. See Section 2A.14 for a list of disturbance types and codes.
Disturbance Extent Affected	O Record the vegetation affected and/or the ground cover affected, in percent.
Disturbance Date	O Record the disturbance date, in years, to the nearest year.

2A.11 Vertical and Horizontal Shape Code

The following codes should be used for vertical and horizontal slope shape:

Code	Description
BR	Broken – cliffs, knobs, and/or benches interspersed with steeper slopes; generally characterized by sharp, irregular breaks.
CV	Convex – raised, arched up, curved out.
LI	Linear/Planar – straight, even, or smooth.
CC	Concave – depressional, curved in.
UN	Undulating (also rolling) – pattern of one or more low relief ridges or knolls and draws
PA	Patterned – relief of hummocks and swales with several feet
FL	Flat – straight and level.
XX	Unable to Assess

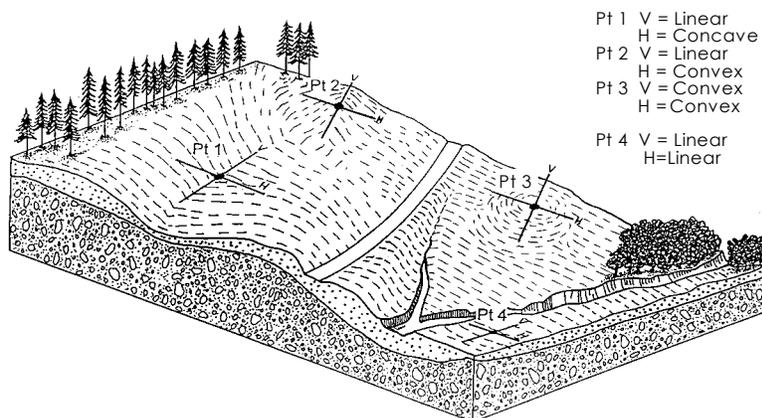


Figure 2A.1. Vertical and Horizontal slopes.

2A.12 Ground Surface Cover

Ground Surface Cover estimates are ocular. Absolute percent cover of the fixed area plot is the standard and required. Defined as the percent of plot surface area, which is occupied by the ground cover type. Estimate to the nearest 1% in the 1-10% range, to the nearest 5% for amounts exceeding 10%. Figure 2A.2 illustrates some ground cover types. The following is a reduced set of ground cover categories used in existing vegetation classification to describe and develop interpretations for ground cover, and document disturbance effects:

Code	Description
BARE	Bare soil: Soil particles < 2 mm not covered by rock, cryptogams, or organic material. Does not include any part of a road, but does include foot trails.
Live Vegetation Categories:	
BAVE	Basal vegetation: Basal vegetation is the soil surface occupied by live basal or root crown portion of vascular plants, including live trees. Typically ranges between 3-7 percent; 15 percent is very high and rarely encountered.
NONV	Nonvascular: Plants or plant-like organisms without specialized water or fluid conductive tissue (xylem and phloem). Includes mosses, liverworts, hornworts, lichens, algae, and bacterial soil crusts.
Organic Debris Categories:	
LITT	Litter: Plant litter and duff not yet incorporated into the decomposed top humus layer. Includes twigs < ¼ inch in diameter, ash from burned plants, dead nonvascular plants, and dung.
WOOD	Wood: Any dead woody material >1/4 inch in diameter, small and large woody debris, regardless of depth. Includes bases of standing dead trees and shrubs.
Rock Categories:	
BEDR	Bedrock: A general term for the rock, usually solid, that underlies soil or other unconsolidated, superficial material.
BOUL	Boulders: Rock > 600 mm (24 inches) in diameter or length.
COBB	Cobbles: Rock fragments between 75 and 250 mm (3 and 10 inches) in diameter.
GRAV	Gravel: Rock fragments between 2 and 75 mm in diameter.
PAVE	Pavement: A natural, concentration of closely packed and polished stones at the soil surface in a desert (may or may not be an erosional lag). Or rock fragments < 19.1mm in diameter.
ROCK	Total Rock: Relatively hard, naturally formed mineral or petrified matter >2mm in diameter.
RROC	Range Rock: Rock fragments > ¾ inch (19.1mm) in diameter.
STON	Stones: Rock fragments between 250 and 600 mm (10 and 24 inches) in diameter.
Miscellaneous Categories:	
PEIS	Permanent Ice and Snow: Surface area covered by apparently permanent ice and/or snow at the time of plot measurement.
ROAD	Road: Any road or vehicle trail that is regularly maintained or in long-term continuous use. Includes cutbanks and fills.
TRIS	Transient Ice and Snow: Surface area covered by apparently transient ice and/or snow at the time of plot measurement.
WATE	Water: Includes transient water that obscures other cover cover types and permanent water where the water table is above the ground bogs, swamps, marshes, and ponds.

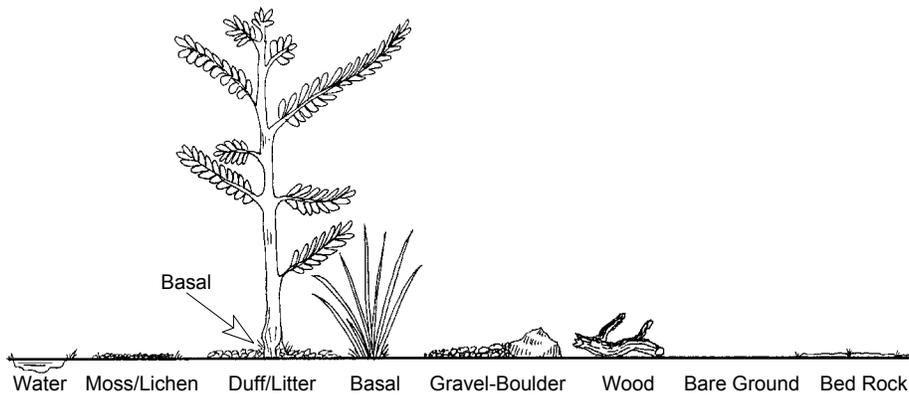


Figure 2A.2. Ground Surface Cover Types

The following ground cover types should be recorded whenever they are present and are included on the example General Site Data form: bare soil, basal vegetation, nonvascular, litter, and wood. More detailed subdivisions of these categories are available in NRIS, but are not recommended for vegetation classification. The miscellaneous categories should also be recorded whenever present. Rock cover must be recorded using one of the three sets of categories described below.

2A.13 Rock Ground Cover Types

Rock cover on the ground surface should be described using one of the following sets of ground cover types. Set 1 is the minimum requirement. Set 3 is recommended for vegetation classification and description done in conjunction with Terrestrial Ecological Unit Inventory. Set 2 is used primarily for specific rangeland monitoring methods.

Rock Set 1		Rock Set 2		Rock Set 3	
ROCK	All rock from gravel to bedrock.	PAVE	Pavement (2 – 19.1mm diam.)	GRAV	Gravel (2 – 75mm diam.)
		RROC	Rock > 19.1 mm diameter.	COBB	Cobbles (75 – 250mm diam.)
				STON	Stones (250 – 600mm diam.)
				BOUL	Boulders (>600mm diam.)
				BEDR	Bedrock

2A.14 Disturbance Event Code Categories

The following codes should be used for disturbance and treatment types:

Code	Disturbance or Treatment	Code	Disturbance or Treatment
10000	Insects (General)	50003	Drought
10011	Ant (Formicidae)	50004	Flooding/High Water
11000	Bark Beetles	50011	Snow/Ice
12000	Defoliators	50013	Wind/Tornado
13000	Chewing Insects	50015	Avalanche
14000	Sucking Insects	50016	Mud/Landslide
15000	Boring Insects	51001	Channel Erosion
16000	Seed/Cone/Flower/Fruit Insects	51002	Soil Creep
17000	Gallmaker Insects	51010	Slump
18000	Insect Predators	70005	Land Clearing
19000	General Diseases	70006	Land Use Conversion
20000	Biotic Damage	70008	Mechanical
21000	Root/Butt Diseases	71000	Timber Harvest
22000	Stem Decay/Cankers	71002	Firewood Harvest
23000	Parasitic/Epiphytic Plants	71027	Natural Changes (No Cut)
23001	Mistletoe	73000	Regeneration Activities (General)
24000	Decline Complexes/Dieback/Wilts	73004	Seeding (Trees-Natural)
25000	Foliage Diseases	73005	Seeding (Trees-Artificial)
26000	Stem Rusts	73008	Grass Seeding
27000	Broom Rusts	73015	Site Preparation
30000	Fire	73016	Brush Control
41002	Beaver	74000	Timber Stand Improvement (General – Non-Commercial)
41003	Big Game (e.g. Deer)	75000	Prescribe Burning (General)
41016	Browsing	75004	Planned Ignition - Prescribed Burn - Natural Fuels
41021	Rodents	75005	Unplanned Ignition - Prescribed Burn - Natural Fuels
41022	Elk	78007	Miscellaneous Upland Recreation Activities
42001	Cattle	78008	Miscellaneous Riparian Recreation Activities
42004	Sheep	80000	Multi-Damage (Insects/Diseases)
		90000	Unknown

General Site Data Form USDA Forest Service

SITE ID #		PROJECT NAME			
DATE (MM-DD-YYYY)			SAMPLE TYPE(S)		
EXAMINER: LAST		First		Initial	
PLOT LOCATION TYPE:	SPECIES LIST TYPE:		PLOT AREA:		UOM
PLOT SIZE: RADIUS	WIDTH	LENGTH	UOM	STATE:	

VEGETATION CLASSIFICATION		
PNV SERIES:	PNV ASSOC:	PNV REFERENCE:
EV ALLIANCE:	EV ASSOC:	EV REFERENCE:
ECOLOGICAL TYPE:		FGDC SUBCLASS:

GPS LOCATION		
LAT.	UTM	NORTH
LONG.	ZONE	EAST

AERIAL PHOTO INFORMATION						
DATE	SOURCE	SCALE	PROJ/CODE	FLIGHT LINE	ROLL #	EXP. #

PLOT PHOTO INFORMATION			
LABEL	PHOTO DESCRIPTION	FILM TYPE	DIGITAL PHOTO FILE NAME

MORPHOMETRY						
ELEVATION	SLOPE	ASPECT	SHAPE HOR.	SHAPE VERT.	COMPLEXITY	POSITION
						MOD _____

GROUND SURFACE COVER							
TYPE	PERCENT	TYPE	PERCENT	TYPE	PERCENT	TYPE	PERCENT
BARE		BARE					
NONV							
LITT							
WOOD							

MAJOR DISTURBANCE EVENTS				
DISTURBANCE TYPE	EXTENT AFFECTED		DISTURBANCE DATE	NOTES:
	VEGETATION	GROUND COVER		

Remarks:

2A.2 Instructions for Vegetation Composition Form

The Vegetation Composition Form can be used to record or summarize data for a number of sampling methods. Its use for the ocular macroplot method is described here.

2A.21 Vegetation Sampling Metadata

The first part of the Vegetation Composition Form records metadata about the vegetation sampling methods and who collected the data. The plot location should be recorded on the General Site Data Form.

Field Name	Instructions
Site ID	R Record a plot number or site identifier that is unique within the project. This must match the Site ID on the General Site Data Form.
Date	R Record the month, day, and year in the format MMDDYYYY.
Examiner(s)	R Record the last name, first name, and middle initial of all crewmembers. Record the name of the principal investigator first.
Sample Type	R Record the type of data collected on the plot using one of the following codes: OCMA = Ocular Macroplot FLLI = Flora Line Intercept FLCO = Flora Cover/Frequency FLPO = Flora Point Cover FLTR = Flora Tree Data
Species List Type	R Record the completeness of the plant species list for the plot using the following codes: C = Complete – All plant species present at time of sampling are recorded. R = Reduced – Not all plant species are recorded. The list may be limited by a cover threshold (e.g. $\geq 5\%$ cover) or relative abundance (e.g. 5 most abundant species). S = Selected – Not all plant species recorded. A protocol- or project-specific list of species are recorded whenever they are present on a plot. L = Lifeform Only – No species are recorded. Cover is only recorded for life forms, and usually by layer or size class within life form. A complete species list is required for developing and describing new associations and alliances. See Section 2.43 for more information.
Plot Area	R Record the area of the macroplot or belt transect in either acres or square meters, and the unit of measure (UOM) used. See Section 2.41 for guidelines for determining plot size.
Area UOM	R Record the unit of measure for the plot area, either acres or square meters.
Plot Size	R Record actual plot dimensions. Radius for circular plots; width and length for rectangular plots. Also record the unit of measure (UOM) used.
Size UOM	R Record the unit of measure for the plot dimensions, either feet or meters.
Height UOM	R Record the unit of measure for plant heights, either feet or meters.
Diameter UOM	R Record the unit of measure for tree diameters.

2A.22 Canopy Cover by Life Form

Record the canopy cover for each item in this part of the form. Canopy cover is “*the percentage of ground covered by a vertical projection of the outermost perimeter of the natural spread of foliage of plants. Small openings within the canopy are included*” (SRM 1989, NRCS 1997). See Sections 2.233 and 2.45 for more information about canopy cover and ocular estimation techniques.

Complete the fields in this part of the form as follows:

All Veg	Total Vegetation Cover: Record the percentage of the ground covered by a vertical projection of the outermost perimeter of the natural spread of foliage of all vascular plants within the sample unit (plot or transect).
Trees	Tree Cover: Record the total cover of trees – <i>woody plants that generally have a single main stem, have more or less definite crowns, and are usually equal to or greater than 5 meters in height at maturity</i> (see Section 2.421).
Shrubs	Shrub Cover: Record the total cover of shrubs – <i>woody plants that generally have several erect, spreading, or prostrate stems which give it a bushy appearance, and are usually less than 5 meters in height at maturity</i> (see Section 2.421). Shrub cover includes the cover of dwarf shrubs.
Dwarf Shrubs	Dwarf Shrub Cover: Record the total cover of dwarf shrubs – <i>caespitose, suffrutescent, matted, or cushion-forming shrubs which are typically less than 50 cm tall at maturity due to genetic and/or environmental constraints</i> (see Section 2.421).
Herbs	Herb cover: Record the total cover of herbs – <i>vascular plants without significant woody tissue above the ground, with perennating buds borne at or below the ground surface</i> (see Section 2.421). Includes forbs, graminoids, ferns, and fern allies. Herb cover must be equal to or less than the sum of graminoid cover and forb cover.
Graminoids	Graminoid Cover: Record the total cover of graminoids – <i>flowering herbs with relatively long narrow leaves and inconspicuous flowers with parts reduced to bracts</i> . Includes grasses, sedges, rushes, and arrowgrasses (see Section 2.421).
Forbs	Forb Cover: Record the total cover of forbs – <i>spore-bearing herbs or flowering herbs with relatively broad leaves and/or showy flowers</i> (see Section 2.421). Include ferns or fern allies.

Dwarf shrubs are a subcategory of shrubs. Forbs, graminoids, and fern-like are subcategories of herbs. Total canopy cover of additional life forms can be recorded in part 3 of the Vegetation Composition Form as needed.

2A.23 Canopy Cover by Species

The third part of the Vegetation Composition Form is used to record data about vegetation layers and individual plant species. This portion of the form is divided into two sections: one for trees and shrubs and one for herbs and nonvascular organisms.

Record a complete list of all plant species within the sampling unit. Record only those species present in the plot. Do not record species that are present in the stand but do not occur within the plot. Record the canopy cover for each species. Do not use cover classes. Estimate percent canopy cover of each species, life form, layer, or size class within the plot as follows:

- Use 0.1 as “trace” for items present but clearly less than 1% cover.
- Estimate to the nearest 1% between 1 and 10% cover.
- Estimate to at least the nearest 5% between 10% and 30% cover.
- Estimate to at least the nearest 10% for values exceeding 30% cover.

Record a life form and life form modifier for each species using the codes in Tables 2.5 and 2.6, respectively (see Section 2.49). These are used for cross-walking to the FGDC physiognomic hierarchy and describing physiognomy of associations and alliances (Jennings et al. 2003).

2A.24 Canopy Cover and Structural Data by Layer

Species data may also be recorded by layer if desired. The following instructions describe how to record data for tree and shrub layers, and for tree and shrub species by layer.

2A.241 Tree Layer Definitions

Trees vary widely in mature height, from 5 meters to over 50 meters (FGDC 1997). This variation must be taken into account when defining layers or height classes for trees. For this purpose, a **dwarf tree** is defined as *a tree which is typically less than 12 meters tall at maturity due to genetic and/or environmental constraints*. A stand of dwarf trees typically has a site-specific potential height growth of less than 12 meters. The layers described below are defined separately for dwarf trees where necessary.

The following tree layers must be described whenever they are present in the sampling unit (e.g. macroplot or transect):

Overstory	The overstory layer includes all trees greater than or equal to 5 meters in height that make up the forest canopy. In dwarf tree stands, the overstory consists of trees that have attained at least half of their site-specific potential height growth and make up the forest canopy.
Regeneration	The regeneration layer includes all trees less than 5 meters in height. In dwarf tree stands the regeneration layer includes trees that have attained less than half of their site-specific potential height growth and are clearly overtopped by the overstory trees.

The overstory may optionally be subdivided into the following sub-layers, if they occur, to describe stand structure in more detail:

- Main Canopy** The dominant and co-dominant overstory trees that receive direct sunlight from above and make up the majority of the forest canopy.
- Supercanopy** Scattered overstory trees that clearly rise above the main canopy.
- Subcanopy** Overstory trees that are clearly overtopped by and separate from the main canopy, but are larger and taller than the regeneration layer.

The regeneration layer may optionally be subdivided into the following sub-layers:

- Saplings** Regenerating trees greater than 1.4 meters (4.5 feet) in height, **or** regenerating dwarf trees greater than 1 meter in height.
- Seedlings** Regenerating trees less than 1.4 meters (4.5 feet) in height, **or** regenerating dwarf trees less than 1 meter in height.

2A.242 Tree Layer Data Requirements and Instructions

Canopy cover, predominant plant height, and predominant crown height must be recorded for the tree overstory and regeneration layers. Predominant diameter must also be recorded for the overstory. Record these attributes using the following procedures:

Canopy Cover	Record percent canopy cover for each layer and optional sub-layer occurring within the sampling unit. Canopy cover of a layer cannot be greater than the sum of the canopy cover values of its sub-layers. However, layer cover can be, and typically is, less than the sum of the sub-layer covers due to overlapping of the sub-layers.
Predominant Plant Height	Record the predominant, or prevailing, tree height for the overstory and regeneration layers to the nearest meter and nearest foot, respectively. It is determined by selecting a representative tree for the layer and estimating its height using a clinometer and measuring tape. The representative tree for the overstory layer must be in the main canopy. The representative tree for the regeneration layer must be from the sub-layer (sapling or seedling) with the most canopy cover. Predominant plant height may also be recorded for each optional sub-layer.
Predominant Crown Height	Record the predominant, or prevailing, crown height for the overstory and regeneration layers to the nearest meter. Crown height is <i>the vertical distance from ground level to the lowest whorl with live branches in at least three of four quadrants around the stem</i> . It is determined by selecting a representative tree for the layer and estimating its crown height using a clinometer and measuring tape. The representative tree for the overstory layer must be in the main canopy. The representative tree for the regeneration layer must be from the sub-layer (sapling or seedling) with the most canopy cover. Predominant crown height may also be recorded for each optional sub-layer.
Predominant Diameter	Record the predominant, or prevailing, tree diameter for the overstory layer to the nearest inch. Predominant diameter is the prevailing diameter of the most abundant tree species in a layer or sub-layer. It is determined by selecting a representative tree and measuring it with a diameter tape, using procedures described in Common Stand Exam Field Guide. The representative tree for the overstory layer must be in the main canopy. Measure the diameter at breast height (DBH) whenever possible, otherwise measure diameter at root crown (DRC), and record the diameter in the appropriate column (DBH or DRC) of the Vegetation Composition Form.

An example of both the required and optional data for tree layers is shown below. Required layers and data are in bold text. Heights are in meters and diameters in inches.

Example of Completed Data for Tree Layers and Sub-layers.

Life Form	LF Mod.	Layer	Species	Canopy Cover	Pred. Plant Height	Pred. Crown Height	Pred. DBH	Pred. DRC
T	---	TO	---	45	10	6	12	---
T	---	TOSP	---	5	12	8	15	---
T	---	TOMC	---	40	10	6	12	---
T	---	TOSB	---	10	7	2.5	8	---
T	---	TR	---	10	4	0.3		
T	---	TRSA	---	5	4	0.3		
T	---	TRSE	---	5	0.3	0		

2A.243 Data for Shrub Layers

The following shrub layers may optionally be described when present in the sampling unit (e.g. macroplot or transect):

- Tall Shrubs** Shrubs greater than 2 meters in height. (May occasionally include shrubs over 5 meters tall but clearly multi-stemmed.)
- Medium Shrubs** Shrubs 0.5 to 2 meters in height.
- Low Shrubs** Shrubs less than 0.5 meter in height.

When shrub layers are described, canopy cover and predominant plant height should be recorded for each layer. Predominant crown height may also be recorded. Record these attributes using the following procedures:

Canopy Cover	Record percent canopy cover for each shrub layer occurring within the sampling unit. Total shrub cover cannot be greater than the sum of the individual layer cover values, but may be less.
Predominant Plant Height	Record the predominant, or prevailing, height of each shrub layer to at least the nearest foot. Predominant plant height is the prevailing upper height of the shrubs within a layer. It is determined by selecting a representative individual shrub and measuring its height with an appropriate method (e.g. tape measure for low to medium shrubs or clinometer for tall shrubs).
Predominant Crown Height	Record the predominant crown height for each shrub layer to at least the nearest foot. Crown height for shrubs is <i>the vertical distance from ground level to the lowest live foliage or branches</i> . It is determined by selecting a representative shrub for the layer and measuring or estimating its crown height.

An example of completed shrub layer data is shown below. Heights are in meters.

Example of Completed Data for Shrub Layers.

Life Form	LF Mod.	Layer	Species	Canopy Cover	Pred. Plant Height	Pred. Crown Height
S	---	ST	---	1	3	1
S	---	SM	---	9	1	0.3
S	---	SL	---	Tr	0.3	0

2A.25 Optional Canopy Cover and Structural Data by Species by Layer

Canopy cover and structural data may optionally be recorded separately for each species for each layer or sub-layer in which it occurs.

2A.251 Data for Tree Species by Layer

Canopy Cover: Record the total canopy cover of each tree species and the canopy cover of each species within each layer in which it occurs. Cover by sub-layer may also be recorded. This may require up to eight rows of data, depending on the number of sub-layers in which a species occurs. An example is shown in Table 2A.1 below with required data in bold text. In this example, the canopy cover of Ponderosa pine (*Pinus ponderosa*) is 45 percent. Within the overstory and regeneration layers its canopy cover is 35 and 10 percent, respectively, indicating there is no overlap between the two layers. No sapling or seedling occurs directly under an overstory tree. However, there is overlap between main canopy and subcanopy trees. Ponderosa pine cover is 30 percent in the main canopy and 10 percent in the subcanopy, while overstory cover is only 35 percent. This indicates 5 percent overlap between main canopy and subcanopy Ponderosa pine.

The possibility of overlap between sub-layers requires that overstory and regeneration cover for each tree species be estimated or measured directly, not calculated by summing the sub-layer values. When recording species cover by sub-layer using the ocular macroplot method, it is most efficient to first estimate canopy cover by sub-layer, then estimate the overlap (if any) between sub-layers to derive canopy cover for the overstory and regeneration layers.

Table 2A.1 Example of Tree Species by Layer Canopy Cover Data.

Life Form	LF Mod.	Layer	Species	Canopy Cover
T	TN	---	PIPO	45
T	TN	TO	PIPO	35
T	TN	TOMC	PIPO	30
T	TN	TOSB	PIPO	10
T	TN	TR	PIPO	10
T	TN	TRSA	PIPO	6
T	TN	TRSE	PIPO	4

Predominant Plant Height: Record predominant height of each tree species for each layer in which it occurs. It is determined by selecting a representative tree and estimating its height using a clinometer and measuring tape, using procedures described in Common Stand Exam Field Guide.

Predominant Crown Height: Record predominant crown height of each tree species for each layer in which it occurs. It is determined by selecting a representative tree and estimating or measuring the vertical distance from the ground to the canopy base.

Predominant Age: Record the predominant age of each tree species in the overstory layer. Refer to the Common Stand Exam Field Guide for methods of determining tree age.

Predominant Diameter: Record predominant diameter (DBH or DRC as appropriate) for the overstory layer. It is determined by selecting a representative tree and measuring it with a diameter tape, using procedures described in Common Stand Exam Field Guide.

Stem Count: Record stem counts for each tree species occurring in the regeneration layer. Stems may optionally be recorded by sub-layer (sapling and seedling). Counts can be made on the entire plot or on a portion of the plot depending on the density of each species. When stems are counted on a portion of the plot, the fraction of the plot and the raw count are recorded in the remarks section of the form. These are then used to calculate a count for the entire plot, which is recorded in the stem count column of the form.

An example of a completed data set for one tree species is shown below in Table 2A.2. Predominant plant height, crown height, diameter, age, and stem count have been added to the canopy cover data in Table 2A.1.

Table 2A.2 Example of Completed Data for a Tree Species by Layer.

Life Form	LF Mod.	Layer	Species	Canopy Cover	Pred Plant Ht.	Pred. Crown Height	Pred DBH	Pred DRC	Pred Age	Stem Count
<i>T</i>	<i>TN</i>	---	<i>PIPO</i>	45						
<i>T</i>	<i>TN</i>	<i>TO</i>	<i>PIPO</i>	35	40	15	30	---	150	
<i>T</i>	<i>TN</i>	<i>TOMC</i>	<i>PIPO</i>	30	40	15	30	---	150	
<i>T</i>	<i>TN</i>	<i>TOSB</i>	<i>PIPO</i>	10	20	5	12	---	80	
<i>T</i>	<i>TN</i>	<i>TR</i>	<i>PIPO</i>	10	4	0.5				13
<i>T</i>	<i>TN</i>	<i>TRSA</i>	<i>PIPO</i>	6	4	0.5				4
<i>T</i>	<i>TN</i>	<i>TRSE</i>	<i>PIPO</i>	4	0.3	0				9

2A.252 Data for Shrub Species by Layer

Canopy Cover: Record the total canopy cover of each shrub species. The canopy cover of each species within each layer in which it occurs may optionally be recorded, but is not required. This may require up to four rows of data, depending on the number of layers in which a shrub species occurs. The possibility of overlap between layers requires that total canopy cover for each shrub species be estimated or measured directly, not calculated by summing the species by layer cover values.

Predominant Crown Height: Record predominant crown height of each shrub species for each layer in which it occurs. It is determined by selecting a representative shrub and estimating or measuring the vertical distance from the ground to the lowest live foliage.

Predominant Height: Record predominant height of each shrub species or optionally for each layer in which the species occurs. Predominant height is the prevailing upper height of the shrub species within a layer. It is determined by selecting a representative individual shrub and measuring its height with an appropriate method (e.g. tape measure for low to medium shrubs or clinometer for tall shrubs).

An example of completed shrub species and species by layer data is shown below. Heights are in meters.

Example of Completed Data for Shrub Species by Layers.

Life Form	LF Mod.	Layer	Species	Canopy Cover	Pred. Plant Height	Pred. Crown Height
S	SBD	---	QUGA	9	1	0.2
S	SBD	ST	QUGA	1	3	1
S	SBD	SM	QUGA	8	1	0.2
S	SM	---	ARTRP4	1	0.7	0.2
S	SM	SM	ARTRP4	1	0.7	0.2

2A.26 Basal Area Data

Basal area may optionally be collected using a single prism point at the center of a macroplot or midpoint of a transect. Follow the procedures in the Common Stand Exam Field Guide. Record the basal area, in square feet per acre, and the expansion factor (BAF) of the prism used.

2A.27 Blank Vegetation Composition Form and Completed Examples

A blank Vegetation Composition Form is provided on the following page. It is followed by examples of a completed General Site Data Form and Vegetation Composition Form.

General Site Data Form
USDA Forest Service

SITE ID # <i>FSR4BT92DT127</i>		PROJECT NAME <i>B-T East TEUI</i>			
DATE (MM-DD-YYYY) <i>08-23-1995</i>			SAMPLE TYPE(S) <i>OCMA, SOPE</i>		
EXAMINER: LAST <i>Tart Ferwerda</i>		First <i>David Martin</i>		Initial <i>L</i>	
PLOT LOCATION TYPE: <i>P</i>	SPECIES LIST TYPE: <i>C</i>	PLOT AREA: <i>1/10</i>	UOM <i>ACRE</i>		
PLOT SIZE: RADIUS <i>37.2</i>	WIDTH	LENGTH	UOM <i>FEET</i>	STATE: <i>WY</i>	

VEGETATION CLASSIFICATION					
PNV SERIES: <i>ABLA</i>		PNV ASSOC: <i>VASC, PIAL</i>		PNV REFERENCE: <i>Steele&1983</i>	
EV ALLIANCE: <i>PIAL</i>		EV ASSOC: <i>VASC</i>		EV REFERENCE: <i>NONE</i>	
ECOLOGICAL TYPE:				FGDC SUBCLASS: <i>IIA</i>	

GPS LOCATION					
LAT. <i>43° 18' 44"</i>		UTM		NORTH	
LONG. <i>110° 12' 33"</i>		ZONE		EAST	

AERIAL PHOTO INFORMATION						
DATE	SOURCE	SCALE	PROJ/CODE	FLIGHT LINE	ROLL #	EXP. #
<i>09-01-1989</i>					<i>1715</i>	<i>87</i>

PLOT PHOTO INFORMATION			
LABEL	PHOTO DESCRIPTION	FILM TYPE	DIGITAL PHOTO FILE NAME

MORPHOMETRY							
ELEVATION <i>9900'</i>	SLOPE <i>9%</i>	ASPECT <i>19°</i>	SHAPE HOR. <i>UN</i>	SHAPE VERT. <i>UN</i>	COMPLEXITY <i>C</i>	POSITION <i>BS</i>	MOD <i>UP</i>

GROUND SURFACE COVER							
TYPE	PERCENT	TYPE	PERCENT	TYPE	PERCENT	TYPE	PERCENT
<i>BAVE</i>	<i>8</i>	<i>BARE</i>	<i>2</i>	<i>STON</i>	<i>7</i>		
<i>NONV</i>	<i>4</i>	<i>BEDR</i>	<i>5</i>	<i>BOUL</i>	<i>5</i>		
<i>LITT</i>	<i>50</i>	<i>GRAV</i>	<i>1</i>				
<i>WOOD</i>	<i>15</i>	<i>COBB</i>	<i>3</i>				

MAJOR DISTURBANCE EVENTS				
DISTURBANCE TYPE	EXTENT AFFECTED		DISTURBANCE DATE	NOTES:
	VEGETATION	GROUND COVER		

Remarks: *Stop# B0606B. Location from pin-pricked photo, not GPS.*

