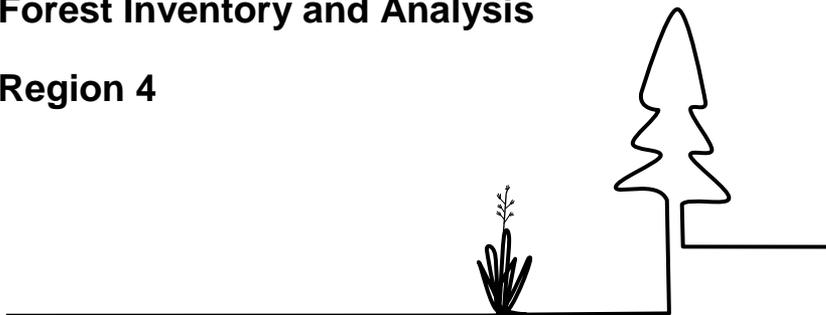


# Interior West Forest Inventory and Analysis

## Region 4



### All Condition Inventory Supplemental Field Guide

5.16.2011





# Table of Contents

INTRODUCTION.....	1
ACI Study Locations (2011 Field Season).....	1
TYPES OF ACI LOCATIONS.....	3
<i>Partial Plots</i> .....	3
<i>Nonforest Plots</i> .....	3
SECTION 0: GENERAL DESCRIPTION.....	7
ACI PLOT LAYOUT.....	7
PARTIAL PLOT SAMPLE ITEMS.....	8
NONFOREST PLOT SAMPLE ITEMS.....	10
ESTABLISHING THE PLOT AND SELECTING A REFERENCE POINT.....	11
Old nails/ tags/stakes (previous-plot sampling).....	11
0.0.ACI    General Description (ACI Monumentation).....	12
0.3.1RM.ACI    Circumstances Precluding Plot/Subplot	
Establishment.....	13
Plot-level Circumstances.....	15
Subplot-level Circumstances.....	18
0.3.2RM.ACI    Plots with Accessible Forest Land.....	20
0.3.3RM.ACI    Plots with No Accessible Forest Land Present.....	23
SECTION 1: PLOT-LEVEL DATA.....	26
ACI SAMPLE PROCEDURES.....	26
<i>partial plots</i> .....	26
<i>nonforest plots</i> .....	26
ACI ITEM REVISIONS.....	26
1.4.ACI    PLOT STATUS.....	27
1.7.ACI    SAMPLE KIND.....	28
1.7.1RM.ACI    REGIONAL SAMPLE KIND.....	28
1.13.ACI    WATER ON PLOT.....	28

<b>SECTION 2: CONDITION CLASS .....</b>	<b>30</b>
<b>ACI SAMPLE PROCEDURES: .....</b>	<b>30</b>
<b>ACI CONDITION CLASS PROCEDURES .....</b>	<b>30</b>
<i>partial plots</i> .....	31
<i>nonforest plots</i> .....	31
Nonforest Land (subcategories).....	31
<b>CONDITION CLASS NUMBER Examples .....</b>	<b>32</b>
<b>Exception to CONDITION CLASS STATUS and CONDITION CLASS</b>	
<b>NUMBER assignment for partial plots .....</b>	<b>33</b>
CONDITION CLASS items .....	35
2.4.1            CONDITION CLASS NUMBER .....	35
2.4.2.AC1      CONDITION CLASS STATUS .....	35
2.4.3            CONDITION NONSAMPLED REASON .....	35
2.5.11 to 2.5.16  DISTURBANCE / YEAR.....	35
2.5.17 to 2.5.22  TREATMENT / YEAR .....	35
2.5.23            PHYSIOGRAPHIC CLASS .....	35
Additional condition-level items (based on PC status).....	36
2.5.1            RESERVED STATUS .....	36
2.5.2            OWNER GROUP .....	36
2.5.7            OWNER CLASS.....	36
<b>ACI ITEM REVISIONS .....</b>	<b>37</b>
2.4.2.AC1          CONDITION CLASS STATUS .....	37
 <b>SECTION 3: SUBPLOT INFORMATION .....</b>	 <b>38</b>
<b>ACI SAMPLE PROCEDURES: .....</b>	<b>38</b>
<i>partial plots</i> .....	38
<i>nonforest plots</i> .....	38
<b>ACI ITEM REVISIONS .....</b>	<b>38</b>
3.2.AC1          SUBPLOT/MACROPLOT STATUS .....	39
3.5.AC1          MICROPLOT CENTER CONDITION .....	40
3.9.AC1          SUBPLOT/MACROPLOT CONDITION LIST .....	40
 <b>SECTION 4: BOUNDARY REFERENCES .....</b>	 <b>42</b>

<b>SECTION 5: TREE, SAPLING, AND SEEDLING DATA .....</b>	<b>44</b>
<b>ACI SAMPLE PROCEDURES:.....</b>	<b>44</b>
<i>partial plots</i> .....	<b>Error! Bookmark not defined.45</b>
<i>nonforest plots</i> .....	46
<i>Circumstances Prohibiting Complete Subplot Sampling</i> .....	47
<b>SECTION 6: SEEDLING DATA.....</b>	<b>48</b>
<b>SECTION 7: SITE TREE INFORMATION .....</b>	<b>50</b>
<b>SECTION 12: FIELD LOCATION REFERENCE FORM .....</b>	<b>52</b>
<b>ACI SAMPLE PROCEDURES .....</b>	<b>52</b>
<i>partial plots</i> .....	52
<i>nonforest plots</i> .....	52
Lack of suitable Reference Point (RP) .....	53
Lack of suitable Witness Landmarks .....	53
<b>SECTION 8: PHASE 2 (2) VEGETATION PROFILE .....</b>	<b>54</b>
<b>ACI SAMPLE PROCEDURES .....</b>	<b>54</b>
<b>UNDERSTORY VEGETATION DESCRIPTION SAMPLING REVISIONS .....</b>	<b>54</b>
PDR Data Entry (Part I Species).....	<b>5656</b>
Agricultural land / residential yards on subplot.....	<b>5656</b>
<i>Circumstances Prohibiting Complete Subplot Sampling</i> .....	<b>5766</b>
<b>SECTION 10: ACCOUNTING PROCEDURES .....</b>	<b>5958</b>
<b>SECTION 11: DOWN-WOODY MATERIALS PLOT .....</b>	<b>6160</b>
<b>ACI SAMPLE PROCEDURES .....</b>	<b>6160</b>

<b>SECTION 12: ACI SUBPLOT-LEVEL DATA .....</b>	<b><u>6362</u></b>
<b>ACI SAMPLE PROCEDURES .....</b>	<b><u>6362</u></b>
12.1.AC1    SUBPLOT NONFOREST/Water LAND USE .....	<u>6362</u>
12.2.AC1    SUBPLOT RANGE TYPE.....	<u>6665</u>
12.3.AC1    SUBPLOT HABITAT TYPE	
(Potential Vegetation Classification).....	<u>6665</u>
12.4.AC1    GROUND SURFACE COVER TRANSECTS.....	74
12.5.AC1    SUBPLOT MULTIPLE CONDITION LAND USE	
FLAG .....	<u>8084</u>
12.6.AC1    SUBPLOT RESERVED STATUS.....	<u>8283</u>
12.7.AC1    SUBPLOT OWNER CLASS .....	<u>8384</u>
 <b>APPENDICES .....</b>	 <b>87</b>
<b>APPENDIX A: ACI DATA ITEMS.....</b>	<b>88</b>
<b>APPENDIX B: GROUND SURFACE COVER TRANSECTS FORM .....</b>	<b>97</b>
 <b>INDEX.....</b>	 <b>100</b>

## Introduction

---

This manual supplement outlines the resource inventory procedures to be used by Forest Inventory and Analysis (FIA) field crews for the All Condition Inventory (ACI) study. These plots expand the Interior West Forest Inventory and Analysis (FIA) Phase 2 (P2) field inventory to include: (1) sampling on nonforest/water grid locations, and (2) data collection on nonforest/water conditions located at forest land grid locations.

This supplement is only to be used for plot locations that are part of the ACI study (*see comment box below*), and that have a **nonforest and/or water condition** at one or more of the **subplot centers**. If all of the subplot centers at a plot location are located within an accessible forest land condition, then do not use the procedures in this document (*use only the FIA manual for all sampling protocol*).

### ACI – 2008 Field Season

#### ACI Study Locations (National Forest Lands):

For the 2011 Field Season, limit ACI sampling to subplots with a center located in a National Forest Land ownership (*this is in addition to limiting ACI sampling to subplots with a center located in a nonforest/water condition*).

If a subplot center, or an entire plot, is located in an ownership other than National Forest Lands, follow the procedures outlined in this document under “Circumstances Precluding Plot/Subplot Establishment” (ACI item 0.3.1RM.ACI).

This document is to be used in conjunction with the Interior West Forest Inventory and Analysis Field Procedures field manual (2011, Version 4.04), referred to in this document as the “**FIA manual**.” Unless indicated differently in this document, follow all protocols outlined in the FIA manual.

The primary purpose of this document is to outline protocols that differ from those specified in the FIA manual, and to list additional sample variables/coding that are necessary for implementation of ACI plots. FIA manual instructions that do not differ are not duplicated in this documentation.

To assist the reader, this manual supplement is indexed by sections/item numbers that correspond to the sections/item numbers in the FIA manual. When a reference is made to a section or data item, and the intent is to refer back to the FIA manual for further instruction, the section number or item number will be preceded by “FIA.” For example, refer to “FIA section 8” implies to refer to section 8 in the FIA manual, the Understory Vegetation Description section, for further instruction. On the other hand, when the intent is to refer to a section/item in this document, the section/item number will be preceded by “ACI.”

Section 12 of this document contains additional subplot-level data items that have been added specifically for ACI plots. These items are not described in the FIA manual.

Most data measurements and classifications are to be entered on Portable Data Recorders (PDRs). Refer to appendix 6 of the FIA manual (Glossary) for FIA terminology.

Note: Instructions for any Phase 3 (P3) sampling that may occur on ACI plot locations will not be discussed in this document.

## Types of ACI locations:

<p><b>Partial Plots</b></p>	<p>Plots that have an accessible forest land condition(s) present on one or more subplots, but also a nonforest/water condition at one or more of the <b>subplot centers</b>, will simply be referred to as “partial plots” in this document</p> <p>For partial plots, the subplot-level sample procedures in this document will pertain only to subplots with a nonforest/water condition at subplot center. <b>Do not sample any subplots with an “accessible forest land” condition at subplot center</b> using ACI procedures (even if a portion of the subplot has a nonforest/water condition). As an exception, down-woody materials (DWM), which is collected along transects that extend between subplots, can cross subplots with an accessible forest land condition. For plot-level and condition-level data items, follow procedures in this document.</p> <p><i>Note: For partial plots, first sample an entire subplot using standard FIA protocol as outlined in the FIA manual. Then, if the subplot center is located in a nonforest/water condition, complete the additional procedures outlined in this document.</i></p>
<p><b>Nonforest Plots</b></p>	<p>Plots that do not have any “accessible forest land condition(s)” present on any of the four subplots will simply be referred to as “nonforest plots” in this document.</p> <p>For nonforest plots, <b>sample procedures in this document pertain to the entire plot.</b></p>

As a general overview, the ACI study will include the following aspects:

- **Data collection for nonforest/water conditions** – Many of the FIA data items that are currently only collected on subplots with an accessible forest land condition will be collected on subplots with a nonforest/water condition at subplot center. In general, disregard references in the FIA manual that specify only to sample subplots, or portions of subplots, that occur within the “accessible forest land” condition classes.
- **Individual data item protocol revisions (.ACI extension)** – For some of the current FIA manual data items, it has been necessary to modify procedures beyond the simple instruction to “disregard references only to sample on accessible forest land conditions.” Such data items have required further protocol changes, or revised instruction. These FIA data items have been listed in this document using the same item number as used in the FIA manual, but with an “.ACI” extension added to the end of the item number (e.g., item 0.3.2**RM.ACI**). For FIA data items with the “.ACI” extension, use the revised protocols listed in this document.
- **Sampling revisions** – Some of the standard FIA data collection procedures have been revised:
  - **Condition-level data items** – Data items coded at the condition level will be minimal. It will be necessary to determine the “number” of condition classes present on a plot, and what CONDITION CLASS STATUS (FIA item 2.1.1) is present at each subplot center, but it will not be necessary to “map” detailed condition boundaries as outlined in the FIA manual. For each CONDITION CLASS identified, a subset of the standard FIA condition-level data items will be collected (refer to ACI section 2 for further instruction).

- **Tree data** – For nonforest plots, all trees meeting FIA “qualifying tree” specifications will be sampled. For partial plots, additional trees on the nonforest portions of subplots with a nonforest/water condition at subplot center, and meeting FIA “qualifying tree” specifications, will be sampled (refer to ACI section 5 for further instruction).
- **Understory Vegetation Description** – For subplots with a nonforest/water condition at subplot center, this sample will not be limited to the condition class located at subplot center. In addition, the Species Composition protocol can include up to the top four crown canopy cover species per growth habit, per subplot, per condition with a subplot crown canopy cover of 3 percent or greater. If a condition boundary exists on the subplot, the total crown canopy cover on the subplot must be at least 3 percent, but the apportioned cover per condition can be less than 3 percent. There are also many changes to the Vegetation Structure protocol in version 5.0 of the FIA manual (refer to FIA and ACI section 8 for further instruction).
- **Down-woody Materials Plot** – This “traverse” transects sample has been revised to allow sampling on all accessible forest land and nonforest/water conditions (refer to ACI section 11 for further instruction). Note: As an exception, portions of transect that cannot be accurately sampled due to water/snow, or portions of transect that cross nonforest linear features (e.g., improved roads, maintained rights-of-way) are not sampled.
- **ACI subplot-level data items** – Some additional subplot-level variables have been added specifically for the ACI study. These data items are to be coded on all subplots with a nonforest/water condition at subplot center (refer to ACI section 12 for further instruction).

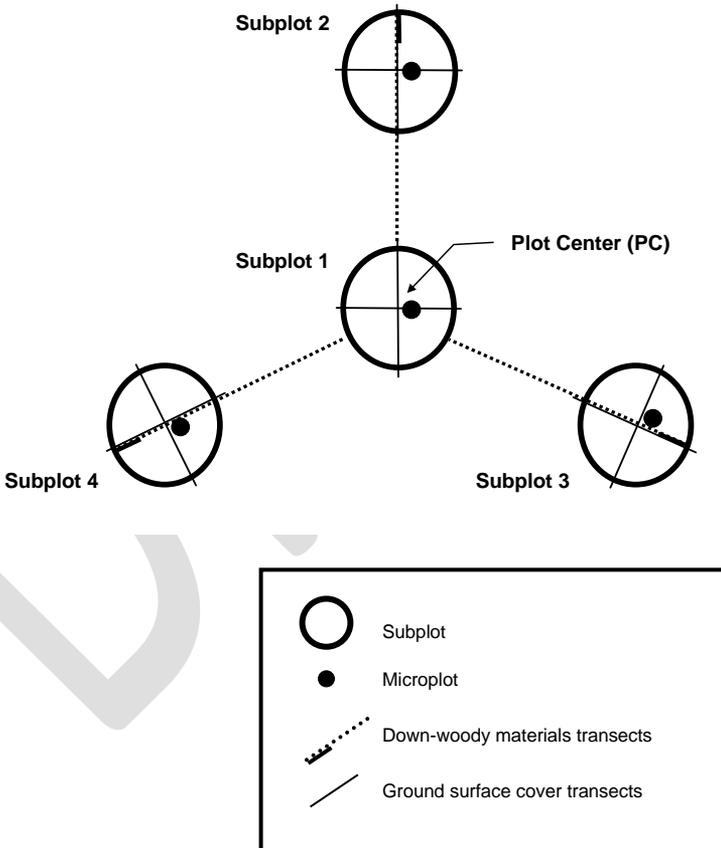


## General Description

---

As described in the FIA manual, each plot location (*sometimes referred to as the field location*) consists of a 4-subplot design. The radius of each subplot is 24.0 feet (horizontal distance). The center of subplot 1 is referred to as the plot center, or PC.

### ACI Plot Layout:



For **partial plots**, sample the following items for ACI plots:

ACI -- Partial Plots		
Sample Area	Plot Radius (horizontal distance)	Sample Items:
Plot	Area encompassing subplots	<ul style="list-style-type: none"> <li>● <b>Field Location Reference Items</b> <i>Do not re-enter data items</i></li> <li>● <b>Condition-Level Data</b> <i>Minimal items required**</i></li> <li>● <b>Plot-Level Data</b> <i>Re-enter data items**</i></li> </ul>
Subplot *	24.0 feet	<ul style="list-style-type: none"> <li>● <b>FIA subplot-level items</b> <i>Re-enter data items**</i></li> <li>● <b>Tally Trees</b> ≥ 5.0 inches DBH/DRC <i>Sample additional qualifying trees on nonforest/water conditions</i></li> <li>● <b>Understory Vegetation Description</b> <i>Revised procedures</i></li> <li>● <b>ACI subplot-level items</b></li> </ul>
Microplot *	6.8 feet	<ul style="list-style-type: none"> <li>● <b>Saplings:</b> 1.0- to 4.9-inches DBH/DRC <i>Sample additional qualifying saplings on nonforest/water conditions</i></li> <li>● <b>Seedling counts</b> <i>Sample additional qualifying seedlings on nonforest/water conditions</i></li> </ul>
		
Transect Samples		Design:
<b>Down-Woody Materials</b> <i>Revised procedures</i>		<ul style="list-style-type: none"> <li>● Coarse-Woody Debris (CWD): three 120-ft transects, horizontal distance</li> <li>● Fine-Woody Debris (FWD): 6- to 10-feet, at end of transects, slope distance</li> </ul>
<b>Ground Surface Cover</b> <i>Added for the ACI study</i>		<ul style="list-style-type: none"> <li>● Four 25-ft transects per subplot, slope distance</li> </ul>

\* **Only sample subplots with nonforest/water condition at subplot center.**

\*\* *Some data items may be coded differently than the standard FIA inventory (refer to the appropriate ACI sections for further detail).*

DRAFT

For **nonforest plots**, sample the following items for the ACI:

<b>ACI -- Nonforest Plots</b>		
<b>Sample Area</b>	<b>Plot Radius (horizontal distance)</b>	<b>Sample Items:</b>
Plot	Area encompassing subplots	<ul style="list-style-type: none"> <li>• <b>Field Location Reference Items</b></li> <li>• <b>Condition-Level Data</b> <i>Minimal items required</i></li> <li>• <b>Plot-Level Data</b></li> </ul>
Subplot	24.0 feet	<ul style="list-style-type: none"> <li>• <b>FIA subplot-level items</b></li> <li>• <b>Tally Trees</b> ≥ 5.0 inches DBH/DRC <i>Sample all qualifying trees</i></li> <li>• <b>Understory Vegetation Description</b> <i>Revised procedures</i></li> <li>• <b>ACI subplot-level items</b></li> </ul>
Microplot	6.8 feet	<ul style="list-style-type: none"> <li>• <b>Saplings:</b> 1.0- to 4.9-inches DBH/DRC <i>Sample all qualifying saplings</i></li> <li>• <b>Seedling count</b> <i>Sample all qualifying seedlings</i></li> </ul>
		
<b>Transect Samples</b>		<b>Design:</b>
<b>Down-Woody Materials</b> <i>Revised procedures</i>		<ul style="list-style-type: none"> <li>• Coarse-Woody Debris (CWD): three 120-ft transects, horizontal distance</li> <li>• Fine-Woody Debris (FWD): 6- to 10-feet, at end of transects, slope distance</li> </ul>
<b>Ground Surface Cover</b> <i>Added for the ACI study</i>		<ul style="list-style-type: none"> <li>• Four 25-ft transects per subplot, slope distance</li> </ul>

Note: For “qualifying tree” specifications, refer to FIA manual items 0.4.3**RM** (Subplot Tree Tally), 0.4.4**RM** (Microplot Sapling Tally), and 0.4.5**RM** (Seedling Counts).

## Establishing the Plot and Selecting a Reference Point:

Follow procedures in section 0 of the FIA manual for finding/establishing the PC, and for selecting a suitable reference point (RP). If no suitable RP or witness landmarks are within the vicinity of the plot location, refer to ACI section 12 Field Location Reference form.

For ACI monumentation procedures, refer to ACI item 0.0.AC1.

For circumstances that may preclude plot/subplot establishment, and that are applicable to the ACI study, refer to ACI item 0.3.1RM.AC1.

### *Previous-plot sampling*

#### **Old nails/ tags/stakes:**

Most ACI locations were visited by field crews on a previous occasion. Some of these locations were sampled using plot designs that are no longer used. For all plots, remove any old subplot stakes, old RP/witness tree tags, or old tally-tree nails, if they are no longer part of the current FIA sample design (*and if they can be located*).

Data items with procedures that differ from the FIA manual are listed below with the “.ACI” extension: For all other “general description” data items, refer to the FIA manual.

**ACI Item**

**0.0.ACI      General Description (ACI Monumentation)**

ACI monumentation procedures for subplots and microplots are described below (*see comment box*).

If a nonforest plot is located in a reserved/wilderness area, follow monumentation and specimen collection guidelines in the FIA manual (refer to FIA item 0.3.5RM).

<b>ACI</b>
<b>Subplot/microplot monumentation</b>
<p>For ACI plots , place a wire metal stake at the center of all subplots. Place a second stake at the center of microplots.</p> <p>If a subplot center metal stake cannot be placed in the ground because of bedrock, etc., build a small rock cairn (rock pile) around the stake. Attach a tag to the stake with the subplot number labeled. If a subplot center cannot be monumented at all (e.g., in a river, on a paved road), place a stake where possible (e.g., off the road), and attach a tag to the stake with the subplot number labeled. In the PLOT-LEVEL NOTES (FIA item 1.18), reference the azimuth and distance from the offset stake to the correct subplot center. Take all measurements from the correct subplot/microplot center location, not the offset stake.</p>

### 0.3.1RM.ACI Circumstances Precluding Plot/Subplot Establishment

ACI – 2011 Field Season	
Ownership not National Forest Lands:	
<p>For the 2011 Field Season, if a subplot center, or an entire plot, is located in an ownership other than National Forest Lands, follow the procedures below.</p> <p>Note: For “plot-level” and “subplot-level” circumstances that may preclude establishment on National Forest Lands, refer to the tables below.</p>	
Circumstance	Procedure
<b>Subplot center located in ownership other than National Forest Lands</b>	If a <b>subplot center</b> is located in an ownership that is not National Forest Lands, then code “Nonsampled” for SUBPLOT/MACROPLOT STATUS (FIA item 3.2) and state the reason under SUBPLOT NONSAMPLED REASON (FIA item 3.3). Leave all other subplot-level data items (FIA subplot variables, tree/sapling/seedling data, understory vegetation sample, down-woody materials sample, ACI subplot-level variables) blank for that particular subplot.

## Ownership not National Forest Lands:

**Entire plot located in ownership other than National Forest Lands**

If an **entire nonforest plot** is located in an ownership that is not National Forest Lands, complete the following:

**1) Plot-level Data Items:**

- STATE (FIA item 1.1)
- COUNTY (FIA item 1.2)
- PLOT NUMBER (FIA item 1.3)
- PLOT STATUS (FIA item 1.4) – record code=3, Nonsampled
- PLOT NONSAMPLED REASON (FIA item 1.5)
- SAMPLE KIND (FIA item 1.7)
- YEAR (FIA item 1.10.1)
- MONTH (FIA item 1.10.2)
- DAY (FIA item 1.10.3)
- CREW NUMBER(S) (FIA item 1.10.4**RM**)
- QA STATUS (FIA item 1.14)
- CREW TYPE (FIA item 1.15)
- INVENTORY PHASE (FIA item 8.1.1**RM**)

**2) Record “Nonsampled – PLOT STATUS code=3” on the outside of the plot location packet, and briefly note the reason why the location is nonsampled.**

**Plot-level circumstances precluding establishment:**

<i>ACI -- Plot-level circumstances precluding establishment</i>	
Circumstance	Procedure
<p><b>Entire plot inaccessible or with hazardous situation</b></p> <p><i>(not due to Census or Noncensus water)</i></p>	<p>If an <b>entire nonforest plot</b> is denied access, inaccessible, or entirely too hazardous to visit, complete the following:</p> <p><b>3) Plot-level Data Items:</b></p> <ul style="list-style-type: none"> <li>• STATE (FIA item 1.1)</li> <li>• COUNTY (FIA item 1.2)</li> <li>• PLOT NUMBER (FIA item 1.3)</li> <li>• PLOT STATUS (FIA item 1.4) – record code=3, Nonsampled</li> <li>• PLOT NONSAMPLED REASON (FIA item 1.5)</li> <li>• SAMPLE KIND (FIA item 1.7)</li> <li>• YEAR (FIA item 1.10.1)</li> <li>• MONTH (FIA item 1.10.2)</li> <li>• DAY (FIA item 1.10.3)</li> <li>• CREW NUMBER(S) (FIA item 1.10.4<b>RM</b>)</li> <li>• QA STATUS (FIA item 1.14)</li> <li>• CREW TYPE (FIA item 1.15)</li> <li>• INVENTORY PHASE (FIA item 8.1.1<b>RM</b>)</li> </ul> <p><b>2) Record “Nonsampled – PLOT STATUS code=3” on the outside of the plot location packet, and briefly note the reason why the location is nonsampled (e.g., hazardous due to cliffs).</b></p>

**ACI -- Plot-level circumstances precluding establishment**

Circumstance	Procedure
<p><b>Entire plot located in Census or Noncensus Water</b></p> <p><i>(see note below)</i></p>	<p>If an <b>entire nonforest plot</b> falls within Census/Noncensus water (<i>even if subplot centers cannot be physically visited</i>), then <b>do not</b> code the plot as “Nonsampled.” Enter codes to indicate the Census/Noncensus water status for the entire plot.</p> <p>For PDR entry, it will be necessary to complete the following menus as specified:</p> <p><u>Menu</u></p> <ul style="list-style-type: none"> <li>1 – Plot identification data (<i>enter required items</i>)</li> <li>2 – Point data (<i>enter required items; this menu contains FIA and ACI subplot-level variables; for SUBPLOT HABITAT TYPE, record code=9999999; for GROUND SURFACE COVER TRANSECTS classify all hits as “water”</i>)</li> <li>5 – Subplot tree data (<i>enter menu done/no data</i>)</li> <li>7 – Sapling data (<i>enter menu done/no data</i>)</li> <li>8 – Seedling data (<i>enter menu done/no data</i>)</li> <li>9 – Veg. profile data (<i>enter menu done/no data</i>)</li> <li>10 – Veg. Lifeform data (<i>enter all zeros</i>)</li> <li>11 -- Condition class data (<i>enter required items</i>)</li> <li>15 – Plot notes</li> </ul>

*ACI -- Plot-level circumstances precluding establishment*

Circumstance	Procedure
<b>Locations with Census or Noncensus Water</b>	<p><b>Note:</b></p> <p>Do not classify an <b>entire nonforest plot</b> as Census/Noncensus water unless it is obvious that all subplot perimeters are within the water boundary. Before classifying an entire nonforest plot as Census/Noncensus water, verify that the perimeters of all four subplots fall within the water boundary.</p> <p>If <b>all subplot centers are in Census/Noncensus water, but part of a subplot(s) is on nonforest land</b>, code the subplot centers and subplot samples accordingly. Assign the Census/Noncensus water CONDITION CLASS to the subplot centers, but also determine the appropriate information to record for other data items (e.g., tree, understory vegetation, ground surface cover transects). If it would be too difficult to determine and measure subplot-level data items for a particular subplot, then classify the individual subplot as nonsampled.</p> <p>If <b>only some of the subplot centers are within Census/Noncensus water</b>, and others are located on nonforest land, it will be necessary to assign CONDITION CLASS NUMBERS to each condition class and code subplots/samples accordingly.</p>

**Subplot-level circumstances precluding establishment:**

<i>ACI -- Subplot-level circumstances precluding establishment</i>	
<b>Circumstance</b>	<b>Procedure</b>
<p><b>Entire subplot located in Census or Noncensus Water</b></p> <p><i>(see note above)</i></p>	<p>If an <b>entire subplot</b> perimeter falls within Census/Noncensus water, then do not code the subplot as “Nonsampled.” Enter codes to indicate the Census/Noncensus water status for the entire subplot.</p> <p>For PDR entry, it will be necessary to complete the following menus as specified (note: some menus are for the plot area):</p> <p><u>Menu</u></p> <ul style="list-style-type: none"> <li>1 – Plot identification data (<i>enter required items</i>)</li> <li>2 – Point data (<i>enter required items; this menu contains FIA and ACI subplot-level variables; for SUBPLOT HABITAT TYPE, record code=9999999; for GROUND SURFACE COVER TRANSECTS classify all hits as “water”</i>)</li> <li>5 – Subplot tree data (<i>enter menu done/no data</i>)</li> <li>7 – Sapling data (<i>enter menu done/no data</i>)</li> <li>8 – Seedling data (<i>enter menu done/no data</i>)</li> <li>9 – Veg. profile data (<i>enter menu done/no data</i>)</li> <li>10 – Veg. Lifeform data (<i>enter all zeros</i>)</li> <li>11 – Condition class data (<i>enter required items</i>)</li> <li>15 – Plot notes</li> </ul>

<i>ACI -- Subplot-level circumstances precluding establishment</i>	
Circumstance	Procedure
<p><b>Entire subplot with hazardous situation</b></p> <p><i>(not due to Census or Noncensus water)</i></p>	<p>If an <b>entire subplot</b> cannot be accessed, due to a hazardous situation, such as cliffs, then code “Nonsampled” for SUBPLOT/MACROPLOT STATUS (FIA item 3.2) and state the reason under SUBPLOT NONSAMPLED REASON (FIA item 3.3). Leave all other subplot-level data items (FIA subplot variables, tree/sapling/seedling data, understory vegetation sample, down-woody materials sample, ACI subplot-level variables) blank for that particular subplot.</p>
<p><b>Subplot center inaccessible</b></p>	<p>If a subplot center cannot be <b>safely</b> accessed due to water or other hazardous situation, and it would be too difficult to determine and measure subplot-level data items located within the perimeter of the subplot (e.g., trees, understory vegetation, ground surface cover items), then code “Nonsampled” for SUBPLOT/MACROPLOT STATUS (FIA item 3.2) and state the reason under SUBPLOT NONSAMPLED REASON (FIA item 3.3). Leave all other subplot-level data items (FIA subplot variables, tree/sapling/seedling data, understory vegetation sample, down-woody materials sample, ACI subplot-level variables) blank for that particular subplot.</p>

### 0.3.2RM.ACI Plots with Accessible Forest Land

For **partial plots**, complete the following inventory sections (listed below) using procedures outlined in this document.

For **subplot-level data**, only sample subplots with a nonforest/water condition at subplot center. **Do not sample any subplots with an “accessible forest land” condition at subplot center (including those with a portion of the subplot classified with a nonforest/water condition).** As an exception, the down-woody materials (DWM) data, which is collected along transects that extend between subplots, can cross subplots with an accessible forest land condition.

Note: The **Field Location Reference Data** (FIA section 8) item codes will not need to be re-entered for ACI plots.

#### 1. The Field Location Description (Plot-Level) Data (ACI section 1) – Re-enter codes using ACI protocol. Most variables will have the same code as used for the standard FIA inventory. Data items with different procedures and/or coding instructions include:

- PLOT STATUS  
(ACI item 1.4.ACI)
- SAMPLE KIND  
(ACI item 1.7.ACI)
- REGIONAL SAMPLE KIND  
(ACI item 1.7.1RM.ACI)
- WATER ON PLOT  
(ACI item 1.13.ACI)

2. The **Condition Class Description Data** (ACI section 2) – Identify the CONDITION CLASS NUMBER (FIA item 2.4.1) associated with each nonforest/water **subplot center**, based on condition numbers assigned during the standard FIA inventory. Items collected at the condition level will be minimal. Follow procedures as outlined in ACI section 2. Data items with different procedures and/or coding instructions include:
  - CONDITION CLASS STATUS (ACI item 2.4.2.ACI)
3. The **Subplot Description Data** (ACI section 3) – Re-enter codes using ACI protocol. Most variables will have the same code as used for the standard FIA inventory. Data items with different procedures and/or coding instructions include:
  - SUBPLOT/MACROPLOT STATUS (ACI item 3.2.ACI)
  - MICROPLOT CENTER CONDITION (ACI item 3.5.ACI)
  - SUBPLOT CONDITION LIST (ACI item 3.9.ACI)
4. The **Tree/Sapling/Seedling Data** (ACI sections 5 and 6) – For subplots with a nonforest/water condition at subplot center, sample trees as specified:
  - **Entire Tree Data Sample (no forest land condition)** – For subplots with no “accessible forest land condition(s)” within the subplot perimeter, sample all tally trees present ( $\geq 5.0$  inches DBH/DRC). On the microplot, tally saplings and count seedlings by species.

- **Partial Tree Data Sample (forest land condition already sampled)** – For subplots with an “accessible forest land” condition present within the subplot perimeter (but not at subplot center), sample any additional tally trees  $\geq 5.0$ -inches DBH/DRC that fall within the nonforest and/or water portion of the subplot. On the microplot, tally additional saplings and count seedlings by species. **Do not re-tally or re-count any sample trees on the “accessible forest land” portion of the subplot.**
5. **The Understory Vegetation Description Data** (ACI section 8) – For subplots with a nonforest/water condition at subplot center, complete the Understory Vegetation Description sample as outlined in this document. Some of the ACI protocols differ from the FIA manual.
  6. **Down-woody Materials (DWM)** (ACI section 11) – For DWM, sample all accessible forest land and nonforest/water conditions (refer to ACI section 11 for further instruction). Note: As an exception, do not sample portions of transect that cannot be accurately sampled due to water/snow, or portions of transect that cross nonforest linear features (e.g., improved roads, maintained rights-of-way).
  7. **ACI Subplot-Level Data** (ACI section 12). – For subplots with a nonforest/water condition at subplot center, collect data for all ACI subplot-level variables.

### 0.3.3RM.ACI

### Plots with No Accessible Forest Land Present

For **nonforest plots**, complete the following inventory sections using procedures outlined in this document:

1. The **Field Location Reference Data** (ACI section 8). Collect data for all FIA items.
2. The **Field Location Description (Plot-Level) Data** (ACI section 1). Collect data for all FIA items.
3. The **Condition Class Description Data** (ACI section 2) – Items collected at the condition level will be minimal. Follow procedures as outlined in ACI section 2.
4. The **Subplot Description Data** (ACI section 3). Collect data for all FIA items.
5. The **Tree/Sapling/Seedling Data** (ACI sections 5 and 6) – On each subplot area, sample all tally trees present ( $\geq 5.0$  inches DBH/DRC). On each microplot area, tally saplings and count seedlings by species.
6. The **Phase 2 Vegetation Profile** (ACI section 8) – For each subplot, complete the P2 Vegetation sample as outlined in the P2 FIA manual. Some of the ACI protocols differ (see revisions in Section 8).

7. **Down-woody Materials (DWM)** (ACI section 11) – For the DWM plot, sample all conditions (refer to ACI section 11 for further instruction). Note: As an exception, do not sample portions of transect that cannot be accurately sampled due to water/snow, or portions of transect that cross nonforest linear features (e.g., improved roads, maintained rights-of-way).
  
8. **ACI Subplot-Level Data** (ACI section 12). – Collect data for all ACI subplot-level variables.

DRAFT

## Plot-level Data

---

### ACI Sample Procedures:

---

For **partial plots**, although plot-level data (FIA section 1) will have been collected for the standard FIA inventory, codes will have to be re-entered using ACI protocol. Data items with procedures and/or coding instructions that differ are listed below (*in most instances data items will have the same code as that used for the FIA inventory; however, there is the possibility of different coding based on the procedure listed*).

---

For **nonforest plots**, collect all FIA plot-level data items listed in section 1 of the FIA manual. Data items with different procedures and/or coding instructions are listed below.

### ACI Item Revisions:

Data items with procedures and/or coding instructions that differ from the FIA manual are listed below with the “.ACI” extension.

For all other FIA plot-level data items, refer to the FIA manual for item descriptions (*for partial plots, if an item is not listed below, re-enter the code used for the FIA inventory*). Disregard any references in the FIA manual to collect data only at locations with at least one accessible forest land condition.

## ACI Item

### 1.4.AC1

### PLOT STATUS

Values:

- 1 **Sampled – at least one accessible forest land condition present.** Use this code for all **partial plots**, *even if there is a nonforest/water subplot that is nonsampled.*
- 2 **Sampled – no accessible forest land condition present.** Use this code for nonforest plots if one or more subplots are **physically sampled** using the ACI procedures, **or if the entire nonforest plot is located in Census or Noncensus water.**
- 3 **Nonsampled** – use this code for nonforest plots if the entire plot cannot be accessed; *do not use this code for entire plots located in Census or Noncensus water.*

Note: For some nonforest plots, it is possible that the PLOT STATUS code for the standard FIA inventory will differ from the PLOT STATUS code used for the ACI study. Using standard FIA protocol, it is acceptable to code a nonforest plot as “Sampled” (code 2) if a plot obviously contains no forest land, even though the location was not “physically” sampled.

However, using ACI protocol, a nonforest plot can only be coded “Sampled” (code 2) if one or more of the subplots is physically sampled (*because ACI samples can only be completed during an actual field visit*), or if the entire plot is located in Census or Noncensus water.

1.7.ACI  
1.7.1RM.ACI

SAMPLE KIND  
REGIONAL SAMPLE KIND

For **partial plots**, re-enter the code used for the standard inventory. For **nonforest plots**, record code=1.

1.13.ACI

WATER ON PLOT

For the ACI study, this variable is not an indicator of Census or Noncensus water on the plot location area. Record any water source that may be within the plot location area, other than Census or Noncensus water. If more than one option applies, record the option that has the greatest impact on the plot location area. Disregard the reference to record the source that has the greatest impact on the “accessible forest land portion” of the plot. Refer to the FIA manual for categories and codes.

DRAFT

## Condition Class

---

### ACI Sample Procedures:

For ACI plots, it will be necessary to determine the “number” of condition classes present, and what CONDITION CLASS STATUS (FIA item 2.1.1) is present at each **subplot center**, but it will not be necessary to “map” detailed condition boundaries as outlined in the FIA manual.

For **partial plots** and **nonforest plots**, follow the procedures listed below. Data items coded at the condition level will be minimal. For partial plots, re-enter codes for all condition-level data items listed below using ACI protocol.

---

### ACI Condition Class Procedures:

1. **Assign CONDITION CLASS NUMBERS to the plot area, based on conditions located at subplot centers.**

After the PC has been established, identify all the condition(s) present on the plot area (encompassing the four subplots) using the following CONDITION CLASS categories; refer to the FIA manual for CONDITION CLASS definitions.

- **Accessible forest land** – *this class can be present on a partial plot, but not on a nonforest plot.*
- **Nonforest land** – *at the condition-level, combine all nonforest land subcategories; see comment box below.*
- **Noncensus water**
- **Census water**
- **Nonsampled**

Note: Ephemeral and intermittent streams are classified as land.

For **partial plots**, identify the CONDITION CLASS NUMBER (FIA 2.4.1) associated with each nonforest/water **subplot center**, based on condition numbers assigned during the standard FIA inventory. *Note: For an exception to this procedure, refer to the “Exception to CONDITION CLASS STATUS and CONDITION CLASS NUMBER assignment for partial plots” comment box below.*

For **nonforest plots**, assign a condition number to each subplot, based on the CONDITION CLASS located at the subplot center. The condition class at the PC is designated as CONDITION CLASS NUMBER “1.” If different condition classes are located at other subplot centers, assign condition class numbers sequentially.

<b>ACI – condition-level data</b>
<b>Nonforest Land (subcategories)</b>
<p>At the <b>condition-level</b>, lump “nonforest land” subcategories (e.g., rangeland, developed land, agricultural land, rock outcrops) into the overall “Nonforest Land” CONDITION CLASS. Do not assign different CONDITION CLASS NUMBERS for distinct nonforest land subcategories.</p> <p>Note: For the ACI study, a separate <b>subplot-level</b> variable, NONFOREST LAND USE, has been added to code the nonforest subcategory present at each subplot center (refer to ACI item 12.1.<b>ACI</b>). However, at the condition-level, combine all nonforest land subcategories into the “Nonforest Land” CONDITION CLASS category.</p>

**CONDITION CLASS NUMBER Examples:**

- If the centers of subplots 1 and 2 are located in rangeland, and the centers of subplots 3 and 4 are located in a rock outcrop, only one “condition class” is present at all subplot centers (Nonforest Land). Assign CONDITION CLASS NUMBER “1” to all subplot centers.
- If the centers of subplots 1 and 2 are located in rangeland, the center of subplot 3 is located in a rock outcrop, and the center of subplot 4 is located in Census water, two “condition classes” are present at the subplot centers (Nonforest Land and Census water). Assign CONDITION CLASS NUMBER “1” to subplot centers 1, 2, and 3, and assign CONDITION CLASS NUMBER “2” to subplot center 4.
- If the centers of subplots 1, 2, and 3 are located in rangeland, and the center of subplot 4 is inaccessible (due to a cliff), two “condition classes” are present at the subplot centers (Nonforest Land and Nonsampled). Assign CONDITION CLASS NUMBER “1” to subplot centers 1, 2, and 3, and assign CONDITION CLASS NUMBER “2” to subplot center 4.

**Exception to CONDITION CLASS STATUS and CONDITION CLASS NUMBER assignment for partial plots**

For **partial plots**, always use the CONDITION CLASS NUMBERS assigned at the time of the standard FIA inventory, unless the following scenario applies.

SCENARIO:

Using standard FIA protocol, a nonforest condition can be classified as “Nonforest Land” (if it obviously contains no accessible forest land conditions), even if it is not physically sampled by the field crew. However, for ACI, a nonforest condition can only be classified as “Nonforest Land” if it is **physically** sampled (*because ACI samples can only be completed during an actual field visit*).

If a nonforest condition cannot be sampled (e.g., due to a hazardous condition, access denied), and it was classified as “Nonforest Land” using FIA protocol, **re-classify the CONDITION CLASS STATUS** (FIA item 2.4.1) as **“Nonsampled”** for ACI. Also, **assign a different CONDITION CLASS NUMBER** (FIA item 2.4.1) – *use the next available number*. Use this newly assigned number for all subplot centers located within the ACI “Nonsampled” nonforest condition.

## 2. Draw a simple condition boundary map.

Draw a simple sketch of all condition class boundaries located on the plot area on the Condition Boundary Map (on side 2 of the Field Location Reference Form). If multiple condition classes and/or nonforest land subcategories are present on the plot area, sketch the approximate boundary line(s). If any boundary line(s) intersects a subplot perimeter, sketch the approximate boundary line across the subplot area. Label condition classes by category, and write the assigned CONDITION CLASS NUMBER next to the label (e.g., rangeland - #1, rock out crop - #1, Noncensus water - #2).

Note: For **partial plots**, the map completed for the standard FIA inventory may be used. However, if any nonforest land subcategories are present on the location, sketch approximate boundary lines on the map.

3. For each **CONDITION CLASS** designated on the plot area, record the following data items. Refer to the FIA manual for item descriptions.

Record the following items for each **CONDITION CLASS**:

<i>ACI – condition-level data</i>	
<b>FIA Item No.</b>	<b>Item</b>
2.4.1	CONDITION CLASS NUMBER
2.4.2.ACI	<p>CONDITION CLASS STATUS</p> <p>Note: For the ACI study, a nonforest condition can only be classified as “Nonforest Land” if it is <b>physically</b> sampled. If a nonforest land condition is inaccessible, or access denied, classify the condition as “Nonsampled.”</p>
2.4.3	<p>CONDITION NONSAMPLED REASON</p> <p>Record this item only in an entire condition cannot be sampled (if <b>CONDITION CLASS STATUS</b> code=5, Nonsampled)</p>
2.5.11 to 2.5.16	<p>DISTURBANCE / YEAR</p> <p>Record up to three disturbances for each condition class (disturbances must have occurred within the last 5 years; if none of the disturbances listed apply, record “00”)</p>
2.5.17 to 2.5.22	<p>TREATMENT / YEAR</p> <p>Record up to three treatments for each condition class (treatments must be actual applications applied to the condition area within the last 5 years; if none of the treatments listed apply, record “00”)</p>
2.5.23	PHYSIOGRAPHIC CLASS

**4. Record additional condition-level data items (based on PC status).**

The following items are needed to facilitate PDR functioning.

Record the following condition-level data items for each CONDITION CLASS based on the status of the item at the PC (*i.e.*, if more than one CONDITION CLASS is present on the plot area, determine the status for each item at the PC, and then re-enter the codes for all condition classes). Refer to the FIA manual for item descriptions.

<i>ACI – additional condition-level data (based on PC status)</i>	
<b>FIA Item No.</b>	<b>Item</b>
2.5.1	RESERVED STATUS
2.5.2	OWNER GROUP
2.5.7	OWNER CLASS

Note: These entries will not be used to determine the actual status for each subplot center. For the ACI study, **subplot-level** variables (SUBPLOT RESERVED STATUS and SUBPLOT OWNER CLASS) have been added to indicate the actual status at each subplot center; refer to section 12 of this document (ACI items 12.6.**ACI** and 12.7.**ACI**).

## ACI Item Revisions:

Data items with procedures and/or coding instructions that differ from the FIA manual are listed below with the “.ACI” extension.

For all other FIA condition-level data items, refer to the FIA manual for item descriptions.

### ACI Item

#### 2.4.2.ACI

#### CONDITION CLASS STATUS

Values:

- 1 Accessible forest land
- 2 Nonforest land**
- 3 Noncensus water
- 4 Census water
- 5 Nonsampled

For the ACI study, a nonforest condition can only be classified as “Nonforest Land” if it is **physically** sampled (*because ACI samples can only be completed during an actual field visit*). If a nonforest land condition is inaccessible, or access denied, classify the condition as “Nonsampled.”

## Subplot Information

---

### ACI Sample Procedures:

This section pertains to FIA subplot-level data items (FIA section 3). Refer to ACI section 12 for other subplot-level data items that have been added for the ACI.

---

For **partial plots**, although subplot-level data (FIA section 3) will have been collected for the standard FIA inventory, codes will have to be re-entered using ACI protocol. Data items with procedures and/or coding instructions that differ are listed below (*in most instances data items will have the same code as that used for the FIA inventory; however, there is the possibility of different coding based on the procedure listed*).

---

For **nonforest plots**, collect all FIA subplot-level data items listed in section 3 of the FIA manual (refer to the ACI appendix A for a variable list). Data items with different procedures and/or coding instructions are listed below.

---

### ACI Item Revisions:

Data items with procedures and/or coding instructions that differ from the FIA manual are listed below with the “.ACI” extension.

For all other FIA plot-level data items, refer to the FIA manual for item descriptions (*for partial plots, if a data item is not listed below, re-enter the code used for the FIA inventory*). Disregard any references in the FIA manual to collect data only on subplots with at least one accessible forest land condition.

---

## ACI Item

### 3.2.ACI

#### SUBPLOT/MACROPLOT STATUS

Values:

- 1 **Sampled – subplot center located in an accessible forest land condition.** This code is needed to facilitate PDR functioning. For partial plots, use this code for all subplots with a center located in an accessible forest land condition. These subplots were sampled using standard FIA protocol and are not part of the ACI study.
- 2 **Sampled – subplot center located in a nonforest/water condition (forest land condition may be present on the subplot).** Use this code for subplots that are physically sampled using ACI procedures, or if an entire subplot is located in Census or Noncensus water.
- 3 **Nonsampled –** use this code if an **entire subplot** cannot be accessed, regardless of the condition located at subplot center; *as an exception, do not use this code if an entire subplot is located in Census or Noncensus water.* Also, use this code if a **subplot center** cannot be accessed (e.g., due to cliffs or water), and it would be too difficult to determine and measure subplot-level data items.

### 3.5.ACI

#### MICROPLOT CENTER CONDITION

Record the CONDITION CLASS NUMBER assigned to the **subplot center** (*even if another condition is located at the microplot center*).

Note: If there is another condition at the microplot center, the code recorded for the standard FIA inventory will differ.

### 3.9.ACI

#### SUBPLOT/MACROPLOT CONDITION LIST

List all the CONDITION CLASS NUMBERS located on the subplot area (refer to ACI section 2). If more than one number is listed, detailed boundary data are not required. Complete the remainder of this field with zeros.

DRAFT

Section 4

**Boundary References**

---

This section does not apply to the ACI study.

DRAFT

## Tree, Sapling, and Seedling Data

---

### ACI Sample Procedures:

This section describes data collection procedures for tally trees/saplings (FIA section 5) and seedling counts (FIA section 6). For ACI, the “tally tree” definition is not limited to trees on accessible forest land conditions.

Refer to FIA item 0.4.3**RM** for subplot tally tree procedures and qualifying tree specifications. Refer to FIA item 0.4.4**RM** for microplot sapling tally procedures and qualifying tree specifications. Refer to FIA item 0.4.5**RM** for seedling count procedures.

Use the item descriptions listed in FIA sections 5 and 6. Disregard FIA manual references that pertain to:

- Remeasure(d) or remeasurement – tally tree, plots, etc.
- Resampled trees, “old” tally trees, trees on the formerly centered microplot
- “Account(ing)” for trees, Accounting plots
- Site trees or nontallied site trees (site trees will not be collected for nonforest/water conditions)
- P3 (or Phase 3) plots
- Previous inventory/survey

If necessary, follow procedures outlined for tallying trees on “reserved locations” (e.g., wilderness areas).

Use the “**RM** When collected” specifications to determine when to collect the data item for a particular tree. If the “**RM** When collected” option is not listed for a variable, then use the general “When collected.” References that state to collect the data item for a “new” live/dead tree apply to all trees sampled for the ACI.

---

Note: For “qualifying tree” specifications, refer to FIA manual items 0.4.3**RM** (Subplot Tree Tally), 0.4.4**RM** (Microplot Sapling Tally), and 0.4.5**RM** (Seedling Counts).

---

For **partial plots and nonforest plots**, collect tree data on all subplots/microplots. On each subplot area, sample all tally trees present ( $\geq$  5.0 inches DBH/DRC). On each microplot, tally saplings and count seedlings by species. Disregard FIA manual instructions to count seedlings by “condition and species.”

Note: For “qualifying tree” specifications, refer to FIA manual items 0.4.3**RM** (Subplot Tree Tally), 0.4.4**RM** (Microplot Sapling Tally), and 0.4.5**RM** (Seedling Counts).

## Circumstances Prohibiting Complete Subplot Sampling:

<i>ACI – Tree, Sapling, and Seedling Data</i>
<b>Unable to complete subplot/microplot sample</b>
If a portion of a subplot/microplot has a situation that prohibits complete sampling (e.g., hazardous situation, access denied), include a note in the PLOT-LEVEL NOTES (FIA item 1.18) describing the situation, and indicate if any trees were not sampled.

Section 6

**Seedling Data**

---

Refer to ACI section 5 for seedling count procedures.

DRAFT

Section 7

**Site Tree Information**

---

This section does not apply to the ACI.

DRAFT

## Field Location Reference Form

---

### ACI Sample Procedures:

---

For **partial plots**, all FIA Field Location Reference items are collected by the standard FIA inventory.

---

For **nonforest plots**, collect all FIA Field Location Reference items listed in section 12 of the FIA manual. Disregard any references in the FIA manual to collect data only if there is at least one accessible forested condition on the location. For the noxious weed survey, examine all subplot areas; disregard the FIA manual reference to “not collect information for the plot if the location is completely nonforest.”

*ACI*

**Lack of suitable Reference Point (RP):**

If no suitable RP landmarks (e.g., tree, large boulder, fence corner, sharp bend in road), are in the vicinity of the plot location, build a small rock cairn (rock pile). Insert a metal stake into the center of the rock cairn and attach an RP tag to the stake. If possible, use a large shrub (e.g., large sagebrush) as the alternative RP landmark, nail an RP tag to the base of the shrub, or place the small rock cairn (with the inserted stake and RP tag) at the base of the shrub. Describe the RP used in the "RP Description" notes section on the Field Location Reference Form.

*ACI*

**Lack of suitable Witness Landmarks:**

If no live trees are within the vicinity of the PC, select alternative witness landmarks that are likely to be present in 10 years (e.g., a sound snag, large stump, prominent rock). If no suitable landmarks can be found, build small rock cairns approximately 30-40 feet from the PC and at right angles to each other. Insert a metal stake into the center of the rock cairn and attach a witness tag to the stake (scribe "X" or "Y" on the tag). If possible, use a large shrub (e.g., large sagebrush) as the alternative witness landmark, nail a witness tag to the base of the shrub, or place the small rock cairn (with the inserted stake and tag) at the base of the shrub. Describe the alternative landmarks selected in the "Witness Trees" notes section on the Field Location Reference Form.

## Phase 2 (P2) Vegetation Profile

---

### **ACI Sample Procedures:**

The FIA Understory Vegetation Description sample has been revised for the ACI study (revisions listed below). For **partial plots**, sample subplots with a nonforest/water condition at subplot center. For **nonforest plots**, sample all subplots. Other than the revisions listed below, follow sample procedures and Lifeform definitions as outlined in section 8 of the FIA manual.

### **Understory Vegetation Sampling Revisions:**

**Contractors and FIA crews need to be able identify all plants to species level that are provided on the “Region 4 Indicator and Dominance Type Species Lists”. If plants cannot be identified to the species level in the field, unknown plant samples need to be collected for identification. Follow FIA protocol for the recording and collection of unknown specimens.**

**Unknown plants collected by contractor crews should be identified prior to submission of plot packets for inspection.**

**Plant Identification training sessions will be provided by Region 4 NFS personnel to assist FIA crews and Inspectors in building the plant identification knowledge base that is needed to adequately conduct a regionwide All Condition Inventory (ACI).**

**In addition, a list of Region 4 Forest Personnel with local plant identification expertise will be identified by Forest or area for aiding FIA crews in indicator and dominance species plant identification.**

DRAFT

- **Collect “unknown specimens” for all plants that cannot be identified to the species level** – For Part I of the Understory Vegetation Description sample, if a plant cannot be identified to the species level, record the plant as an “unknown.” Follow FIA protocol for the recording and collection of unknown specimens (refer to FIA item 9.4RM for detailed instructions). *Record “UNKN1” in the species column for the first unknown, “UNKN2” for the second unknown, and so forth. Collect a sample to be sent to the office.*

*ACI -- Understory Vegetation Description*

**Part I Species Entry on PDR**

~~The maximum number of individual species entries that can be recorded on the PDR is 20 per Lifeform (i.e., 20 Trees, 20 Shrubs, 20 Forbs, and 20 Graminoids). If there are more than 20 species on a subplot within a particular Lifeform, record the additional species on an Understory Vegetation Description Form, and include a comment in the notes section.~~

*ACI -- Understory Vegetation Description*

**Agricultural land / residential yards on subplot**

~~Include vegetative species within the boundaries of agricultural cropland or residential yards. If possible, identify plants to the species level. If not, record as an unknown. Collect unknown plant samples only if permitted.~~

## Circumstances Prohibiting Complete Subplot Sampling:

<b>ACI -- Understory Vegetation Description</b>
<b>Unable to complete subplot sample</b>
<b>Permanent water on subplot:</b>
<p>Due to safety hazards, do not include vegetative species on portions of subplot areas currently located within the boundaries of permanent water. Include species below a high-water mark if the water level at the time of the field visit is below this mark. Record a note on the Understory Vegetation Description form indicating the approximate subplot area not sampled due to water. If applicable, also include a note indicating the approximate area that was sampled below a high-water mark. Base all sample cover/layer estimates on the actual area sampled. Do not “double-count” or estimate higher cover/layer percentages to compensate for portions of the subplot not sampled due to water.</p>
<b>Other situations on subplot:</b>
<p>If a portion of a subplot has any other situation that prohibits sampling (e.g., cliffs, access denied) <i>not due to permanent water</i>, only include species within the accessible portion of the subplot. Record a note on the Understory Vegetation Description form describing the situation, and indicate the approximate area not sampled. Base all sample cover/layer estimates on the actual area sampled. Do not “double-count” or estimate higher cover/layer percentages to compensate for portions of the subplot not sampled.</p>



## **Accounting Procedures**

---

This section does not apply to the ACI.

DRAFT



## Down-Woody Materials

---

### ACI Sample Procedures:

For the ACI, DWM has been revised to allow for sampling in accessible forest land and nonforest/water conditions. For this sample, data are collected along transects that extend between subplots. For partial plots, transects can cross subplots with an accessible forest land condition.

For **partial plots** and **nonforest plots**, follow procedures outlined in section 11 of the FIA manual. However, disregard all statements that the three main components of down-woody material (coarse-woody debris, fine-woody debris, and duff/litter) are sampled only on accessible forest land conditions. All three components may be sampled in both forest and nonforest/water conditions.

Instructions for transect line segmenting, and the 8 hierarchical rules used for choosing a maximum of two conditions per 120-foot transect, apply to forest and nonforest/water conditions.

As outlined in the DWM sampling guidelines, do not sample transect segments, or portions of segments, if they cannot be accurately sampled for coarse-woody debris (CWD) due to snow/water. Also, do not sample nonforest linear features (e.g., improved roads, maintained rights-of-way).



## ACI Subplot-level Data

---

### ACI Sample Procedures:

This section lists additional variables/samples that have been added specifically for the ACI study. These variables are not discussed in the FIA manual.

For **partial plots**, collect the following ACI subplot-level data items on subplots with a nonforest/water condition at subplot center. For **nonforest plots**, collect the ACI data items on all subplots.

### ACI Item

#### 12.1.AC1 SUBPLOT NONFOREST/Water LAND USE

Use the categories below to classify the LAND USE located at **subplot center**.

The following NONFOREST LAND USE categories are finer subdivisions of nonforest land. At the condition-level (refer to FIA manual section 2), "Nonforest Land" must be at least 120-foot wide and 1 acre in size (exceptions apply to improved roads, rights-of-ways, developed areas). However, for the ACI study, the following nonforest LAND USE subcategories are based on the category occurring at subplot center and can be <120-foot wide and/or <1 acre in size. Therefore, **given that this classification is coded only at the subplot level, it is not intended for condition-level analysis.**

- ❖ **When collected:** Subplots with a nonforest/water condition at subplot center.
- ❖ **Field width:** 2 digits
- ❖ **Tolerance:** No errors
- ❖ **MQO:** At least 99% of the time

Values:

**NONFOREST LAND USE categories:**

10 **Agricultural land** - Land managed for crops, pasture, or other agricultural use. Use code "10" only for areas not better described by one of the following:

- 11 Cropland
- 12 Pasture (improved through cultural practices)
- 13 Idle farmland
- 14 Orchard
- 15 Christmas tree plantation

20 **Rangeland** - Land primarily composed of grasses, forbs, or shrubs. This includes lands vegetated naturally or artificially to provide a plant cover managed like native vegetation and does not meet the definition of pasture.

30 **Developed** - Land used primarily by humans for purposes other than forestry or agriculture. Use code "30" only for land not better described by one of the following:

- 31 Cultural (business, residential, and other places of intense human activity)
- 32 Rights-of-way (improved roads, railway, power lines, maintained canal)
- 33 Recreation (parks, skiing, golf courses, developed campgrounds)

40 **Other** - Land parcels that do not fall into one of the uses described above. Examples include undeveloped beaches, barren land (rock outcrops, sand), marshes, bogs, ice, and snow.

## **WATER categories:**

- 91 **Census Water** - Lakes, reservoirs, ponds, and similar bodies of water 4.5 acres in size and larger; and rivers, streams, canals, etc., more than 200 feet wide – high-water mark. Portions of braided streams meeting this criteria and more than 50 percent water at normal high-water level are also considered Census water.
- 92 **Noncensus Water** - Lakes, reservoirs, ponds, and similar bodies of water 1.0 acre to 4.5 acres in size; and rivers, streams, canals, etc., 30.0 feet to 200 feet wide – high-water mark. Portions of rivers and streams not meeting the criteria for Census water, but at least 30-feet wide and 1 acre in size are considered Noncensus water. Portions of braided streams not meeting the criteria for Census water, but at least 30-feet wide and 1 acre in size and more than 50 percent water at normal high-water level are also considered Noncensus water.

**12.2.ACI** SUBPLOT RANGE TYPE  
(Existing Vegetation Classification)

For all subplots, record code=999 (undefined). *This variable will not be classified at this time.*

**12.3.ACI** SUBPLOT HABITAT TYPE  
(Potential Vegetation Classification)

**Note: R4 Habitat Type Manual Key still needs to be inserted**

**-See addendums to be provided at a later date.**

Base this classification on the type occurring at **subplot center**. Follow procedures described below. Refer to local supplemental Habitat Type manuals. *Complete Habitat Type supplemental worksheets if required.*

- ❖ **When collected:** Subplots with a nonforest/water condition at subplot center.
- ❖ **Field width:** 7 digits
- ❖ **Tolerance:**
  - Series – No errors
  - Type – No errors

**Procedures:**

- **Subplot center located in permanent water** – If a subplot center is located in Census Water, Noncensus Water, or other permanent water, record code=9999999. For “other” permanent water, such as small streams/ponds not qualifying for Census/Noncensus water, describe in the PLOT-LEVEL NOTES (FIA item 1.18).

- **Subplot center located in nonforest land (*not permanent water*)** -- Examine the area surrounding the subplot, but within the nonforest condition occurring at subplot center. If several habitat types occur within the nonforest condition, record the type that occurs at subplot center. Note: A **forested habitat type** can occur in a nonforest condition.

For areas at subplot center that do not have a defined type listed in the Habitat Type manual(s), such as scree, record code=9999999, and describe in the PLOT-LEVEL NOTES (FIA item 1.18).

Note: For Region 1, refer to the Habitat Type manual selection guidelines and Habitat Type manual keys below.

**Note: R4 Habitat Type Manual Key still needs to be inserted. See addendums to be provided at a later date.**

**ACI -- R1 Procedure**

**Habitat Type Manual Selection Procedure for Region 1**

To determine the appropriate, or preferred, Habitat Type manual (Potential Vegetation Classification reference) to use for the ACI study in Region 1, follow the procedure described below. Overall, there are seven valid habitat type reference guides for Montana and Idaho. Refer to the table below, titled "Acceptable Habitat Type Manuals for Region 1" for a detailed reference bibliography.

**PROCEDURE:**

Refer to the appropriate "Habitat Type Manual Key" table below—Montana or Idaho.

For "Uplands," start with the reference guide on the same row (to the right) as the general type listed. For example, for "Grassland" in Montana, start with the "Mueggler & Stewart, 1980" reference guide. If that reference guide does not provide an adequate description of the habitat type located at subplot center, go to the next reference guide listed. If necessary, continue down the reference guide column until the appropriate guide is determined.

For "Moist Meadow," start with the "top most" guide listed.

Note: If a habitat type is described in more than one reference, use the first guide listed. However, it is more important to identify the correct habitat type than it is to identify the "top most" reference guide listed.

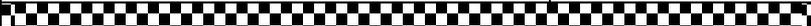
ACI – R1 Procedure			
Habitat Type Manual Key : MONTANA			
General Type:			Reference:
Uplands	Other	Forested (western & central MT)	Pfister et al., 1977
		Combination (Custer NF)	Hansen & Hoffman, 1988
		Grassland	Mueggler & Stewart, 1980
	Alpine (above 8000 feet)		Cooper, 1997
Riparian (non-conifer)			Hansen et al., 1995
Moist Meadow			Mueggler & Stewart, 1980
			Hansen et al., 1995

**ACI -- R1 Procedure**

**Habitat Type Manual Key: IDAHO**

**General Type:**

**Reference:**

			
Uplands	Other	Forested	Cooper, 1991
		Grassland	Johnson & Simon, 1987
	Alpine (above 8000 feet)		Cooper, 1997
			
Riparian (non-conifer)			Hansen et al., 1995
			
Moist Meadow			Johnson & Simon, 1987
			Hansen et al., 1995

ACI – R1 Procedure			
Habitat Type Manual Key: South Dakota and North Dakota			
General Type:			Reference:
South Dakota	Custer NF	Sioux and Ashland RD (Partially in MT)	Hansen and Hoffman, 1988 OR Jensen et. al., 1992
	Grand River National Grassland		
North Dakota	Little Missouri National Grassland		Jensen et. al., 1992
	Sheyenne National Grassland		Hansen, Kurt (not on bibliography yet)

**NOTE: R4 Habitat Type Reference Bibliography still needs to be inserted. See addendums to be provided at a later date.**

**Habitat Type Reference Bibliography (detailed reference citation):**

<i>ACI -- R1 Procedure</i>	
<b>Acceptable Habitat Type Manuals for Region 1</b>	
<b>Reference</b>	<b>Bibliography</b> <i>(detailed citation)</i>
Cooper, 1991	<p><b>Forest Habitat Types of Northern Idaho: A Second Approximation.</b> 1991 <i>(revision)</i>. Cooper, Stephen V.; Neiman, Kenneth E.; Roberts, David W. Gen. Tech. Rep. INT-236. Ogden UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 143 p.</p> <p>Note: Do not use the 1987 version.</p>
Cooper, 1997	<p><b>Plant Community Classification for Alpine Vegetation on the Beaverhead National Forest, Montana.</b> 1997. Cooper, Stephen V.; Losica, Peter; Page-Dumroese, Deborah. Gen. Tech. Rep. INT-GTR-362. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 61 p.</p>
Hanson & Hoffman, 1988	<p><b>The Vegetation of the Grand River/Cedar River, Sioux, and Ashland Districts of the Custer National Forest: A Habitat Type Classification.</b> 1988. Hanson, Paul L.; Hoffman, George R. Gen. Tech. Rep. RM-157. Ft. Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 68 p.</p>

**Acceptable Habitat Type Manuals for Region 1**

<b>Reference</b>	<b>Bibliography</b> <i>(detailed citation)</i>
Hansen et al., 1995	<b>Classification and Management of Montana's Riparian and Wetland Sites.</b> 1995. Hansen, Paul L.; Pfister, Robert D.; Boggs, Keith L.; Cook, Bradley J.; Joy, John; Hinckley, Dan K. Misc. Pub. No. 54. Missoula, MT: Montana Forest and Conservation Experiment Station, School of Forestry, University of Montana. 646 p.
Jensen et al., 1992	<b>Ecological Sites and Habitat Types of the Little Missouri National Grassland and Western North Dakota.</b> 1992. Jensen, Mark; Heisner, Frank; DiBenedetto, Jeff; Wessman, Lynn; Phillippe, Gary. Draft II. U.S. Department of Agriculture, Forest Service, Northern Region.
Johnson & Simon, 1987	<b>Plant Associations of the Wallowa-Snake Province.</b> 1987. Johnson, Charles G.; Simon, Steven A. R6-ECOL-TP-255B-86. Wallowa-Whitman National Forest: U.S. Department of Agriculture, Forest Service, Pacific Northwest Region. 272 p.
Mueggler & Stewart, 1980	<b>Grassland and Shrubland Habitat Types of Western Montana.</b> 1980. Mueggler, W.F.; Stewart, W.L. Gen. Tech. Rep. INT-66. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 154 p.
Pfister et al., 1977	<b>Forest Habitat Types of Montana.</b> 1977. Pfister, Robert D.; Kovalchik, Bernard L.; Arno, Stephen F.; Presby, Richard C. Gen. Tech. Rep. INT 34. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 174 p.

## 12.4.ACI GROUND SURFACE COVER TRANSECTS

Complete sample as specified below. If there are multiple conditions on the subplot area, transects may cross condition lines (i.e., ignore condition boundaries).

- ❖ **When collected:** Subplots with a nonforest/water condition at subplot center.
- ❖ **Field width:** 3 digits
- ❖ **Tolerance:**
  - Transect Azimuth:  $\pm 2$  degrees
  - Number of Hits per category:  $\pm 10$  percent

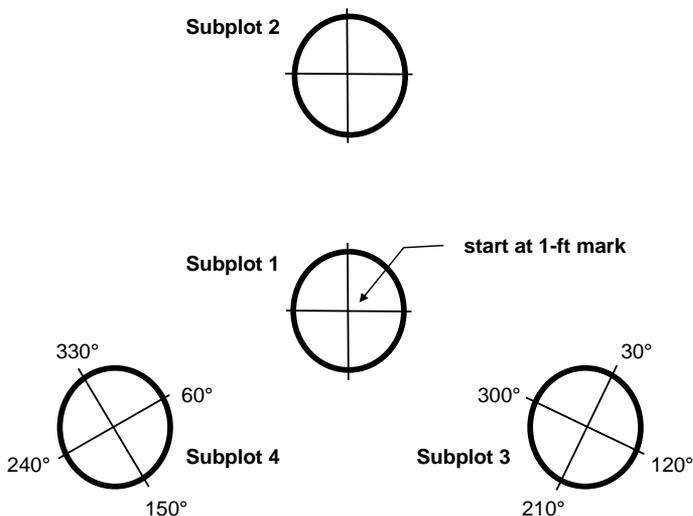
### Procedures:

On each subplot area, lay out four transects that extend outward from subplot center at a distance of 25.0 feet, at the azimuth directions listed below. Lay a cloth tape along the slope of the ground; do not correct the slope distance to obtain horizontal distance.

Transect azimuth direction:

<i>ACI – Ground Surface Cover Transects</i>				
<b>Subplots</b>	<b>Degrees</b> (extending outward from subplot center)			
	<b>1 and 2</b>	0 (360)	90	180
<b>3</b>	30	120	210	300
<b>4</b>	60	150	240	330

## Ground Surface Cover Transects configuration:



Beginning at the 1-foot mark, place a tip of a plot stake or sharply pointed staff on the ground along the transect line at each 1-foot mark (against the right side of the tape with your back to plot center). Record each point, referred to as a "hit," on the Ground Surface Cover Transects Form (*supplemental form – refer to appendix B*) by the appropriate ground surface cover type category (categories listed below). If more than one category occurs at a point (e.g., litter on top of a rock), always record the ground cover category that is on top (i.e., the category that the pointed staff touches first). Note: Foliar canopy cover above the soil surface plane is not considered to be ground surface cover. See water exception below.

Repeat procedures for each transect direction. Each of the four transect directions will contain 25 hits (for a total of 100 hits for the entire subplot).

After all four transects on an individual subplot have been sampled, record the total number of hits by category on the supplemental data form and the PDR (each subplot should have a grand total of 100 hits combining all categories).

Note: This item is recorded by individual subplot; do not combine totals from different subplots.

## Ground Surface Cover Transect categories:

<i>ACI – Ground Surface Cover Transect categories</i>		
<b>Code (Item #)</b>	<b>Description</b>	<b>Definition</b>
Ash ( 12.4.1.ACI)	Ash (organic from fire)	Remaining residue after all combustible material has been burned off.
BARE (12.4.2.ACI)	Bare ground	Exposed soil and rock fragments smaller than ¾-inch diameter. Do not include larger rocks protruding through the soil.
ROCK (12.4.3.ACI)	Rock	Rocks greater than ¾-inch diameter.
WATE (12.4.4.ACI)	Water <b>(See Category EXCEPTION box below)</b>	Water remaining above the ground surface during the growing season, such as streams, bogs, swamps, marshes and ponds.
TRIS (12.4.5.ACI)	Transient ice and snow	Surface area covered by ice and snow at the time of plot measurement, considered transient. For use when permanent ice and snow are not differentiated.
PEIS (12.4.6.ACI)	Permanent ice and snow	Surface area covered with ice and snow at the time of plot measurement, considered permanent. For use when permanent ice and snow are not differentiated.
WOOD (12.4.7.ACI)	Wood	Woody material, slash and debris; any woody material, small and large woody debris, regardless of depth. Litter and non-continuous litter are not included.
LIT (12.3.8.ACI)	Litter	Organic debris, freshly fallen or slightly decomposed; includes dead vegetation, animal feces, etc.
VEG (12.4.9.ACI)	Basal Vegetation	The area outline of a plant near the ground surface; in grass this comprises the shoot system at ground level, while in trees and shrubs it comprises the stem area.

<b>ACI – Ground Surface Cover Transect categories</b>		
<b>Code (Item #)</b>	<b>Description</b>	<b>Definition</b>
CRYP (12.4.10.ACI)	Cryptogamic crust	Thin, biotically dominated ground or surface crusts on soil in dry rangeland conditions, e.g. cryptogamic crust (algae, lichen, mosses or cyanobacteria).
LICH (12.4.11.ACI)	Lichen	Lichens: an organism generally recognized as a single plant that consists of a fungus and an alga or cyanobacterium living in a symbiotic association. For lichen growing on bare soil in dry rangeland conditions, see cryptogamic crusts.
MOSS (12.4.12.ACI)	Moss	Nonvascular, terrestrial green plants including mosses, hornworts and liverworts - always herbaceous. This code does not apply to moss growing on bare soils in dry rangeland conditions. For rangeland conditions, see cryptogamic crusts.
DEVP (12.4.13.ACI)	Developed land / Residential / Agricultural	Surface area occupied or covered by: (1) any man-made structure other than a road, such as a building, dam, parking lot, electronic site/structure; (2) maintained residential yards; or (3) agricultural crops (not rangeland).
ROAD (12.4.14.ACI)	Road	Improved roads, paved roads, gravel roads, improved dirt roads and off-road vehicle trails regularly maintained or in long-term continuing use. Generally constructed using machinery. Includes cutbanks and fills.
OTHER (12.4.15.ACI)	Other	Other covers not defined elsewhere – includes trash (describe in notes section).
NONSM (12.4.16.ACI)	Nonsampled	Use this code if any points along a transect cannot be sampled (describe reason in notes section).

CATEGORY EXCEPTION for areas with water:

<i>ACI – Ground Surface Cover Transects</i>	
<b>Water Category EXCEPTION:</b>	
<b>Areas with permanent water</b>	For transect segments that extend through permanent water, classify points as “water” hits. Use the water-level boundary present at the time of the inventory (not necessarily the high-water mark).
<b>Areas with transient water</b>	For transect segments that extend through water that will not remain throughout the growing season, such as temporary flooding or a puddle, go below the water surface and classify (or estimate) the point using the category that would apply if the water was not there.

## 12.5.ACI SUBPLOT MULTIPLE CONDITION LAND USE FLAG

Use this classification to identify the subplot area as having either:

- (1) Only one condition/LAND USE type within the subplot boundary, or
- (2) Multiple conditions/LAND USES located within the subplot boundary.

- ❖ **When collected:** Subplots with a nonforest/water condition at subplot center.
- ❖ **Field width:** 1 digit
- ❖ **Tolerance:** No Errors

Values:

- 1** Subplots with single forest condition or **single NONFOREST LAND USE/water present**.  
*For the ACI study, none of the sample subplots will have a single forest condition. Do not record this code if there are multiple nonforest land subcategories present on the subplot, such as rangeland and rock outcrop.*

Subplots with multiple conditions/NONFOREST LAND USES present on the subplot area:

- 2** Multiple forest conditions present (e.g., Aspen vs. Mixed-Conifer; Large diameter vs. small diameter).  
*This code is not valid for the ACI study.*
- 3** **Both a forest condition and NONFOREST LAND USE/water present** (e.g., forest and rangeland, forest and maintained rights-of-way, forest and recreation area, forest and Noncensus water).

**4 Multiple NONFOREST LAND USE/water present** (e.g., rangeland and rock outcrop, water and maintained rights-of-way, rangeland and Noncensus water).

**5 Other** – explain with note in the PLOT-LEVEL NOTES (FIA item 1.18).

## 12.6.ACI SUBPLOT RESERVED STATUS

Record the code that identifies the area at the subplot center by the reserved designation. Reserved land is withdrawn from wood products utilization through statute or administrative designation (refer to the FIA manual glossary). Examples include Wilderness areas and National Parks and Monuments.

- ❖ **When collected:** Subplots with a nonforest/water condition at subplot center.
- ❖ **Field width:** 1 digit
- ❖ **Tolerance:** No Errors
- ❖ **MQO:** At least 99% of the time

Values:

- |   |              |
|---|--------------|
| 0 | Not Reserved |
| 1 | Reserved     |

## 12.7.ACI SUBPLOT OWNER CLASS

Record the code that best corresponds to the ownership (or the managing Agency for public lands) of the land located at subplot center.

- ❖ **When collected:** Subplots with a nonforest/water condition at subplot center.
- ❖ **Field width:** 2 digits
- ❖ **Tolerance:** No Errors
- ❖ **MQO:** At least 99% of the time

Values:

SUBPLOT OWNER CLASSES within Forest Service Lands  
(Owner Group 10):

- 11 National Forest
- 12 National Grassland
- 13 Other Forest Service

### *ACI – 2011 Field Season*

#### **Valid SUBPLOT OWNER CLASS codes for 2011:**

For the 2011 Field Season, ACI sampling has been limited to subplots with a center located in a National Forest Land ownership (*this is in addition to limiting ACI sampling to subplots with a center located in a nonforest/water condition*).

Given this stipulation, SUBPLOT OWNER CLASS codes 11, 12, or 13, are the only valid owner class codes for the 2011 field season.

*The following SUBPLOT OWNER CLASS codes are not valid for the 2008 Field Season:*

SUBPLOT OWNER CLASSES within Other Federal Lands  
(Owner Group 20):

- 21 National Park Service
- 22 Bureau of Land Management
- 23 Fish and Wildlife Service
- 24 Departments of Defense/Energy
- 25 Other Federal

SUBPLOT OWNER CLASSES within State and Local  
Government lands  
(Owner Group 30):

- 31 State
- 32 Local (County, Municipality, etc.)
- 33 Other Non Federal Public

SUBPLOT OWNER CLASSES within Private lands  
(Owner Group 40):

- 41 Corporate
- 42 Non Governmental Conservation / Natural  
Resources Organization- examples: Nature  
Conservancy, National Trust for Private Lands,  
Pacific Forest Trust, Boy Scouts of America, etc.
- 43 Unincorporated Partnerships / Associations / Clubs –  
examples: Hunting Clubs that own, not lease  
property, recreation associations, 4H, etc.
- 44 Native American (Indian) – within reservation  
boundaries
- 45 Individual

DRAFT



# Appendices

---

<i>ACI Field Guide – Appendices</i>	
<b>A</b>	<b>ACI Data Items</b>
<b>B</b>	<b>Ground Surface Cover Transects Form</b>

# Appendix A: ACI Data Items

Data items with procedures that differ from the FIA manual, or data items that have been added for the ACI study, are listed below with the “.ACI” extension. For these data items, refer to this document for item descriptions. For all other data items, refer to the FIA manual for item descriptions.

**Note: This list does not include FIA data items that are not applicable to ACI. In addition, many of the following variables have changed in version 5.0 of the FIA manual, and thus have been lined through. See above instructions or version 5.0 of FIA manual for variable references.**

<i>ACI Data Items</i> <i>Section 1: Plot-level Data</i>	
<b>Item No.</b>	<b>Variable Name:</b>
1.1	STATE
1.2	COUNTY
1.3	PLOT NUMBER
1.2.1RM	USGS MAP NUMBER
1.2.2RM	CONSECUTIVE POINT NUMBER (CPN)
1.4.ACI	<b>PLOT STATUS</b>
1.5	PLOT NONSAMPLED REASON
1.5.1RM	CONDITION CLASS CHANGE
1.5.2RM	RANGE DATA
1.6	SUBPLOTS EXAMINED
1.7.ACI	<b>SAMPLE KIND</b>
1.7.1RM.ACI	<b>REGIONAL SAMPLE KIND</b>
1.8	PREVIOUS PLOT NUMBER
1.9	FIELD GUIDE VERSION
1.9.1RM	REGIONAL FIELD GUIDE VERSION
1.10	CURRENT DATE
1.10.1	YEAR
1.10.2	MONTH
1.10.3	DAY
1.10.4RM	CREW NUMBER(S)
1.12	<del>HORIZONTAL DISTANCE TO IMPROVED ROAD</del>

<b>ACI Data Items</b> <b>Section 1: Plot-level Data</b>	
<b>Item No.:</b>	<b>Variable Name:</b>
<b>1.13.ACI</b>	<b>WATER-ON-PLOT</b>
1.14	QA STATUS
1.15	CREW TYPE
1.16.3	GPS UNIT
1.16.4	GPS SERIAL NUMBER
1.16.5	GPS DATUM
1.16.6	COORDINATE SYSTEM
1.16.9	UTM ZONE
1.16.10	EASTING (X) UTM
1.16.11	NORTHING (Y) UTM
1.16.12	Correction For "Offset" Location
1.16.13	AZIMUTH TO PLOT CENTER
1.16.14	DISTANCE TO PLOT CENTER
1.16.15	GPS ELEVATION
1.16.16	GPS ERROR
1.16.17	NUMBER OF READINGS
1.17.2RM	MICROPLOT RADIUS
1.17.3RM	SUBPLOT RADIUS
1.17.4RM	MICROPLOT LOCATION
1.17.4RM	FUTURE FOREST POTENTIAL
1.18	PLOT-LEVEL NOTES

<b>ACI Data Items</b> <b>Section 2: Condition Class</b>	
<b>Condition-level Data (recorded for each CONDITION CLASS):</b>	
<b>Item No.:</b>	<b>Variable Name:</b>
2.4.1	CONDITION CLASS NUMBER
<b>2.4.2.ACI</b>	<b>CONDITION CLASS STATUS</b>
2.4.3	CONDITION NONSAMPLED REASON
2.5.11 to 2.5.16	DISTURBANCE / YEAR
2.5.17 to 2.5.22	TREATMENT / YEAR
2.5.23	PHYSIOGRAPHIC CLASS

*Section 2 — continued below*

**ACI Data Items**  
**Section 2: Condition Class**

**Condition-level Data (recorded for each CONDITION CLASS, based on PC status\*):**

<b>Item No.</b>	<b>Variable Name:</b>
2.5.1	RESERVED STATUS
2.5.2	OWNER GROUP
2.5.7	OWNER CLASS

*\*The above condition-level data items are needed for PDR functioning, and are based on the status of the item at the PC. If more than one CONDITION CLASS is present on the plot area, determine the status for each item at the PC, and then re-enter the codes for all condition classes (note: For the actual status at subplot centers 2-4, refer to subplot-level data items SUBPLOT RESERVED STATUS and SUBPLOT OWNER CLASS in ACI section 12).*

**ACI Data Items**  
**Section 3: Subplot Information\* (FIA data items)**

<b>Item No.</b>	<b>Variable Name:</b>
3.1	SUBPLOT NUMBER
3.2.ACI	<b>SUBPLOT/MACROPLOT STATUS</b>
3.3	SUBPLOT NONSAMPLED REASON
3.4	SUBPLOT CENTER CONDITION
3.5.ACI	<b>MICROPLOT CENTER CONDITION</b>
3.6	SUBPLOT SLOPE
3.7	SUBPLOT ASPECT
3.8	SNOW/WATER DEPTH
3.9.ACI	<b>SUBPLOT/MACROPLOT CONDITION LIST (CORE OPTIONAL)</b>
3.9.1RM	ROOT DISEASE SEVERITY RATING

*\*Refer to ACI section 12 for other subplot-level data items that have been added for the ACI study.*

**ACI Data Items****Section 5: Tree and Sapling Data**

<b>Item No.</b>	<b>Variable Name:</b>
5.1	SUBPLOT NUMBER
5.2	TREE RECORD NUMBER
5.3	CONDITION CLASS NUMBER
5.4	AZIMUTH
5.5	HORIZONTAL DISTANCE
5.7	PRESENT TREE STATUS
5.7.2	STANDING DEAD
5.7.3	MORTALITY (CORE OPTIONAL)
5.8	SPECIES
5.9.2	DIAMETER AT BREAST HEIGHT (DBH)
5.9.4	DIAMETER AT ROOT COLLAR (DRC)
5.9.4.1	DRC STEM DIAMETER
5.9.4.2	DRC STEM STATUS
5.11	CURRENT NUMBER OF STEMS
5.12	DIAMETER CHECK
5.13	ROTTEN/MISSING CULL
5.14	TOTAL LENGTH
5.15	ACTUAL LENGTH
5.16	LENGTH METHOD
5.17	CROWN CLASS
5.18	UNCOMPACTED CROWN RATIO
5.19	COMPACTED CROWN RATIO
5.20.1RM	DAMAGE AGENT 1, 2, 3
5.21	CAUSE OF DEATH
5.22	MORTALITY YEAR (CORE OPTIONAL)
5.23	DECAY CLASS
5.24.1RM	PERCENT VOLUME MISSING TOP
5.25.1RM	SOUND DEAD
5.25.2RM	FORM DEFECT
5.25.4RM	CURRENT TREE CLASS
5.25.5RM	RADIAL GROWTH
5.25.6RM	TREE AGE
5.25.7RM	RADIAL GROWTH AND TREE AGE CHECK
5.26	MISTLETOE CLASS (CORE OPTIONAL)
5.27	TREE NOTES

<b>ACI Data Items</b> <b>Section 6: Seedling Data*</b>	
<b>Item No.</b>	<b>Variable Name:</b>
6.1	SUBPLOT NUMBER
6.2	SPECIES
6.3	CONDITION CLASS NUMBER
6.4	SEEDLING COUNT
6.4.1RM	COUNT CHECK
6.4.2RM	SEEDLING AGE
6.4.3RM	TOTAL SEEDLING AGE

\*Refer to ACI section 5 for seedling count procedures.

<b>ACI Data Items</b> <b>Section 8: Field Location Reference Items</b>	
<b>Item No.</b>	<b>Variable Name:</b>
8.1.1RM	INVENTORY PHASE
8.1.2RM	OWNER CONTACT
8.1.4RM	ATV
8.1.5RM	LOCKED GATE
8.1.6RM	PHOTO PROJECT
8.1.7RM	PHOTO ROLL
8.1.9RM	PHOTO SCALE
8.1.10RM	PHOTO YEAR
8.1.11RM	TOWNSHIP
8.1.12RM	NORTH/SOUTH
8.1.13RM	RANGE
8.1.14RM	EAST/WEST
8.1.15RM	SECTION
8.1.16RM	OWNER
8.2.1RM	GPS TYPE
8.2.2RM	TRUCK UTM ZONE
8.2.3RM	TRUCK UTM EASTING
8.2.4RM	TRUCK UTM NORTHING
8.3.1RM	PHOTO SCALE RECIPROCAL (PSR)
8.3.2RM	RP SPECIES
8.3.3RM	RP DIAMETER
8.3.5RM	RP HORIZONTAL DISTANCE
8.3.6RM	RP SLOPE DISTANCE
8.3.7RM	REMARKS 1-8

<b>ACI Data Items</b> <b>Section 8: Field Location Reference Items</b>	
<b>Item No.:</b>	<b>Variable Name:</b>
<b>8.3.8RM</b>	<b>GPS TYPE</b>
<b>8.3.9RM</b>	<b>GPS ERROR</b>
<b>8.3.10RM</b>	<b>NUMBER OF READINGS</b>
<b>8.3.11RM</b>	<b>RP UTM ZONE</b>
<b>8.3.12RM</b>	<b>RP UTM EASTING</b>
<b>8.3.13RM</b>	<b>RP UTM NORTHING</b>
<b>8.4.1RM</b>	<b>X SPECIES</b>
<b>8.4.2RM</b>	<b>Y SPECIES</b>
<b>8.4.3RM</b>	<b>X DIAMETER</b>
<b>8.4.4RM</b>	<b>Y DIAMETER</b>
<b>8.4.4RM *</b>	<b>X DISTANCE (*item number in FIA manual)</b>
<b>8.4.5RM</b>	<b>Y DISTANCE</b>
<b>8.4.6RM</b>	<b>X AZIMUTH</b>
<b>8.4.7RM</b>	<b>Y AZIMUTH</b>
<b>8.4.8RM</b>	<b>NOTES</b>
<b>8.5RM</b>	<b>NOXIOUS WEEDS</b>
<b>8.6RM</b>	<b>TRAVEL DESCRIPTION</b>
<b>8.8RM</b>	<b>TRUCK TO PC BOUNDARY MAP</b>
<b>8.9RM</b>	<b>PHOTOGRAPHING THE PLOT</b>

*ACI Data Items*  
**Section 9: Understory Vegetation Description**

<b>Item No.</b>	<b>Variable Name:</b>
9.1.1RM	SPECIES
9.1.2RM	SPECIES CANOPY COVER
9.1.3RM	SPECIES VEGETATIVE LAYER
9.2.1RM	TREE COVER LAYER 1
9.2.2RM	TREE COVER LAYER 2
9.2.3RM	TREE COVER LAYER 3
9.2.4RM	TREE COVER — AERIAL VIEW
9.2.5RM	SHRUB COVER LAYER 1
9.2.6RM	SHRUB COVER LAYER 2
9.2.7RM	SHRUB COVER LAYER 3
9.2.8RM	SHRUB COVER — AERIAL VIEW
9.2.9RM	FORB COVER LAYER 1
9.2.10RM	FORB COVER LAYER 2
9.2.11RM	FORB COVER LAYER 3
9.2.12RM	FORB COVER — AERIAL VIEW
9.2.13RM	GRAMINOID COVER LAYER 1
9.2.14RM	GRAMINOID COVER LAYER 2
9.2.15RM	GRAMINOID COVER LAYER 3
9.2.16RM	GRAMINOID COVER — AERIAL VIEW

<b>ACI Data Items</b> <b>Section 11: Down-Woody Materials Plot</b>	
<b>Item No.</b>	<b>Variable Name:</b>
11.2.1RM	CONDITION CLASS NUMBER
11.2.2RM	HORIZONTAL DISTANCE
11.2.3RM	SAMPLE HORIZONTAL DISTANCE
11.3.3RM	DECAY CLASS
11.3.4RM	SPECIES
11.3.5RM	DIAMETER AT POINT OF INTERSECTION
11.3.6RM	LARGE END DIAMETER
11.3.7RM	CONDITION CLASS NUMBER
11.3.8RM	IS THE PIECE HOLLOW?
11.3.9RM	IS THE PIECE ON A SUBPLOT?
11.4RM	SAMPLING RESIDUE PILES
11.5.2RM	FWD SAMPLED
11.5.3RM	FWD TRANSECT PERCENT SLOPE
11.5.4RM	CONDITION CLASS NUMBER
11.5.5RM	SMALL FWD COUNT
11.5.6RM	MEDIUM FWD COUNT
11.5.7RM	LARGE FWD COUNT
11.5.8RM	HIGH COUNT REASON
11.6.3RM	SAMPLED
11.6.4RM	DUFF DEPTH
11.6.5RM	LITTER DEPTH

**ACI Data Items****Section 12: ACI Subplot-level Data**

<b>Item No.</b>	<b>Variable Name:</b>
12.1.AC1	SUBPLOT NONFOREST/Water LAND USE
12.2.AC1	SUBPLOT RANGE TYPE <i>(not classified at this time)</i>
12.3.AC1	SUBPLOT HABITAT TYPE
12.4.AC1	GROUND SURFACE COVER TRANSECTS
12.5.AC1	SUBPLOT MULTIPLE CONDITION LAND USE FLAG
<del>12.6.AC1</del>	<del>SUBPLOT RESERVED STATUS</del>
<del>12.7.AC1</del>	<del>SUBPLOT OWNER CLASS</del>

# Appendix B: Ground Surface Cover Transects Form

<b>GROUND SURFACE COVER TRANSECTS</b>																				
Crew Name(s): _____		STATE _____				COUNTY _____				PLOT # _____										
Categories:	Subplot 1					Subplot 2					Subplot 3					Subplot 4				
	0°	90°	180°	270°	Total	0°	90°	180°	270°	Total	30°	120°	210°	300°	Total	60°	150°	240°	330°	Total
ASH																				
BARE																				
ROCK																				
WATE																				
TRIS																				
PEIS																				
WOOD																				
LIT																				
VEG																				
CRYP																				
LICH																				
MOSS																				
DEVP																				
ROAD																				
OTHER																				
NONSM																				

**Procedure:** On each subplot area, lay out four 25-foot transects that extend outward from the subplot center at the azimuth directions listed above. Lay a cloth tape along the slope of the ground; do not correct the slope distance to obtain horizontal distance. Start "hits" at the 1-foot mark, (for a total of 25 hits per transect direction, and 100 hits per subplot). From subplot center and facing the subplot perimeter, measure hits to the right side of the transect tape. Record total for category by subplot; enter category totals by subplot on the PDR. Note: If a subplot is not sampled, draw a large X over subplot columns.

**ASH** - Remaining residue after all combustible material has been burned off  
**BARE** - Bare ground; exposed soil and fragments < 3/4-inch diameter  
**ROCK** - Rocks; > 3/4-inch diameter  
**WATE** - Water; remaining above ground surface during the growing season (code all hits within "permanent water" as a water hit; for transient water, or temporary flooding, base hits on ground cover category below water surface as if water was not there)  
**TRIS** - Transient ice and snow  
**PEIS** - Permanent ice and snow  
**WOOD** - Woody material; litter not included  
**LIT** - Organic debris, freshly fallen or slightly decomposed; includes dead vegetation, animal feces, etc.  
**VEG** - Basal vegetation; the area outline of a plant near the ground surface; for grass - shoot system; for tree/shrub - stem area  
**CRYP** - Cryptogamic crust; thin biotically dominated ground or surface crust; for dry rangeland, algae, lichen, mosses or cyanobacteria  
**LICH** - Lichens; for dry rangeland see cryptogamic crust  
**MOSS** - Mosses; for dry rangeland see cryptogamic crust  
**DEVP** - Developed land or man-made structures; maintained residential yards; agricultural crops  
**ROAD** - Improved roads, paved roads, gravel roads, improved dirt roads and off-road vehicle trails regularly maintained  
**OTHER** - Other covers not defined elsewhere; includes trash (describe in notes section)  
**NONSM** - Nonsampled (describe reason in notes section)

**Notes:**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

ACP Study February 2007



DRAFT

# Index

---

## A

ACI Data Items .....	84
ACI Item Revisions	
Condition Class Procedures .....	29
Condition-level Data .....	36
CONDITION CLASS	
STATUS .....	36
Plot-level Data .....	25
PLOT STATUS .....	26
REGIONAL SAMPLE KIND .....	27
SAMPLE KIND .....	27
WATER ON PLOT .....	27
Subplot Information .....	37
MICROPLOT CENTER	
CONDITION .....	39
SUBPLOT/MACROPLOT	
CONDITION LIST .....	39
SUBPLOT/MACROPLOT	
STATUS .....	38
Understory Vegetation	
Description .....	53
ACI	
General Overview .....	4
Plot Layout .....	7
ACI Study Locations	
(2011 Field Season) .....	1
ACI Subplot-level Data .....	61
GROUND SURFACE COVER	
TRANSECTS .....	71
SUBPLOT HABITAT TYPE .....	64
SUBPLOT MULTIPLE CONDITION	
LAND USE FLAG .....	77
SUBPLOT NONFOREST/Water	
LAND USE .....	61
SUBPLOT OWNER CLASS .....	80
SUBPLOT RANGE TYPE .....	64
SUBPLOT RESERVED	
STATUS .....	79

## C

Circumstances Precluding Plot/Subplot	
Establishment .....	12
Ownership not National Forest	
Lands .....	12
Plot-level Circumstances .....	14
Subplot-level Circumstances ..	17
Circumstances Prohibiting Complete	
Subplot Sampling	
Tree, Sapling, and Seedling	
Data .....	46
Understory Vegetation	
Description .....	55
Condition Boundary Map .....	33
CONDITION CLASS	
Categories .....	29
Condition-level items to record .....	34
Condition-level items to record	
(based on PC status) .....	35
Exception to Status/Number	
assignment .....	30, 32
CONDITION CLASS NUMBER .....	34
CONDITION CLASS NUMBER	
Examples .....	31
CONDITION CLASS STATUS .....	34, 36
CONDITION NONSAMPLED	
REASON .....	34

## D

DISTURBANCE / YEAR .....	34
Down-Woody Materials Plot .....	59

## E

Existing Vegetation Classification .....	64
--	----

## F

Field Location Reference Items .....51

## G

Ground Surface Cover Transects  
  Categories .....74  
  Category exception for water ..76  
  Procedures .....71  
GROUND SURFACE COVER  
  TRANSECTS .....71  
Ground Surface Cover Transects  
  Form .....93

## H

Habitat Type  
  Acceptable Manuals for  
    Region 1 .....69  
  Manual Key  
    Idaho .....68  
    Montana .....67  
  Manual Selection Procedure for  
    Region 1 .....66  
  Reference Bibliography .....69

## M

MICROPLOT CENTER CONDITION ..39  
Monumentation .....11  
  Microplot .....11  
  Subplot .....11

## N

Nonforest Land (subcategories) .....30  
Nonforest Plots (definition) .....3

## O

Offset stake .....11  
Old nails/ tags/stakes .....10  
OWNER CLASS (Condition) .....35  
OWNER GROUP (Condition) .....35

## P

Partial Plots (definition) .....3  
PHYSIOGRAPHIC CLASS .....34  
PLOT STATUS .....26  
Plot-level Data .....25  
Potential Vegetation Classification .....64

## R

Reference Point  
  Lack of suitable landmark .....52  
REGIONAL SAMPLE KIND .....27  
RESERVED STATUS (Condition) .....35

## S

SAMPLE KIND .....27  
SUBPLOT HABITAT TYPE .....64  
  Acceptable Habitat Type Manuals  
    for Region 1 .....69  
  Habitat Type Manual Key  
    Idaho .....68  
    Montana .....67  
  Habitat Type Manual Selection  
    Procedure for Region 1 .....66  
  Subplot Information (FIA items) .....37  
SUBPLOT MULTIPLE CONDITION  
  LAND USE FLAG .....77  
SUBPLOT NONFOREST/Water  
  LAND USE .....61  
SUBPLOT OWNER CLASS .....80  
SUBPLOT RANGE TYPE .....64  
SUBPLOT RESERVED STATUS .....79  
SUBPLOT/MACROPLOT  
  CONDITION LIST .....39  
SUBPLOT/MACROPLOT STATUS .....38  
Subplot-level Data (ACI items) .....61

## T

TREATMENT / YEAR .....34  
Tree, Sapling, and Seedling Data .....43  
  Circumstances Prohibiting  
    Complete Subplot Sampling ....46

## U

Understory Vegetation Description.....	53
Agricultural land / residential yards .....	54
Circumstances Prohibiting Complete Subplot Sampling ...	55
PDR Entry (Part I Species).....	54
Sample Revisions .....	53

## W

WATER ON PLOT .....	27
Witness Landmarks	
Lack of suitable landmark .....	52

DRAFT

