

**Washington Department of Natural Resources  
Forest Regulation  
Compliance Monitoring Program**



**Standard Sample Field Protocols  
Western and Eastern Washington  
2023**

*Edited for 2023 by Compliance Monitoring staff:*

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## Overview

This document serves as instructions and as reference for the Compliance Monitoring sample preparation and field data collection, describing field protocols for the Compliance Monitoring Program (CMP). This revision succeeds previous versions of “Compliance Monitoring Protocols - Western and Eastern Washington” beginning in 2007. This document complements the Forest Practices Compliance Monitoring Program Design providing that detailed protocols be conducted on selected segments of Forest Practices Applications (FPAs). Protocols for sample selection are contained in the Compliance Monitoring Program Design document. Protocols for pre-field season FPA screening are contained in the *2023 Standard Sample FPA Screening Instructions* document.

The following pages contain guidance on how to conduct Compliance Monitoring field reviews in a repeatable manner in order to promote consistency in sampling. However, it is understood that modifications may be made to the protocols as local site conditions warrant.

The core review team that shall be present on any Compliance Monitoring field visit consists of a DNR Forest Practices representative and at least one other representative from either the Department of Ecology (ECY), a tribe, or a second DNR Forest Practices representative working within a separate chain of command from the first. For example, a field review may be considered valid when two members of the review team consist of the DNR Compliance Monitoring Field Coordinator and a local DNR Forest Practices Forester. Another example may include the presence of at least the Compliance Monitoring Program Manager and a tribal biologist.

The [Compliance Monitoring SharePoint webpage](#) provides information for participants pertaining to FPA scheduling, segment selections, field forms, other relevant resources, and topics regarding Compliance Monitoring field reviews. Please contact the Compliance Monitoring Program Field Coordinator to gain access to the SharePoint page.

## **Participant Responsibilities for Compliance Monitoring Field Reviews**

Responsibilities of participants for Compliance Monitoring field reviews vary by agency/affiliation as detailed below.

### **DNR Forest Practices Division Compliance Monitoring Program Staff**

- The CMFC will coordinate all field reviews with the DNR Region Compliance Monitoring liaison. Weeks for fieldwork within each DNR region will be chosen at the Compliance Monitoring Annual Field Kick-off Meeting.
- The CMFC will post all field dates, FPA numbers, and segment selections on the Compliance Monitoring SharePoint webpage. The goal is to provide at least two weeks' notice on the SharePoint site; however, in some circumstances, less than two weeks' notice may be given. The CMFC will notify region liaison via phone call, voicemail message, or email in the event a field review is rescheduled or substantially changed with less than two weeks of notice.
- The CMFC will distribute to other participants any pertinent information given to them by the DNR region liaison.
- The CMFC will make an effort to minimize travel by encouraging applications in close proximity to each other to be reviewed within the same day/week when possible.
- CMP staff will be the DNR lead on all field reviews for which they are present.

### **DNR Forest Practices Staff and Region Liaison**

- Region Forest Practices (FP) field staff or the DNR region liaison will contact all landowners and field participants (ECY, DNR staff, and affected tribes) to set up a field review date, as well as determine meeting time and location, and other logistical support as needed. Liaisons will relay any changes or cancellations regarding site visits to all field participants.
- Region liaison will check, or ask the approving Forest Practices Forester (FPF) to check the office FPA paper file and the FPA jacket to gather all information on the FPA such as Informal Conference Notes (ICNs), Water Type Modification Forms (WTMFs), protocol surveys, forester log notes, emails, etc. It is preferable that this information be emailed to the CMFC at least one week before the field review.
- If the region liaison cannot attend, they will arrange for another representative from the region to attend in their place.
- While the FPF is not required to attend, their presence is encouraged to help clarify elements of the FPA. Approving FPF may participate with the on-site data collection but may not participate in making compliance determinations for the review.
- A member of DNR Region Forest Practices staff may act as the DNR lead for a field review if CMP staff are not present. The approving forester for an FPA may not lead its field review.

### **DNR Lead for Field Review**

The DNR lead has the final determination in all decisions made in the field after having considered all input from stakeholders. The DNR lead for field reviews is the Compliance Monitoring Field Coordinator (CMFC) or Program Manager (CMPM) when they are present, or DNR Region Forest Practices Compliance Monitoring liaison if neither the CMFC nor CMPM are present.

- DNR lead ensures protocols are followed, or that deviations from protocols are properly documented after all input from stakeholders has been received and considered.
- DNR lead will read compliance questions aloud before making final compliance determinations.
- DNR lead will bring the appropriate field forms for the prescriptions selected for review.

### **Department of Ecology, Department of Fish and Wildlife, and Tribal Personnel**

- Maintain availability for scheduled field reviews. Check SharePoint calendar for scheduled field review days.
  - If agency representative is unable to attend a scheduled field day, the representative should seek a substitute attendee from their respective agency if possible, and communicate that to the CMFC, CMPM, or region liaison. This includes absences for annual or sick leave, training or meetings, even if these are on the calendar in advance of scheduling a field review.
  - Field review will take place as long as the DNR and a representative from ECY, tribe, or additional DNR representative from a separate chain of command from the first are present.
- If necessary, ask the CMFC or CMPM for additional information about an individual FPA under review. They will be the point of contact for receiving information regarding ICNs, WTMFs, etc. Place all requests for additional information through them.
- Come prepared with necessary field gear. It is expected that all attendees will have the required personal protective equipment (hard hat, high visibility vest, and caulk boots), as well as the necessary field equipment (diameter tape, laser rangefinder, clinometer, permanent markers, field notebook, etc.). CMP staff may have some extra equipment available for use during the field review.
- Participate in field measurements following the protocols and instructions from DNR lead.
  - Concerns over conduct of fieldwork will be brought to the attention of the DNR lead as soon as possible.
  - If an agency representative has concerns that are not properly addressed by the DNR lead, contact the CMPM. The CMPM should initiate an Agency Caucus meeting (refer to “Decisions” under “General Field Procedure Information” below for more information). If the CMPM’s answer, or the answer resulting from the Agency Caucus meeting is not satisfactory, follow the process below:
    - Provide a detailed written description of the nature of the dispute, including basis for disagreement with the DNR lead’s position on the matter, to the Assistant Division Manager – Operations (ADM-Ops). Division will take the lead in providing a response to the concerned party in writing within five business days of receipt. The individual(s) with the

dispute may then elect to either accept the division answer, request a meeting with the ADM-Ops and accept the answer/outcome of this meeting, or pursue other means of resolution. The party initiating this process should do so following their chain of command in order to elevate the dispute to the ADM-Ops.

- Provide copies of all field notes recorded during the review to the CMFC for inclusion into the file. This will be done on the first available office day after the review has taken place.

### **General Expectations – All Participants**

- Always consider your own safety, as well as the safety of others on the team during field reviews. Look up, down, and around. Be mindful of weather conditions, footing on steep slopes, and blowdown. Practice safe driving habits, especially when following in a convoy. Speak up if you are uncomfortable with a field assignment, and the DNR lead will take action to mitigate the issue.
- Demonstrate professional behavior at all times. It is vital to be respectful, especially while listening to or offering dissenting opinions. Be courteous toward landowners and treat them with respect. Professional relationships will be maintained by all participants during field reviews.
- Read and be familiar with the protocols. Additional training during field reviews is always available and questions are encouraged.
- Be familiar with FPAs selected for review. Conduct a thorough office review of the FPA prior to field visit.
- Request clarification or further information from Compliance Monitoring staff if needed.
- Be mentally and physically prepared for fieldwork.
- Be flexible. FPAs will be dropped, schedules will change, people will get sick, and emergencies will arise. Although DNR CMP staff work to mitigate these issues, we occasionally may not be successful.

### **Standard Sample Prescriptions**

*Note: Standard sample prescriptions are subject to change and will be updated as needed.*

The following are the **standard sample** prescriptions assessed in Compliance Monitoring:

- No Inner Zone Harvest (NIZH)
- Desired Future Condition Option 1 (DFC1)
- Desired Future Condition Option 2 (DFC2)
- Np streams
- Ns streams
- Non-Forested Wetlands (A & B Wetlands)
- Forested Wetlands
- Roads (construction, abandonment, and some types of maintenance)
- Haul Routes

## Periodic Samples

A periodic sample is of a prescription or activity outside of the annually assessed standard sample prescriptions listed above. These might occur infrequently, or have different rule elements than the prescriptions included in the standard sample. They might also involve situations in which historical results from the standard sample have indicated rules that warrant closer scrutiny. Though the “Participant Responsibilities for Compliance Monitoring Field Reviews” and “General Field Procedure Information” sections may apply to these samples, additional protocols may be needed to account for differences between standard sample prescriptions and periodic sample prescriptions. Please review individual periodic sample protocols for specific information regarding sampling methodology.

## General Field Procedure Information

### Prior to field measurements

- DNR leads all field reviews. DNR CMP staff will lead all reviews for which they are present; Region staff will lead reviews when CMP staff is not present. Region staff may not lead field reviews for FPAs of which they were the approving forester.
- DNR staff and other agencies involved in a review are never allowed to trespass on adjacent landowner property, even with permission from the adjacent landowner. If a review of a particular segment is hindered because of this, it should be dropped and the next random segment selected. If there are no additional segments available, the prescription will be dropped from the review and a replacement will be selected for review from a different FPA. Participants may leave the FPA boundary if the land outside the FPA is owned by the same entity.
- DNR lead, after considering input from ECY and tribal representative(s), has the final decision in accepting any documentation, allowing any deviations from protocols, making the compliant/deviation determination, or deviation severity rating.
- Prior to beginning field measurements, DNR lead shall conduct, and all present shall participate in, a pre-review briefing.
  - DNR lead will brief participants on prescriptions for review and the operational tactics surrounding the data collection.
  - DNR lead will assign work roles to participants, keeping in mind the need to reduce potential positional bias and taking any physical limitations (or preferences, when possible) into account. Landowners in attendance are welcome, but not required, to participate in measurement activities.

## Field Discussions and Decisions:

### Discussions

- When facilitating discussions regarding specific Forest Practices rules, bankfull width (BFW) determinations, wetlands, or other topics associated with FPA review:
  - All field participants will be included in the discussion.

- The DNR lead will facilitate discussions whereby all participants are allowed and encouraged to voice their opinions.
- Discussion will be kept to approximately 15 minutes in order to keep the process moving. DNR lead will make final decision.
- WTMFs, ICNs, protocol surveys, other supporting documentation, and stream typing.
  - If documentation supporting a stream typing decision is submitted with an application, or provided to the DNR lead before or during the review, the CMP will not challenge stream typing, provided that the survey or Inter-Disciplinary team referenced in the documentation was conducted on or after March 20, 2000.
  - If supporting documentation is not submitted during the review, the initial compliance determination will be made based on physical characteristics of the stream. Compliance determination will be changed if the documentation is provided shortly after the field visit. In this case, written comments should outline the current compliance determination, and how that may change after submission and review of proper documentation.
  - Fish observed in a stream identified as non-fish need to be confirmed by at least two members from the field team.
  - If fish are observed in a water segment that is classified as non-fish, the water segment will be considered non-compliant for typing and all other rule questions will become not applicable (N/A). Record this type of information on the field form for inclusion in the file.
    - i. In this scenario for Np streams, the “typing” rule question (question one on Np form) becomes non-compliant and all subsequent rule questions on the Np form are N/A. The team will then assess the rest of the stream segment for FPA compliance with the Np prescription.
    - ii. In this scenario for Ns streams the “typing” rule question (question one on the Ns form) becomes non-compliant and the subsequent rule question is N/A.
    - iii. If fish are observed or have the physical capability to inhabit a selected Type A, Type B, or forested wetland via a connected Type F or S stream, the “typing” question (question one on non-forested and forested wetlands forms) becomes non-compliant and the subsequent rule questions become N/A. The wetland prescriptions will then be assessed for FPA compliance.
  - If a landowner is claiming a type N stream on an FPA and the same stream is identified as type F on the DNR hydro layer, a protocol survey and completed water type worksheet must be included with the FPA for the landowner to be compliant with the Forest Practices water typing rules.

## Decisions

- Every effort must be made to make compliance determinations in the field. If compliance calls or ratings are to be changed based on new information that comes to light after the field teams have signed off on the results, the new information will be presented to the field review participants so they can review the change and provide their concurrence or non-concurrence (dissenting opinion). The change will be documented on the field form.



- Decisions that cannot be immediately made in the field must be documented, including the plan for a final determination to be made after additional information has been gathered and evaluated.
- Representatives from DNR, ECY, WDFW, and affected tribes should sign the field form. If any party holds a dissenting opinion, they should either write their own opinion or initial next to the CMFC's transcription of their opinion, but still sign the form at the appropriate line. If no dissenting opinion is written, signing on the appropriate line will indicate agreement with the decisions included in the form.
- Dissenting participants should bring the issues to their respective representatives at the stakeholder/policy level for any further discussion or action that might be needed.
- Overprotection of a resource (site classes reported higher than mapped, stream size reported larger than observed etc.) will be considered compliant.
- DNR lead shall present all issues regarding rules or specific interpretations to the CMPM for clarification within the Forest Practices Division.
  - CMPM will promptly reply to the field team with results of consultation. Basis for decision(s) will be included in the reply.
- The dispute resolution process will include CMP Agency Caucus meetings. Members of this Caucus include:
  - Compliance Monitoring Program Manager
  - Compliance Monitoring Field Coordinator
  - Supervisors or managers of ECY, WDFW and other field staff
  - ECY, WDFW, and tribal field representatives

### **Recording Necessary Field Review Data**

- Documentation for field assessments will consist of:
  - Field notes templates (Appendix D) or notes from field books. These are the documentation to support answers on the field form.
  - Field forms. These are composed of a series of questions derived from Washington Administrative Code (WAC) language related to specific rules that govern the prescriptions under review.
    - Answers to questions on the field forms are based on field notes.
    - The forms detail compliance results for the individual rules within a prescription. Compliance with the FPA is also evaluated, when relevant.
    - Field forms should also be used to record notes if there is disagreement, or if additional information is needed to determine compliance. If additional information is needed, potential outcomes dependent on acquisition of such materials should be denoted in comment areas.

### **General Field Protocols**

Choosing riparian management zones (RMZs), wetland management zones (WMZs) and equipment limitation zones (ELZs) to be sampled:

- In most cases, segments are randomly selected prior to the field visit by CMP staff. However, some information is provided here for situations in which pre-selected

segments need to be dropped or changed during the site visit due to on-the-ground conditions that were not apparent during office review.

- Safety overrides all other considerations with regard to measuring an RMZ, WMZ, ELZ, road, or haul route. If proper measurements cannot be completed safely, and a determination of compliance cannot be made, the segment should be dropped and another selected. Also, if weather conditions are unsafe to work in (high wind, etc.) the team will discontinue work until it is safe to resume work. Everyone has Stop Work Authority for unsafe conditions.
- Only one of each different prescription type will be reviewed on each FPA, if the target sample size of the prescription has not been reached. For example, if an FPA has two DFC1 harvests, only one will be chosen at random.
  - The CMP typically uses a spreadsheet that generates random numbers to determine which segment to review. In the event that the spreadsheet results are not available, any random, unbiased selection method may be used.
  - Both sides of a double-sided Type S or F RMZ will be reviewed, unless one or both sides are treated as separate DFC segments by the applicant. Both sides of an Np RMZ or ELZ, or an Ns ELZ will be reviewed, as long as both sides were harvested under the FPA selected for review.
- Landowner segment identifiers are used when provided on the FPA. For stream segments or water bodies without designators, such as non-numbered Np or Ns streams, DNR CMP staff will assign identifiers to the segments. Identifiers will begin in the upper-left-hand side of the FPA, and proceed as if reading lines of text. After all segments have been identified, the random number generator spreadsheet will be used to determine the segment chosen. DNR CMP staff will ensure that participants know what segment has been chosen by posting segment selections on the SharePoint site.
- In the event a segment is dropped, review the next randomly chosen segment on the selected FPA. If none are available, select from a new FPA. A segment should be dropped if it is wholly or partially off of the applicant's property (except for instances when either all or part of the RMZ lies within a public road Right-of-Way), it is unsafe to review, or the prescriptions listed are not complete or non-existent.
- In general, the entire length of the selected segment must be surveyed. This may include several branches of an Np stream system.

## **Compliance Determinations**

This section summarizes the determinations that field personnel make and record during field reviews, and categories of information that the CMP will biennially report to the Forest Practices Board.

The CMP utilizes average compliance for a prescription among FPAs rather than the proportion of completely compliant FPAs. Each FPA is viewed as a cluster of rule applications, and they will be grouped according to riparian prescription or road activity. Single rules within each prescription or activity will be a simple binomial proportion; the rule is either compliant or a deviation.

Thus, a prescription form may have nine total rules, of which the reviewed segment has seven

applicable rules, and six of those rules are implemented properly. In this scenario, the average compliance for that prescription is 86 percent (six compliant rules / seven total applicable rules = 86 percent).

It is important to note that there can be situations where landowners are compliant with the rules associated with the site characteristics identified on the FPA, but because of a misidentification of a site characteristic, the field team must make a “deviation from compliance” determination for a particular rule. Though the applicant may be compliant with their application, they are not compliant with the rules. The opposite may occur as well; an applicant may be compliant with the rules, but not compliant with the terms of their application. A separate determination of compliance will be made for the prescriptions of the applicant’s FPA as well as the actual rules.

It is understood that Forest Practices Foresters have limited time, and must often make decisions about what portions of an FPA to review before approval. For Forest Practices Foresters, it is often impractical to look at all aspects of a particular FPA, especially when many FPAs require attention simultaneously. FPA or rule compliance determinations by the CMP are not intended to reflect on, or be an audit of, DNR regulatory staff. Compliance Monitoring data collection is based on a statewide study design. No inferential statistical analysis or conclusions can be made for population subsets (i.e. DNR Regions, individual Forest Practice Foresters, etc.). Attempts to interpret data in this manner are to be avoided.

A compliance determination will be made for each individual rule that makes up a prescription or activity. If a rule is determined to be **compliant**, it meets the minimum protection standard identified in the rule (for rule compliance), or adheres to the terms of the approved FPA (for FPA compliance).

The **deviation from compliance** determination means that an individual rule was not properly implemented and did not meet protection standards. As with the compliant determination, this determination will be made on each individual rule that makes up a prescription or activity. If a rule is determined to deviate, it did not meet the protection standard identified in the rule (for rule deviations) or did not follow the terms of the FPA (for FPA deviations). Common examples are:

- Outer Zone leave tree count not met
- RMZs were harvested where no harvest was allowed
- Water crossing structure is inadequate (e.g. under-sized) for stream protection standards

As indicated in the introductory portion of this section, a “deviation from compliance” determination is reported in absolute terms, but qualitative information derived from professional judgment in the field is also reported to the Forest Practices Board. After considering several ways to structure a system of reporting “deviation from compliance” determinations DNR, with input from WDFW, developed the following categories for field personnel to use professional judgment in reporting their findings. These ratings will be applied to each rule within a prescription that is found to deviate from requirements. The following ratings include examples of degrees of impact to aid in rating non-compliance, and reference tables are included in Appendix D. Final decisions on deviation rating lie with the DNR lead who will use input from

field participants and professional judgment, taking into consideration site-specific factors, to make their determination.

Deviation from Compliance - Low – Minor deviation from requirements of rule. This is generally used when the impact of the rule deviation is likely to be insignificant or small over the short- to medium-term (e.g. 1-2 improperly harvested trees in the Core Zone, up to 5 improperly harvested trees in the Inner/Outer Zones, or up to 10 yards of sediment delivery).

Deviation from Compliance - Moderate – Moderate deviation from requirements of rule. This is generally used when the impact of the rule deviation is likely to be moderate over the short- to medium-term (e.g. 3-7 improperly harvested trees in the Core Zone, 6-10 improperly harvested trees in the Inner/Outer Zones, or up to 11-20 yards of sediment delivery).

Deviation from Compliance - High – Major deviation from requirements of rule. This is generally used when the impact of the rule deviation is likely to be high over the short-term (e.g. over 7 improperly harvested trees in the Core Zone, over 10 improperly harvested trees in the Inner/Outer Zones, or over 20 yards of sediment delivery).

It is important to note that these professional judgment non-compliance ratings should not be used to excuse activities that violate the rules or approved FPAs. This process helps to add perspective in evaluating the environmental risk associated with the non-compliance statistics.

Implementing this system requires the following assumptions:

- All participants realize that this process relies on professional judgment, and acknowledge that this process is not meant to represent any effectiveness determination.
- This is an educated assessment of the level of the deviation as it relates to the resource, not a surrogate for effectiveness monitoring.

## **Reasons for Non-Compliance**

The deviation reason assessment is a determination made by the field team as to a potential cause for non-compliance. It is important to note that these deviation reasons entail professional judgment. There are three deviation categories — Layout, Operational, and Administrative. It is acceptable for more than one category to be chosen for each instance of compliance deviation. The following guidelines are used to assist professional judgment when deducing the cause of deviation in the field:

- Layout — The arrangement of the harvest unit did not meet the specifications of the rule. Examples include:
  - A stream meander is unaccounted for in the layout of an RMZ; boundary markings are too close to the stream BFW to accomplish required buffer width.
  - A road cross drain is located or oriented in such a way as to cause sediment deposition to a water course.

- Operational — The timber harvest and related activities process did not follow the correctly marked layout of the harvest unit or associated activity. Examples include:
  - Designated leave trees harvested within a no-cut Inner Zone.
  - A necessary relief culvert listed on the FPA or road plan was not installed during road construction.
- Administrative — Information or data provided on the Forest Practices Application and associated documents deviates from the conditions observed on the ground. In some cases, the resource may have been properly protected despite the incorrect information on the FPA. Examples include:
  - An incorrect site class is recorded on an FPA.
  - Incomplete shade documentation.
  - Incorrect overstory species entered into Desired Future Condition program.

## **Fish-Bearing Waters**

Applications containing harvest adjacent to Type S or F water have three management options:

- No Inner Zone Harvest (NIZH)
- Desired Future Condition 1 (DFC1)
- Desired Future Condition 2 (DFC2)

These prescription types use RMZs consisting of a 50-foot no-cut Core Zone, an Inner Zone, and an Outer Zone. A 50-foot Core Zone is standard on all three prescription types, while Inner and Outer Zone widths can vary depending on stream width, site class, and harvest strategy (Figures 1, 2, 4, and 6).



**Figure 1: Type F and S water RMZ Layout**

The following sections on NIZH, DFC1, and DFC2 (pages 12-25) outline the field data collection procedures for each of these prescriptions.

## **No Inner Zone Harvest (NIZH)**

The field team will work to establish compliance regarding the seven rules for this prescription listed on the field form. Questions #2 (Site Class not underrepresented) and #6 (shade documentation) are administrative checks performed in advance of the field visit.

NIZH RMZ buffer widths depend on stream size, site class, and location (Eastern or Western WA) (Figure 2). The team will move as a unit, establishing either 50- or 100-foot stations (Appendix A) as they go. They will be checking for cut stumps within the Core Zone, measuring the diameter of leave trees within the Inner Zone, and tallying all Outer Zone leave trees that are 12" DBH or greater. The team will also assess if the dominant tree species is consistent with the species listed on the DFC worksheet.

### ***Personnel Layout:***

- At BFW/Edge of CMZ-
  - **1-2 Participants**
    - Responsible for setting up stations with string box and flagging, determining actual stream width using BFW measurements (Appendix A), ensuring the Inner/Outer Zone personnel are perpendicular to the stream direction, and visibly placing the retractable reflector at the edge of the nearest side of BFW/CMZ to help personnel at other positions to establish the Inner and Outer Zone stations.
- At 50-foot Core Zone Outer Edge-
  - **1 Participant (OPTIONAL)**
    - Responsible for flagging the 50-foot Core Zone at each appropriate station, looking for cut stumps within the Core and Inner Zones, and helping personnel on the Inner/Outer Zone line establish the appropriate buffer distance and angle to the stream. This position is optional, as there should be no harvest within the Inner Zone. If topography is steep, the zone has low visibility due to brush, or the stream is loud, this position could be necessary for communication purposes.
- At Inner/Outer Zone Edge-
  - **2 Participants**
    - **Person 1-** Responsible for flagging Inner/Outer Zone edge, helping personnel at the outer edge of the Outer Zone establish their distance and position, and taking horizontal distance measurements between stations (parallel to stream) with Person 2 to calculate actual RMZ length. Checks for stumps within the Inner Zone.
    - **Person 2-** Remains one station behind to take shots up to Person 1 with the laser rangefinder. Assists in looking for stumps within the Inner Zone and counting Outer Zone leave trees.
- Outer edge of Outer Zone-
  - **1 Participant**
    - Responsible for flagging the outer edge of the Outer Zone at the appropriate distance and angle to the stream. If no additional staff are present, this person is also responsible for counting the Outer Zone leave

trees (potentially with help from one of the personnel at the Outer/Inner Zone edge) and recording all field data for the team.

### ***Core and Inner Zones:***

- Between every two stations, determine if trees were harvested within the no-harvest buffer. Between appropriate stations, record in the field notes:
  - Number of trees cut. If too many trees are cut to reasonably count, record approximate number.
  - Approximate stump diameter, when appropriate.
  - Measured or estimated distance of each stump from BFW. This includes trees cut within the 5 percent measurement error tolerance.
    - If there are questions about distance, measure from BFW directly to the center of the stump. This extra measuring will help compensate for sinuosity, bank erosion, etc. along the continuous RMZ width.
  - For line trees, count every other tree as in, just as in standard property line compensation for line trees.
- Trees cut consistently within the 5 percent measurement error tolerance (refer to “Error Tolerance” section below) would result in a deviation from compliance. “Consistently” means greater than 50 percent of the trees within the 5 percent band were removed.
- Compliance or deviation from compliance will be based on rule requirements. Deviation ratings will be based on professional judgment, taking into consideration site-specific conditions on the ground.

### ***Outer Zone:***

Outer Zone leave trees may be reduced by up to 50 percent with large woody debris (LWD) placement strategy. Strategy must be included in FPA documentation.

### **Western Washington**

- Determine from the FPA if leave trees are dispersed or clumped. Hardwoods only count if they are clumped on sensitive features. Hardwoods and conifers less than 12 inches DBH must be clumped on a sensitive feature as defined in WAC 222-30-021(1)(c)(ii).
  - Tally between stations the Outer Zone conifer leave trees 12 inches DBH or greater, if no sensitive features are present. If sensitive features are present, tally hardwoods and conifers 8 inches or greater when clumped on said sensitive feature(s).
  - After completion of measurements, calculate acreage of Outer Zone, and determine required number of Outer Zone leave trees.
- **For CMZ Exchanges:**
  - Tally 100 percent of the CMZ trees; conifer tally must be greater than or equal to 6 inches DBH and hardwood tally must be greater than or equal to 10 inches DBH.
  - Conifer in the CMZ equal to or greater than 6 inches DBH will offset conifer in the Outer Zone at a 1:1 ratio.
  - Hardwood in the CMZ equal to or greater than 10 inches DBH will offset hardwood in the Outer Zone at a 1:1 ratio.



- Hardwood in a CMZ equal to or greater than 10 inches DBH will offset conifer in the Outer Zone at a 3:1 ratio.
- The CMZ exchanges above are by basal area (BA), not stem count.

### **Eastern Washington**

- Tally 100 percent of the dominant and co-dominant Outer Zone trees and add up the total numbers by size class to compare with required leave trees.
- Ponderosa pine habitat type – leave 10 dominant or co-dominant trees per acre (TPA).
- Mixed conifer habitat type – leave 15 dominant or co-dominant TPA.
- High elevation habitat type – Follow stand requirements for Western WA RMZs.

### ***Error Tolerance:***

A 5 percent measurement error tolerance will apply to all zone widths within the RMZ. Stumps within the 5 percent error tolerance (measured from the center of the stump) will be considered compliant. Outer or Inner Zone leave trees that fall within the 5 percent error tolerance may count toward either zone, however they cannot count toward both zones (i.e. these trees may count as an Inner *or* Outer Zone leave tree, not an Inner *and* Outer Zone leave tree). The 5 percent error tolerance does not apply to **number** of stumps cut within a no-harvest zone, but only to measured distance of buffer widths/lengths.

## 4a No Inner Zone Harvest



WESTERN WASHINGTON

SF

TYPE 'S' OR 'F'  
WESTERN WASHINGTON  
RMZ REQUIREMENTS



TYPES 'S' AND 'F'  
ARE FISH HABITAT  
STREAMS

Site Class	Total RMZ Width	Core Zone Width <sup>1</sup>	Inner Zone Width <sup>2</sup>		Outer Zone Width <sup>3</sup>	
			Stream ≤ 10'	Stream > 10'	Stream ≤ 10'	Stream > 10'
I	200'	50'	83'	100'	67'	50'
II	170'	50'	63'	78'	57'	42'
III	140'	50'	43'	55'	47'	35'
IV	110'	50'	23'	33'	37'	27'
V	90'	50'	10'	18'	30'	22'

No Harvest



EASTERN WASHINGTON

SF

TYPE 'S' OR 'F'  
EASTERN WASHINGTON  
RMZ REQUIREMENTS



TYPES 'S' AND 'F'  
ARE FISH HABITAT  
STREAMS

### Bankfull width less than or equal to 15 feet

Site Class	Total RMZ Width	Core Zone Width <sup>1</sup>	Inner Zone Width <sup>2</sup>	Outer Zone Width <sup>3</sup>
I	130'	30'	45'	55'
II	110'	30'	45'	35'
III	90'	30'	45'	15'
IV	75'	30'	45'	0'
V	75'	30'	45'	0'

No Harvest

<sup>1</sup> Measured from outer edge of bankfull width (BFW) or outer edge of Channel Migration Zone (CMZ), whichever is greater.

<sup>2</sup> Measured from outer edge of Core Zone.

<sup>3</sup> Measured from outer edge of Inner Zone.

### Bankfull width greater than 15 feet

Site Class	Total RMZ Width	Core Zone Width <sup>1</sup>	Inner Zone Width <sup>2</sup>	Outer Zone Width <sup>3</sup>
I	130'	30'	70'	30'
II	110'	30'	70'	10'
III	100'	30'	70'	0'
IV	100'	30'	70'	0'
V	100'	30'	70'	0'

No Harvest

Figure 2: NIZH RMZ Requirements

## **DFC1 (Thinning from Below)**

*Note: Inner Zone harvest strategies are only evaluated in Western WA by current Compliance Monitoring standard sample.*

The field team will work to establish compliance regarding the nine rules for this prescription listed on the field form. Questions #2 (Site Class not underrepresented), and #7 (shade documentation) are administrative checks performed in advance of the field visit.

DFC1 RMZ buffer widths depend on stream size and site class (Figure 4). Both will be referenced in the FPA and listed on the DFC summary sheet attached to the FPA. The DFC printout will include runs for both DFC1 and DFC2 for each segment, so ensure that the pages specifically for DFC1 and for the correct segment are referenced. Zone widths will be outlined on the DFC worksheet for the selected segment (refer to Figure 5).

The team will move as a unit, establishing either 50- or 100-foot stations (Appendix A) as they go. They will be checking for cut stumps within the Core Zone, measuring the diameter of leave trees within the Inner Zone, and tallying all Outer Zone leave trees that are 12" DBH or greater. The team will also assess if the dominant tree species is consistent with the species listed on the DFC worksheet.

### ***Personnel Layout:***

- At BFW/Edge of CMZ-
  - **1-2 Participants**
    - Responsible for setting up stations with string box and flagging, determining actual stream width using BFW measurements (Appendix A), ensuring the Inner/Outer Zone personnel are perpendicular to the stream direction, and visibly placing the retractable reflector at the edge of the nearest side of BFW/CMZ to help personnel at other positions to establish the Inner and Outer Zone stations.
- At 50-foot Core Zone Outer Edge-
  - **1 Participant**
    - Responsible for flagging the 50-foot Core Zone at each appropriate station, looking for cut stumps within the Core Zone, and helping personnel on the Inner/Outer Zone line establish the appropriate buffer distance and angle to the stream.
- At Inner/Outer Zone Edge-
  - **2 Participants**
    - **Person 1-** Responsible for flagging Inner/Outer Zone edge, helping personnel at the outer edge of the Outer Zone establish their distance and position, and taking horizontal distance measurements between stations (parallel to stream) with Person 2 to calculate actual RMZ length.
    - **Person 2-** Remains one station behind to take shots up to Person 2 with the laser rangefinder. Assists in measuring trees in Inner Zone and tallying trees in Outer Zone.
- Outer edge of Outer Zone-

- **1 Participant**
  - Responsible for flagging the outer edge of the Outer Zone at the appropriate distance and angle to the stream. If no additional staff are present, this person is also responsible for counting the Outer Zone leave trees (potentially with help from one of the personnel at the Outer/Inner Zone edge) and recording all field data for the team.
- Additional Personnel
  - Any additional personnel can assist in measuring DBH of Inner Zone trees, tallying Outer Zone trees, or scribing field data.

***Core Zone:***

- Between every two stations, determine if trees were harvested within the no-harvest buffer. Between appropriate stations, record in the field notes:
  - Number of trees cut. If too many trees are cut to reasonably count, record approximate number.
  - Approximate stump diameter, when appropriate.
  - Measured or estimated distance from BFW. This includes trees cut within the 5 percent measurement error tolerance.
    - If there are questions about distance, measure from BFW directly to the center of the stump. This extra measuring will help compensate for sinuosity, bank erosion, etc. along the continuous RMZ width.
  - For line trees, count every other tree as in, just as in standard property line compensation for line trees.
- Trees cut consistently within the 5 percent measurement error tolerance (refer to “Error Tolerance” section below) would result in a deviation from compliance. “Consistently” means greater than 50 percent of the trees within the 5 percent band were removed.
- Compliance or deviation from compliance will be based on rule requirements. Deviation ratings will be based on professional judgment, taking into consideration site-specific conditions on the ground.

***Inner Zone Tree Counting:***

- Tally Inner Zone trees by 2-inch diameter classes (Figure 3) at breast height (DBH) starting one size class below the smallest size class of required leave trees (refer to the selected FPA’s DFC printout for the required leave tree size classes), and then continue DBH measurements for all subsequent required leave trees. Starting tree tally measurements with the size class below the smallest required DBH size class helps in the event of a discrepancy between reported and observed stream length, stream size, or dominant tree species, requiring a DFC calculation be re-run to determine compliance with rules.
- Include blowdown and snags reasonably expected to have been standing at time of harvest in the tally. Trees cut for safety reasons and left on site should also be counted if they fall within the diameter classes of required leave trees.
- Excess larger diameter class trees may be used to substitute for insufficient smaller diameter class leave trees.
- Tree diameters are measured with a diameter tape in units of tenths of inches.
- Core Zone trees are not to be measured or tallied.

- While cruising the Inner Zone, also check for stumps that appear to have been trees of DBH larger than the thinning strategy allowed.
  - The CMP cannot determine exactly what the DBH would have been from a stump. However, using professional judgment, the team can reasonably estimate if the tree stump was greater than the thinning strategy allowed.
- For line trees, count every other tree as in, just as in standard property line compensation for line trees.

### ***Outer Zone:***

Outer zone leave trees may be reduced by up to 50 percent with large woody debris (LWD) placement strategy. Strategy must be included in FPA documentation, and Outer Zone leave trees may not be reduced to less than 10 TPA.

- Determine from the FPA if leave trees are dispersed or clumped. Hardwoods only count if they are clumped on sensitive features. Hardwoods and conifers less than 12 inches DBH must be clumped on a sensitive feature as defined in WAC 222-30-021(1)(c)(ii).
- Tally between stations the Outer Zone conifer leave trees 12 inches DBH or greater, if no sensitive features are present. If sensitive features are present, tally hardwoods and conifers 8 inches DBH or greater when clumped on said sensitive feature(s).
- If blowdown 12.0 inches DBH or greater reasonably expected to have fallen since the FPA was approved, include in tally.
- After completion of measurements, calculate acreage of Outer Zone, and determine required number of Outer Zone leave trees.
- **For CMZ Exchanges:**
  - Tally 100 percent of the CMZ trees; conifer tally trees must be greater than or equal to 6 inches DBH and hardwood tally trees must be greater than or equal to 10 inches DBH.
  - Conifer in the CMZ equal to or greater than 6 inches DBH will offset conifer in the Outer Zone at a 1:1 ratio.
  - Hardwood in the CMZ equal to or greater than 10 inches DBH will offset hardwood in the Outer Zone at a 1:1 ratio.
  - Hardwood in a CMZ equal to or greater than 10 inches DBH will offset conifer in the Outer Zone at a 3:1 ratio.
  - The above are by basal area, not stem count.

A dot grid system is recommended for use in field notes for any prescriptions which require trees of various size classes or in different upland zones to be tallied. Refer to the “References” section of Appendix D for an example of the dot grid system.

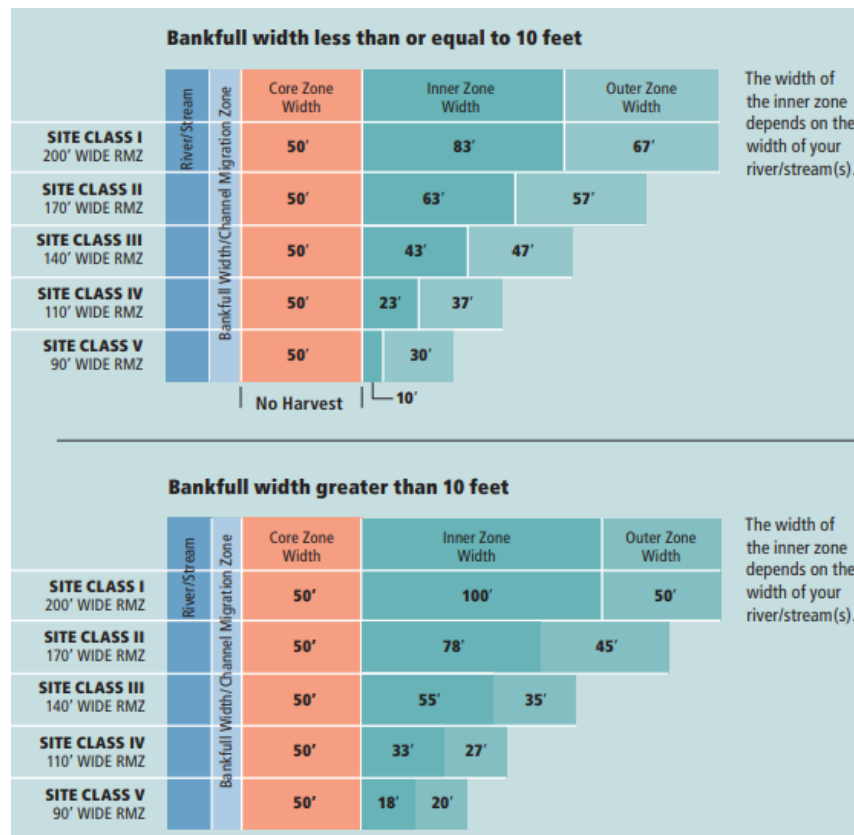
### ***Error Tolerance:***

A 5 percent measurement error tolerance will apply to all zone widths within the RMZ. Stumps within the 5 percent error tolerance (measured from the center of the stump) will be considered compliant. Outer or Inner Zone leave trees that fall within the 5 percent error tolerance may count toward either zone, however they cannot count toward both zones (i.e. these trees may count as an Inner *or* Outer Zone leave tree, not an Inner *and* Outer Zone leave tree). The 5

percent error tolerance does not apply to **number** of stumps cut within a no-harvest zone, but only to measured distance of buffer widths/lengths.

<i>2-Inch Diameter Classes</i>										
<i>Class</i>	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"
<i>Range</i>	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0-30.9

**Figure 3: 2-Inch Diameter Class Ranges**



**Figure 4: DFC1 Buffer Widths**

<b>Inner Zone post-thinning Statistics</b>						
Trees / Acre: 58.73						
Basal Area / Acre: 85.72						
Percent Conifer: 100						
Required Basal Area of Thinned Inner Zone at age 140 must be at least 248.28 Sq. Ft / Acre at age 140.						
Projected Basal Area of Thinned Inner Zone at age 140 will be at least 267.45 Sq. Ft / Acre at age 140.						
The inner zone for Option 1 is from 50 to 93 feet.						
<b>Inner Zone Stand Table</b>						
DBH	Conifers: Can Be Cut	Required Leave Trees	Hardwood: Can Cut All	Required Leave Trees	Conifer BA Cut	Conifer BA Leave
6	16	0	0	0	3.14	0
8	13	0	0	0	4.54	0
10	17	0	0	0	9.27	0
12	41	0	0	0	32.2	0
14	24	3	0	0	25.66	3.21
16	0	22	0	0	0	30.72
18	0	6	0	0	0	10.6
20	0	1	0	0	0	2.18
Totals					74.81	46.71
Option 1 Outer Zone Width: 47						
Option 1 Outer Zone Acres: 0.6						

**Figure 5: DFC Worksheet Example**

## **DFC2 (Leaving Trees Closest to the Water)**

*Note: DFC2 is not permitted for Eastern WA due to the minimum floor (100 feet) constraint.*

The field team will work to establish compliance regarding the eight rules for this prescription listed on the field form. Question #2 (Site Class not underrepresented) is an administrative check performed in advance of the field visit.

DFC2 RMZ buffer widths depend on stream size and site class, and is not an option for some stream width and site class combinations (Figure 6). Both will be referenced in the FPA and listed on the DFC summary sheet attached to the FPA. The DFC printout will include runs for both DFC1 and DFC2 for each segment, so ensure that you are looking at the page(s) specifically for DFC2 and for the correct segment. Buffer widths will be outlined on the DFC worksheet for the selected segment (Figure 7). Inner Zones in the DFC2 prescription are split into a no-cut extension closer to the stream (adjacent to the Core Zone) and a partially harvestable Inner Zone strip between the no-cut extension and the Outer Zone. The division of the Inner Zone widths are dependent on stream size and site class (Figure 6).

The team will move as a unit, establishing either 50- or 100-foot stations (Appendix A) as they go. They will be checking for cut stumps within the Core Zone and no-cut Inner Zone, measuring the diameter of leave trees within the harvestable Inner Zone, and tallying all Outer Zone leave trees that are 12" DBH or greater. The team will also assess if the dominant tree species is consistent with the species listed on the DFC worksheet.

### ***Personnel Layout:***

- At BFW/Edge of CMZ-
  - ***1-2 Participants***
    - Responsible for setting up stations with string box and flagging, determining actual stream width using BFW measurements (Appendix A), ensuring the Inner/Outer Zone personnel are perpendicular to the stream direction, and visibly placing the retractable reflector at the edge of the nearest side of BFW/CMZ to help personnel at other positions to establish the Inner and Outer Zone stations.
- At 50-foot Core Zone Outer Edge-
  - ***1 Participant (OPTIONAL)***
    - Responsible for flagging the 50-foot Core Zone at each appropriate station, looking for cut stumps within the Core and Inner Zones, and helping personnel on the Inner/Outer Zone line establish the appropriate buffer distance and angle to the stream. This position is optional, as there should be no harvest within the no-cut Inner Zone extension. If topography is steep, the zone has low visibility due to brush, or the stream is loud, this position could be necessary for communication purposes.
- At Outer Edge of No-Cut Inner Zone-
  - ***1 Participant***
    - Responsible for flagging the edge of the no-cut zone at each appropriate station, looking for cut stumps within the no-cut zone, and helping



personnel on the Inner/Outer Zone line establish the appropriate buffer distance and angle to the stream.

- At Inner/Outer Zone Edge-
  - **2 Participants**
    - **Person 1-** Responsible for flagging Inner/Outer Zone edge, helping personnel at the outer edge of the Outer Zone establish their distance and position, and taking horizontal distance measurements between stations (parallel to stream) with Person 2 to calculate actual RMZ length.
    - **Person 2-** Remains one station behind to take shots up to Person 1 with the laser rangefinder. Assists in measuring trees in the outer managed portion of the Inner Zone and tallying trees in the Outer Zone.
- Outer edge of Outer Zone-
  - **1 Participant**
    - Responsible for flagging the outer edge of the Outer Zone at the appropriate distance and angle to the stream. If no additional staff are present, this person is also responsible for counting the Outer Zone leave trees (potentially with help from one of the personnel at the Outer/Inner Zone edge) and recording all field data for the team.
- Additional Personnel
  - Any additional personnel can assist in measuring DBH of Inner Zone trees, tallying Outer Zone trees, or scribing field data.

#### ***Core/No-Cut Inner Zone:***

- Between every two stations, determine if trees were harvested within the no-harvest buffer. Between appropriate stations, record in the field notes:
  - Number of trees cut. If too many trees are cut to reasonably count, record approximate number. Differentiate between harvest that occurred in the Core Zone versus the no-cut Inner Zone.
  - Approximate stump diameter, when appropriate.
  - Measured or estimated distance from BFW. This includes trees cut within the 5 percent measurement error tolerance.
    - If there are questions about distance, measure from BFW directly to the center of the stump. This extra measuring will help compensate for sinuosity, bank erosion, etc. along the continuous RMZ width.
  - For line trees, count every other tree as in, just as in standard property line compensation for line trees.
- Trees cut consistently within the 5 percent measurement error tolerance (refer to “Error Tolerance” section below) would result in a deviation from compliance. “Consistently” means greater than 50 percent of the trees within the 5 percent band were removed.
- Compliance or deviation from compliance will be based on rule requirements. Deviation ratings will be based on professional judgment, taking into consideration site-specific conditions on the ground.

#### ***Outer Portion of Inner Zone:***

- Tally stumps in the “floor zone,” the no-harvest portion of the Inner Zone.
- Tally required leave trees in the outer portion of the Inner Zone.

- Leave trees must be conifer measuring 12 inches DBH or greater. This means a tree that falls into the 12-inch diameter *class* (11.0-12.9 inches) measuring 11.0” to 11.9” would not count as a leave tree for the DFC2 prescription.
  - Include blowdown and snags reasonably expected to have been standing at time of harvest in the tally. Trees cut for safety reasons and left on site should also be counted if they fall within the diameter classes of required leave trees.
  - Excess larger diameter class trees may be used to substitute for insufficient smaller diameter class leave trees.
- Tree diameters are measured with a diameter tape in units of tenths of inches.
- If average BFW exceeds 10 feet on site class III ground, DFC2 is not allowed. When these conditions are encountered, the field team is to determine compliance for any relevant rule questions, and may still conduct FPA compliance with the prescription.
- Stream-adjacent parallel roads and DFC2
  - A stream-adjacent parallel road may be an issue for a DFC2 harvest if the basal area components of the stand requirement cannot be met within the sum of the areas of the Inner and Core Zones.
  - An estimation must be made of the approximate basal area that would have been present in the Inner and Core Zones if the road was not present in the Core/Inner Zone.
  - Trees containing basal area equal to the amount determined above will be left elsewhere in the Inner or Outer Zone, or if the zones contain insufficient riparian leave trees, substitute riparian leave trees will be left within the RMZ of other Type F or S Streams in the same unit. Refer to WAC 222-30-021(1)(b)(ii)(B)(II)(iii).
  - Refer to WAC 222-16-010 for the definition of stream-adjacent parallel roads.

### ***Outer Zone:***

Outer Zone leave trees may be reduced by up to 50 percent with large woody debris (LWD) placement strategy. Strategy must be included in FPA documentation, and Outer Zone leave trees may not be reduced to less than 10 TPA.

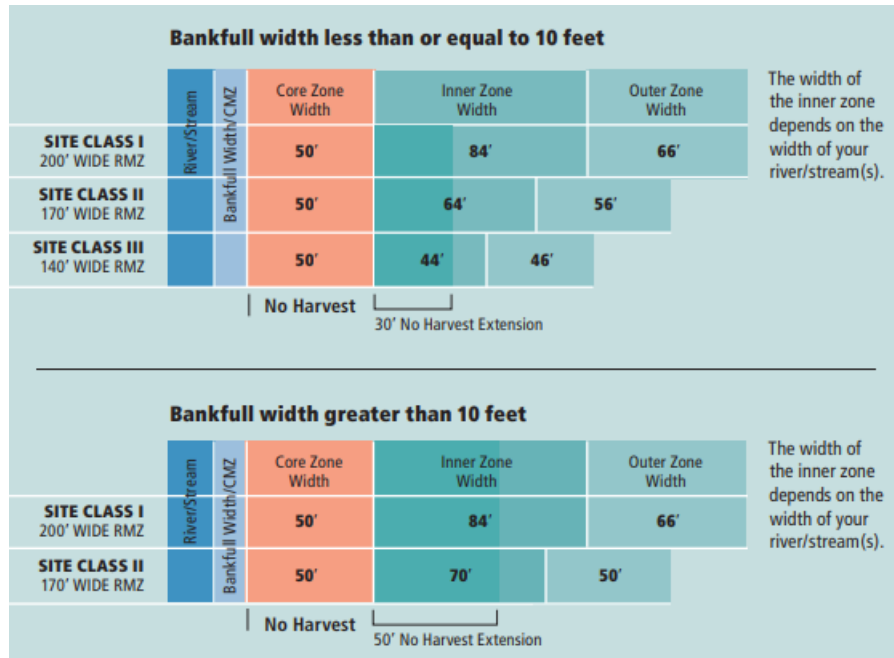
- Determine from the FPA if leave trees are dispersed or clumped. Hardwoods only count if they are clumped on sensitive features. Hardwoods and conifers less than 12 inches DBH must be clumped on a sensitive feature as defined in WAC 222-30-021(1)(c)(ii).
- Tally between stations the Outer Zone conifer leave trees 12 inches DBH or greater, if no sensitive features are present. If sensitive features are present, tally hardwoods and conifers 8 inches DBH or greater when clumped on said sensitive feature(s).
- If blowdown 12.0 inches DBH or greater reasonably expected to have fallen since the FPA was approved, include in tally.
- After completion of measurements, calculate acreage of Outer Zone, and determine required number of Outer Zone leave trees. Reduce as needed for DFC2 basal area exchange (detailed below) or LWD placement strategy.

- Check for basal area exchanges associated with DFC2 prescriptions. These will be listed on the DFC2 attachment and appropriate RMZ codes must be included in the associated FPA tables.
- **For CMZ Exchanges:**
  - Tally 100 percent of the CMZ trees; conifer tally trees must be greater than or equal to 6 inches DBH and hardwood tally trees must be greater than or equal to 10 inches DBH.
  - Conifer in the CMZ equal to or greater than 6 inches DBH will offset conifer in the Outer Zone at a 1:1 ratio.
  - Hardwood in the CMZ equal to or greater than 10 inches DBH will offset hardwood in the Outer Zone at a 1:1 ratio.
  - Hardwood in a CMZ equal to or greater than 10 inches DBH will offset conifer in the Outer Zone at a 3:1 ratio.
  - The above are by basal area, not stem count.

A dot grid system is recommended for use in field notes for any prescriptions which require trees of various size classes or in different upland zones to be tallied. Refer to the “References” section of Appendix D for an example of the dot grid system.

***Error Tolerance:***

A 5 percent measurement error tolerance will apply to all zone widths within the RMZ. Stumps within the 5 percent error tolerance (measured from the center of the stump) will be considered compliant. Outer or Inner Zone leave trees that fall within the 5 percent error tolerance may count toward either zone, however they cannot count toward both zones (i.e. these trees may count as an Inner *or* Outer Zone leave tree, not an Inner *and* Outer Zone leave tree). The 5 percent error tolerance does not apply to **number** of stumps cut within a no-harvest zone, but only to measured distance of buffer widths/lengths.



**Figure 6: DFC2 Buffer Widths**

<b>Inner Zone Floor:</b> 50 to 81 feet, no harvesting allowed.
<b>ClearCut Inner Zone :</b> 81 to 94 feet, Need 7 Riparian leave trees in this area. Leave trees must be at least 12 inches at DBH.
<b>Outer Zone:</b> 94 to 140 feet, Need 24 Riparian leave trees in this area.
<b>Option 2 Outer Zone Width:</b> 46
<b>Option 2 Outer Zone Acres:</b> 1.16

**Figure 7: DFC2 Worksheet Example**

## **Non-Fish Perennial (Np) Streams**

*Note: Rules differ for Np streams between the western and eastern WA. Be sure that you have the correct form for your location. These instructions are separated into Westside and Eastside procedures.*

### **Np streams (Western WA)**

The field team will work to establish compliance regarding the seven rules for this prescription listed on the field form. Np streams require either a no-harvest 50-foot buffer or a partial buffer depending on stream length and proximity to Type F or S streams (Figures 8-10).

The team will determine the location of upper-most point of perennial flow/perennial initiation point (UMPPF/PIP) if applicable, and then check buffer distances according to the selected strategy listed on the FPA. They will check for cut stumps within the no-cut buffer, sensitive site buffers, and alluvial fans.

### ***Continuous 50-foot No-Cut Personnel Layout:***

- At BFW
  - ***1-2 Participants***
    - Responsible for setting up stations with string box and flagging, measuring the total length of the stream and lengths of cut and no-cut zones, ensuring personnel on the 50-foot no-cut line are perpendicular to the stream direction, and visibly placing the retractable reflector at the edge of BFW nearest those measuring buffer widths. Check for fish physicals and for the presence of fish to determine stream typing. Look for alluvial fans and confluences of two or more Np streams.
- At 50-foot No-Cut Edge-
  - ***All Remaining Participants***
    - Responsible for flagging the 50-foot no-cut zone at each appropriate station, looking for cut stumps within the buffer zone. Look out for headwall and side-slope seeps.

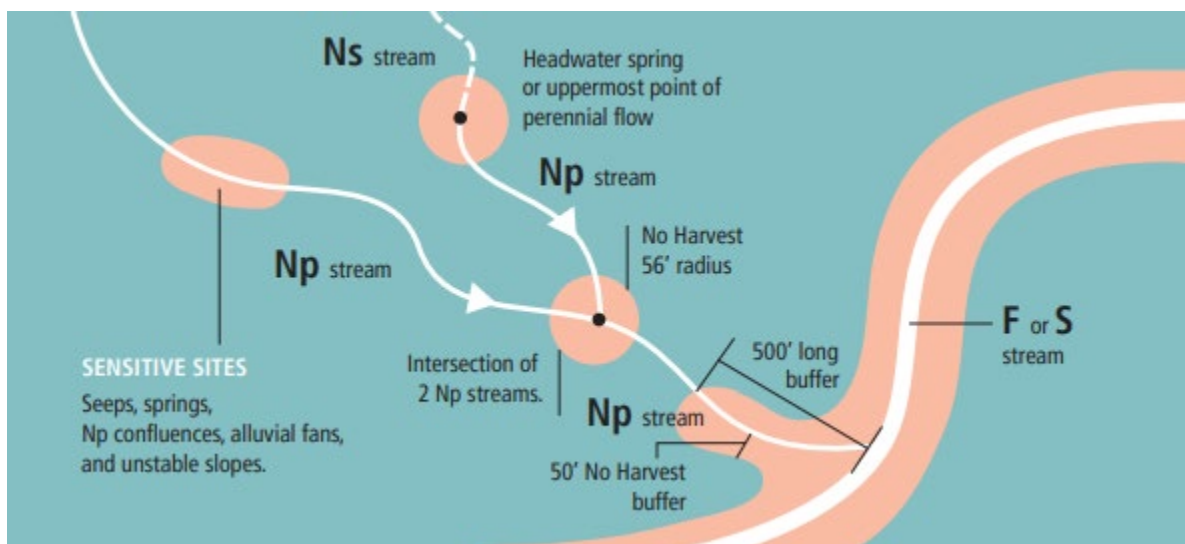
### ***Additional Information:***

- **Upper most point of perennial flow (UMPPF, formerly perennial initiation point [PIP])**
  - These can vary from year to year.
  - CMP will use marking implemented by the landowner if it is available.
  - Use other indicators if the UMPPF is not marked, or if flagging is absent.
    - Measure the UMPPF buffer from the center of the 56-foot radius leave tree area.
    - Use maps to observe the junction of Ns streams, base of outcrop, or other features that may indicate an UMPPF's location.
- **Other sensitive sites**
  - No harvest is allowed within 56 feet of the confluence of two or more Np streams.
  - No harvest is allowed on an alluvial fan.

- No harvest is allowed within 50 feet of the outer perimeters of soil zones perennially saturated by headwall or side-slope seeps.
- Any harvest in the no-cut buffer is non-compliant for both FPA and rules.
- **Harvesting Np RMZs**
  - Look for equipment entry into the 30-foot equipment limitation zone (ELZ).
    - If there was entry, assess if there is greater than or equal to 10 percent soil exposure and if any mitigation for soil exposure was implemented.
  - No salvage is permitted in the buffered portion of an Np RMZ or associated sensitive sites.
  - "Appropriate length and configuration" of 50-foot no-cut buffer includes the total length and configuration of the RMZ, correct length upstream from Type F/N break, and minimum 100-foot no-cut reaches to count toward total required percentage to be buffered. Refer to Figures 9-10 for buffer requirements based on total stream length.
  - "Appropriate length and configuration" also includes proper layout for RMZs affected by stream-adjacent parallel roads
    - Additional acres of leave trees are required equal to the acres occupied by an existing stream-adjacent parallel road within a Type Np RMZ or sensitive site buffer.
    - Refer to WAC 222-16-010 for the definition of stream-adjacent parallel roads.

***Error Tolerance:***

A 5 percent measurement error tolerance will apply to all zone widths within the RMZ. Stumps within the 5 percent error tolerance (measured from the center of the stump) will be considered compliant.



**Figure 8: Example Np Buffer Scenario**

<b>Length of Type Np Water from the confluence of Type S or F Water</b>	<b>Length of 50-foot buffer required on Type Np Water (starting at the confluence of the Type Np and connecting water)</b>
Greater than 1,000'	500'
Greater than 300' but less than 1,000'	Distance of the greater of 300' or 50% of the Type Np Water
Less than or equal to 300'	The entire length of the Np Water

**Figure 9: Required no-harvest, 50-foot buffers on Type Np Waters.**

<b>Total length of a Type Np Water upstream from the confluence of a Type S or F Water</b>	<b>Percent of length of Type Np Water that must be protected with a 50-foot no-harvest buffer more than 500 feet upstream from the confluence of a Type S or F Water</b>
1,000 feet or less	Refer to table in Figure 9 above
1,001 – 1,300 feet	19%
1,301 – 1,600 feet	27%
1,601 – 2,000 feet	33%
2,001 – 2,500 feet	38%
2,501 – 3,500 feet	42%
3,501 – 5,000 feet	44%
Greater than 5,000 feet	45%

**Figure 10: Minimum percent of length of Type Np Waters to be buffered when more than 500 feet upstream from the confluence of a Type S or F Water**

### **Np Streams (Eastern WA)**

The field team will work to establish compliance regarding the 15 rules (divided by management strategy; all 15 rules on this form will never apply to one segment) for this prescription listed on the field form. Proponents in Eastern WA are required to select a management strategy for Np streams; either no-cut, clearcut (partial), or partial cut (thin).

The team will determine the location of headwall spring or uppermost point of perennial flow (UMPPF) if applicable, and then check buffer distances according to the selected strategy listed on the FPA. They will check for cut stumps within the no-cut buffer and sensitive site buffers. For clearcut (partial) strategy, they will also check the length of clearcut and no-cut portions. For partial cut (thin) strategy, they will also check that the target basal area is met.

### ***Personnel Layout:***

- At BFW-
  - ***1-2 Participants***
    - Responsible for setting up stations with string box and flagging, measuring the total length of the stream and lengths of cut and no-cut zones, ensuring personnel on the 50-foot no-cut line are perpendicular to the stream direction, and visibly placing the retractable reflector at the

edge of BFW nearest those measuring buffer widths. Check for fish physicals and for the presence of fish to determine stream typing. Look for alluvial fans and confluences of two or more Np streams.

- At 50-foot Edge-
  - ***All Remaining Participants***
    - Responsible for flagging the 50-foot no-cut zone at each appropriate station, looking for cut stumps within the buffer zone. Look for sensitive sites.
    - For partial cut (thin) strategy, they will check basal area of thinned RMZ to ensure it meets the target.

***Additional Information:***

- **Headwall springs or uppermost point of perennial flow (UMPPF, formerly perennial initiation point [PIP])**
  - These can vary from year to year.
  - CMP will use marking implemented by the landowner if it is available.
  - Use other indicators if the headwall spring is not marked, or if flagging is absent.
    - Measure the headwall spring buffer from the center of the 50-foot radius leave tree area.
    - Use maps to observe the junction of Ns streams, base of outcrop, or other features that may indicate a headwall spring's location.
- **Other sensitive sites**
  - No harvest is allowed within 50 feet of the confluence of two or more Np streams.
  - No harvest is allowed within 50 feet of an alluvial fan.
  - No harvest is allowed within 50 feet of the outer perimeters of soil zones perennially saturated by headwall or side-slope seeps.
  - Any harvest in the no-cut buffer is non-compliant for both FPA and rules.
- **Harvesting Np RMZs**
  - Look for equipment entry into the 30-foot equipment limitation zone (ELZ).
    - If there was entry, assess if there is greater than or equal to 10 percent soil exposure and if any mitigation for soil exposure was implemented.
  - No salvage is permitted in the buffered portion of an Np RMZ or associated sensitive sites.
  - Determine which of the three strategies the proponent is using on the segment:
    - No-Cut
      - Ensure no timber was cut within 50 feet of BFW
    - Clearcut (Figure 11)
      - Ensure all harvest is at least 50 feet from all sensitive sites.
      - Measure length of no-cut and clearcut sections of Np segment
        - a. Total no-cut length must be equal to or greater than total clearcut length.
        - b. Clearcut sections must be less than or equal to 30 percent of the entire segment length within the harvest unit.
        - c. Clearcut sections must be less than 300 feet in continuous length and at least 500 feet away from confluence with Type S or F waters



- Partial Cut (Thin)- (Figure 11)
  - Basal area (BA) requirements are the same as EWA Inner Zone rules by habitat type. To meet basal area requirements, leave tree priorities, in descending order, are:
    - a. Ensure the largest 10 TPA were retained (look for larger stumps).
    - b. Up to an additional 40 TPA  $\geq 10$ " DBH must be left if BA target has not been met with trees above.
    - c. Up to an additional 50 trees  $> 6$ " DBH are required if BA target has not been met with trees above.
- "Appropriate configuration" includes proper layout for RMZs affected by stream-adjacent parallel roads
  - For a road that is within 30 to 49 feet measured horizontally from the outer edge of BFW:
    - 100 feet total RMZ measured horizontally must be left. Both sides of the stream count toward the total.
    - If harvest is only occurring on one side of the stream, then 50 feet of RMZ width must be left, regardless of presence of a stream-adjacent parallel road.
    - The width of the road is not counted as part of the total width of the RMZ.
    - Follow the priority order of required RMZ location for stream-adjacent parallel roads in WAC 222-30-022(2)(c).
  - For a road that is within less than 30 feet measured horizontally from the outer edge of BFW:
    - In addition to the above requirements, all trees between the stream and streamside edge of the road must be left.
  - Refer to WAC 222-16-010 for the definition of stream-adjacent parallel roads.

***Error Tolerance:***

A 5 percent measurement error tolerance will apply to all zone widths within the RMZ. Stumps within the 5 percent error tolerance (measured from the center of the stump) will be considered compliant.

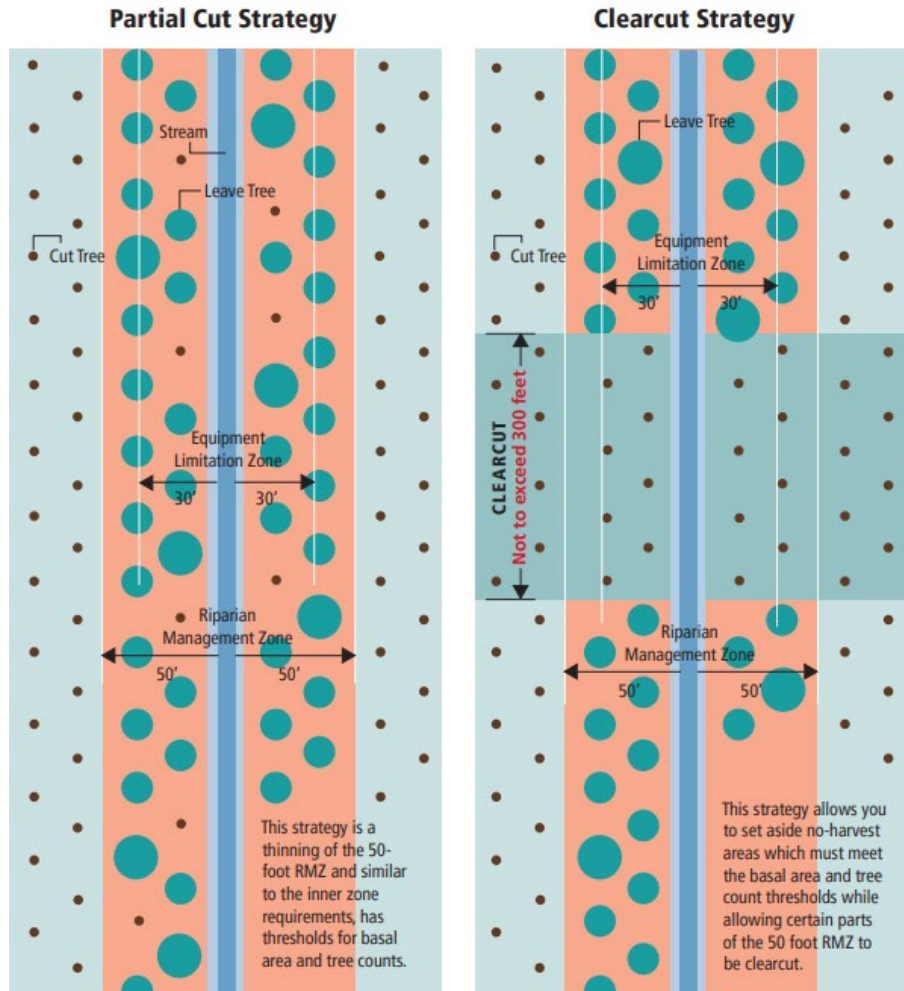


Figure 11: Eastern WA Np Partial Cut and Clearcut Strategies

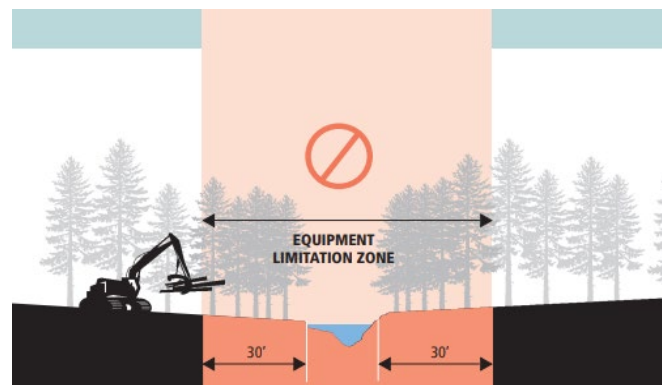
## **Non-Fish Seasonal (Ns) Streams**

The field team will work to establish compliance regarding the two rules for this prescription listed on the field form.

- Evaluate whether the stream was typed correctly, even if the stream was buffered
  - If flowing, check for perennial obligate vegetation (Figure 12).
- Look for equipment entry into the 30-foot ELZ (Figure 13).
- If there was entry, assess if greater than or equal to 10 percent of the soil within the ELZ was exposed, and if any mitigation for soil exposure was implemented.
- If there was no disturbance or less than 10 percent disturbance, the ELZ rule is not applicable.



**Figure 12: Trees and Plants associated with Riparian and Wetland Areas**



**Figure 13: Equipment Limitation Zone**

## **Non-Forested (Type A & B) Wetlands**

The field team will work to establish compliance regarding the 13 rules for this prescription listed on the field form.

WMZ buffer widths depend on wetland size and type, and not all wetland sizes have WMZ requirements. The team will be checking that the wetland was typed correctly, for cut stumps within the minimum WMZ width, and tallying leave trees by diameter ranges within the harvestable portion of the WMZ.

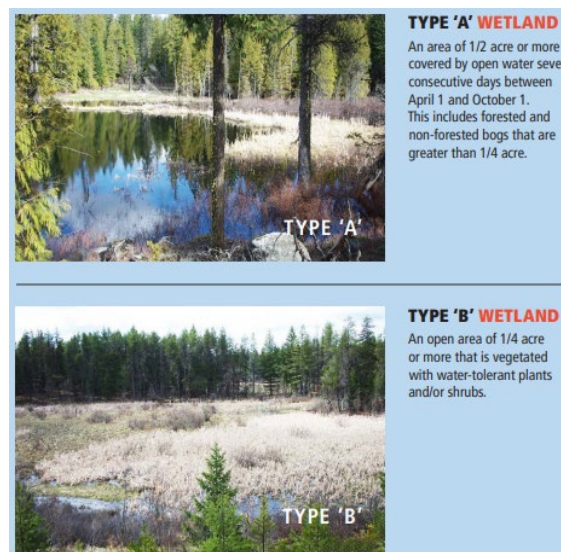
- Verify wetland type and size (Figure 15, Appendix A, and Board Manual Section 8). This includes determining whether periodically inundated and associated with other typed water, off-channel habitat, or default Type F physicals are present. Refer to wetland definitions in WAC 222-16-035 and Type 3 water definitions in WAC 222-16-031\*(3).
- Measure WMZ per the wetland typing in the FPA (Figure 14 and Appendix A).
- If the FPA specifies that harvest will occur within the maximum width WMZ, verify compliance with the rules below for harvest in the WMZ with a variable width buffer:
  - Measure the wetland and applicable WMZ (Appendix A).
  - Tally 100 percent of the trees for each required size class in the WMZ.
  - Calculate trees per acre of each rule requirement:
    - Trees 6 to 12 inches DBH (4 to 12 inches in Eastern Washington).
    - Trees greater than 12 inches but less than 20 inches DBH.
    - Trees greater than 20 inches DBH.
  - If the WMZ laid out by the applicant does not have either 25 TPA greater than 12 inches DBH or five TPA greater than 20 inches DBH, you must check the maximum WMZ width per WMZ tables for trees and stumps that would fall into these categories. Refer to Figures 16-18 for examples of different WMZ layouts.
- If the FPA specifies that no harvest will occur within the maximum width WMZ, verify that no harvesting within the WMZ occurred. If harvesting did occur, the sample becomes FPA noncompliant and shall be assessed for rule compliance according to the rules above for harvest in the WMZ with a variable width buffer.

### ***Error Tolerance:***

A 5 percent measurement error tolerance will apply to all WMZ widths. Stumps within the 5 percent error tolerance (measured from the center of the stump) will be considered compliant.

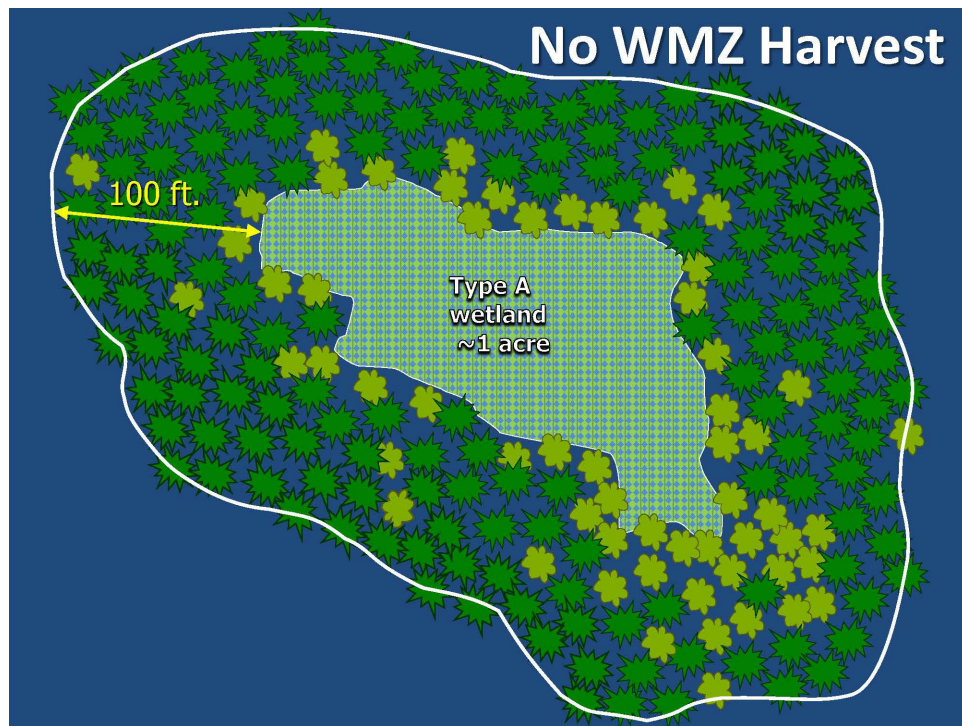
Wetland Type	Acres of Non-Forested Wetland*	Maximum WMZ Width (feet)	Average WMZ Width (feet)	Minimum WMZ Width (feet)
A (including bogs*)	Greater than 5	200'	100'	50'
A (including bogs*)	0.5 to 5	100'	50'	25'
A (bogs only*)	0.25 – 0.5	100'	50'	25'
B	Greater than 5	100'	50'	25'
B	0.5 to 5	No WMZ Required	No WMZ Required	25'
B	0.25 to 0.5	No WMZ Required	No WMZ Required	No WMZ Required
Forested	No WMZ required. Low impact harvesting allowed. Additional restrictions apply. * For bogs, both forested and non-forested areas are included.			

**Figure 14: Wetland Management Zone Widths**

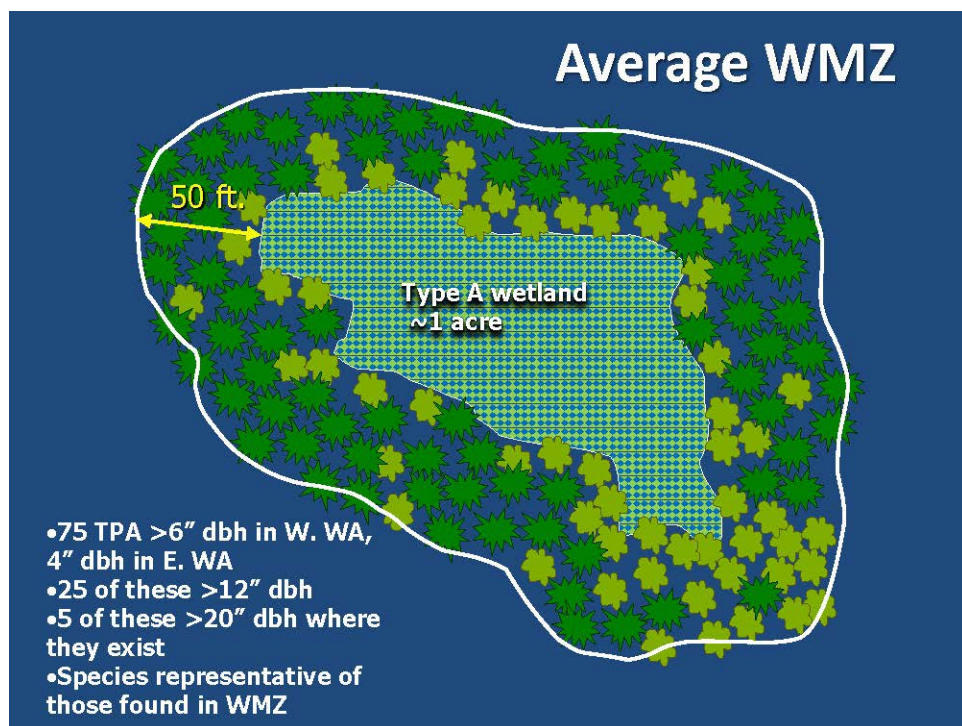


**Figure 15: Type A and B Wetlands**





**Figure 16: One-Acre Type A Wetland with No-Cut WMZ Sample Illustration**



**Figure 17: One-Acre Type A Wetland with Average WMZ Sample Illustration**



**Figure 18: One-Acre Type A Wetland with Maximum WMZ Sample Illustration**

## **Forested Wetlands**

The field team will work to establish compliance regarding the three rules for this prescription listed on the field form.

- Verify type and size (Figure 19, Appendix A, and Board Manual Section 8). This includes determining whether periodically inundated and associated with other typed water, off-channel habitat, or default Type F physicals are present. Refer to wetland definitions in WAC 222-16-035 and Type 3 water definitions in WAC 222-16-031\*(3).
  - For forested wetlands, crown closure requirements must be met by merchantable tree species.
    - For example, a wetland containing less than 30 percent crown closure of Douglas-fir or other merchantable conifer species and over 30 percent crown closure of red alder in a region of the state with no alder market would be considered a non-forested wetland.
  - Base cover of merchantable tree seedlings and saplings in the wetland on estimated percentage crown closure at maturity.
- Verify that harvest within the forested wetland was limited to low impact systems unless otherwise approved in writing by DNR. If no harvest occurred in the forested wetland, this rule is not applicable.
  - Low impact systems include the following:
    - Reaching into the wetland with equipment while keeping tracks and wheels out
    - Laying down slash to reduce potential for rutting
    - Cable yarding cut trees out of the wetland
- If a forested wetland is greater than three acres, verify that approximate boundaries were delineated and mapped.



**Figure 19: Forested Wetlands**



## **Roads**

1. Review all new construction and up to one field days' worth of abandonment, including Type N crossings.
2. Read roadwork information included in the FPA carefully to insure that everything is included.
3. New road construction will be walked or driven for the entirety of the construction.
4. Each segment of road construction will be assessed for compliance separately. Thus, if construction includes four spurs, each spur will be assessed separately. It is possible to have four different answers for compliance in this scenario. **Compliance is recorded as a fraction for roads prescriptions.** For example, if you were to look at four different segments of road and three out of four were compliant for a specific rule, record  $\frac{3}{4}$  for that rule.
5. Further, each culvert installation and stream crossing will be assessed separately. Compliance or deviations from compliance will be assessed on each individual installation within a road spur.
6. A dot grid system is recommended for use in field notes when reviewing multiple road segments or culvert installations. Refer to the "References" section of Appendix D for an example of the dot grid system.

## **Haul Routes**

1. Safety is of paramount concern, especially when reviewing active haul routes. When a haul route is active, use CB radio for communicating location by mile marker, park in visible locations, and wear high-visibility PPE. The goal is to attempt to review at least some active haul routes. However, if traffic is too heavy and it is not safe to review, drop the unsafe haul route, and the next sample on the list will be chosen.
2. FPAs selected for haul route prescription must include timber harvest and haul of timber products (i.e. not FPAs with just roadwork, stream crossing construction or maintenance, etc.).
3. Haul routes less than five miles from the harvest unit to public roads will entail assessment of 100 percent of the haul route. Road segments across non-forestland or non-DNR jurisdiction (i.e. county roads, federal roads, and roads through rangeland in eastern WA) are not surveyed and will not be included in the total. For haul routes greater than five miles from harvest units to public road, randomly select 0.5 mile segments throughout the entire haul route to be surveyed to total five miles in length. If more than one haul route is identified on an FPA, use the longest route.
4. Haul routes will be selected from the FPAs already selected for review for other prescriptions. Haul routes will be reviewed by using the highest ranked FPA selected in a region for another prescription and working down the list until the target number of haul routes for the region have been completed. Because some haul routes may be used by multiple FPAs on a road system that could span different ownerships, it is important to note that the use of the haul route by a different FPA than the one for which it is chosen is of no consequence. As with other Compliance Monitoring prescriptions, haul routes are not tied to landowner or operator in the data collection or analysis.
5. Segments will be recorded in 0.1 mile increments.
6. No stream typing surveys will be done as part of any haul route survey.
7. The haul route spreadsheet has several options for non-compliance. Write any additional information regarding non-compliance in the comments section.
8. Record cross drains, stream crossings, and any other relevant information in comments.
9. Use particular care when assessing delivery potential at stream crossings, at drains within 200' upslope from streams or wetlands, and along stream-adjacent parallel roads. At a minimum, it is usually necessary to stop at all stream crossings and walk the road upslope to the next cross drain.
10. When possible, begin the haul route survey from the selected FPA's furthest interior landing within the harvest unit furthest from a public road.

## **Appendix A. Stream and Wetland Measurements**

### **Stream Measurements**

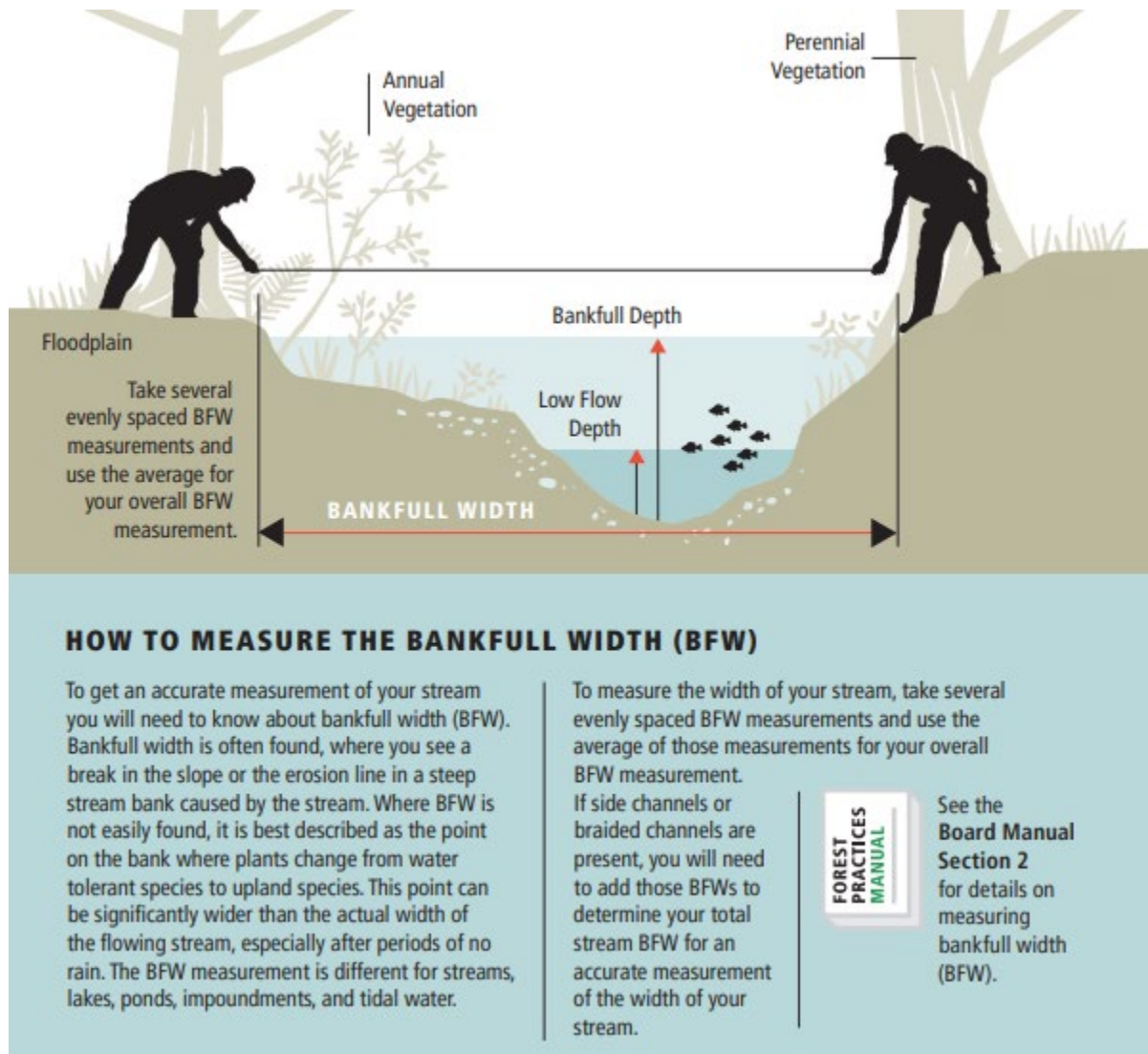
- Stream measurements serve two purposes: to determine bankfull width (BFW) (Figure 20) and gradient (%), and to determine starting point for RMZ or WMZ measurements. BFW measurements are not necessary if the channel is obviously greater or less than 10 feet in Western Washington, or obviously greater or less than 15 feet in Eastern Washington.
  - Measurements start at 0+00. This is where the first RMZ measurement should be taken. If the stream segment starts near a road or culvert that may influence BFW, do not start BFW measurements here, even though an RMZ measurement may be taken. The goal is to get at least 10 measurements, as evenly-spaced as possible, that are **representative** of the stream's BFW. Increments of 100-foot or 50-foot stations are common. Recording a representative measurement will override spacing goals. Clearly flag all locations where BFW was measured and note the corresponding station in permanent marker on the flagging (0+00, 1+00, 2+00, etc.).
  - For short segments (less than 300 feet long):
    - It may be excessive to take 10 evenly-spaced measurements. Take as many as make sense, as long as they are representative.
  - For medium segments (greater than 300 feet, but less than 1,000 feet long):
    - First station is 0+00. May take a BFW measurement here if it is representative.
    - Use stationing that will result in at least 10 relatively evenly-spaced measurements, keeping in mind that obtaining a representative measurement will override spacing requirements. For segments between 500 and 1,000 feet, use 50-foot stations.
    - If BFW is not in doubt and no BFW measurements will be taken, use 100-foot stationing to facilitate RMZ width measurements.
  - For large segments (greater than 1,000 feet long):
    - Stationing will be 100 feet apart.
    - If no BFW is taken at 0+00, next station will be 0+50. Start BFW measurements here.
    - If BFW is not in doubt and no measurements will be taken, maintain 100-foot stationing in order to facilitate RMZ measurements.
  - Supplemental or intermediate stations should be added as needed where sharp turns or meander bends occur, to ensure that stumps and leave trees are attributed to the correct zones. Document added stations in field notes, and make sure participants are aware that these are non-standard stations to prevent double-counting of leave trees and stumps.
- If terrain, brush, blowdown etc., does not accommodate above stationing guidelines, use what works for visibility and note in field notes any offset distances and directions. After an offset station, continue with standard stationing. If measuring BFW, you must still attempt to use guidelines above. If measurements cannot be taken safely, consider dropping the segment and selecting a replacement.

- Compliance of stream BFW will use the standard 5 percent measurement error tolerance as with other measurements, except in this case the 5 percent applies to the *average* width found. For example, streams found to average Greater Than or Equal to (GTE) 10.5 feet in Western WA or GTE 15.75 feet in Eastern WA are considered large streams.
- Overlapping RMZs (Refer to diagram in Appendix C)
  - Continue flagging through overlapping RMZs. Note on flags which segment they are for to avoid confusion during tree counts.
  - Trees in overlapping RMZs count toward the leave trees for each stream in its respective RMZ.
- Starting point should be determined by marking on the ground, landowner knowledge, or using the FPA and associated maps to determine the location.
  - If starting point is difficult to determine, mark in the field and document in notes the reasoning for the decision. If decision may affect compliance, it might be best to drop the segment and select a different one.
  - If segment begins at a confluence, begin measurements there to ensure that leave trees in the overlapping zones are counted.
- Channel Migration Zones (CMZs) and alluvial fans
  - Most types of CMZs apply only to S or F waters.
  - Alluvial fans are the only type of CMZs that apply to Np waters.
  - CMZ locations are identified by determining if they meet the definition of a CMZ as provided by WAC 222-16-010. The field form from Board Manual Section 2 is used in this determination. This field form is a hierarchical flow chart that starts at the top and progresses to the bottom. The first criterion must be satisfied before proceeding to the next criterion.
    - If the landowner stated that there was no CMZ, and there does not appear to be one, start RMZ measurements at BFW.
    - If it is determined that a CMZ is present, begin measurements at the outer edge of CMZ.
    - If CMZ presence is indeterminate, take measurements from both BFW and the outer edge of potential CMZ for comparison when the CMZ determination is made. A DNR expert will be called to visit the site and determine CMZ presence. Compliance Monitoring participants are encouraged to attend, but only for informational purposes.
  - Document in field forms if BFW or CMZ presence is in conflict with approved FPA.

## **Wetland Measurements**

- Wetland measurements serve to validate WMZ requirements based on the total size of the wetland by type for non-forested wetlands, and to determine mapping requirements for forested wetlands.
- Use GPS to traverse wetland, or laser rangefinder to measure widths along the wetland to calculate the area in acres. Use Board Manual Section 8 for assistance in delineating wetland edges. It may also be possible to roughly estimate the total wetland size by use of aerial imagery prior to the field visit. If using this method, on-the-ground verification may still be necessary.

- For non-forested (Type A or B) wetlands:
  - Measure WMZ per the wetland typing in the FPA (Figure 14).
    - Follow boundary as marked on the ground by the applicant, if available.
    - Calculate WMZ acreage using the **average** width specified in the WMZ table.
      - Measure variable widths and distances of the WMZ and record in notes.
    - Refer to the section “Non-Forested (Type A & B) Wetlands” for guidance on assessing compliance with leave tree requirements.



**Figure 20: Bankfull Width Measurements**

## **Appendix B. Stream Typing**

- The CMP bases stream typing on physical characteristics, absent any supporting documentation (Water Type Modification Form, Inter-Disciplinary Team (IDT) Informal Conference Notes, or other IDT-related documentation). The CMP does not base any stream typing calls on DNR's hydro layer alone. The prescription selection will be based upon stream typing calls made by applicants in their FPA. When there is a discrepancy between the type of a segment listed on the application and the type listed on a WTMF or WTCW, the WTMF/WTCW water type shall take precedence.
- The CMP does not challenge supporting documentation originating on or after March 20, 2000 for stream typing decisions. Acceptable documentation includes, but is not limited to, an approved WTMF, protocol survey following guidelines outlined in Board Manual Section 13, or ID team documentation. ID team visits may be documented in several ways, including an ICN, email, application attachments, or the additional information section of approved FPAs.
- Type Ns streams as well as Type A and B wetlands can be difficult to assess during the wet season. Presence of certain species of perennial vegetation can often help assess water type when visiting at a less favorable time of year (refer to Board Manual Section 8 for plant indicator lists). In the absence of conclusive evidence to the contrary, Ns streams and non-forested wetland delineation are based upon the FPA information. This applies only to Ns vs. Np, not to Ns vs. F, or only to wetlands lacking an inlet/outlet, or wetlands with inlets or outlets that do not meet F physicals. For the following example scenarios, a determination of compliant or indeterminate would be acceptable:
  - a. Scenario 1: A wetland labeled as a Type B wetland on the FPA may have half an acre of open water on the day of field review during the wet season. Type A wetlands must have at least 1/2 acre of open water for at least seven consecutive days between April 1 and October 1, and the field review team is only on site for one day. Therefore, conclusive evidence (i.e. the knowledge that the half acre of water is present for seven consecutive days) with which to call the wetland typing non-compliant is not available.
  - b. Scenario 2: A stream labeled as Ns on the FPA may still have flow on the day of field review during the wet season. This stream may dry up later in the year, and perennial flow is not often possible to determine conclusively on one day during the wet season.
- For possible discrepancies with regard to water or wetland typing, include a description on the field form. In the past, CMP used the Supplemental Water Information Form (SWIF). However, due to redundancy between information on this form and field forms and notes, the current procedure is to note this information on the field form rather than on a SWIF.

## Appendix C. Overlapping RMZs

Trees in overlapping RMZs count towards the leave trees for each stream in its respective RMZ. Where the Outer Zone of stream “A” overlaps a Core Zone or a no-harvest Inner Zone of stream “B”, you can count trees in these two zones for the 20 trees per acre in the Outer Zone of stream “A”. However, if the landowner has selected the clumping strategy for Outer Zone leave trees, the locations of these areas must be clearly identified on the FPA.

Diagram for Sampling Stream “A” RMZ

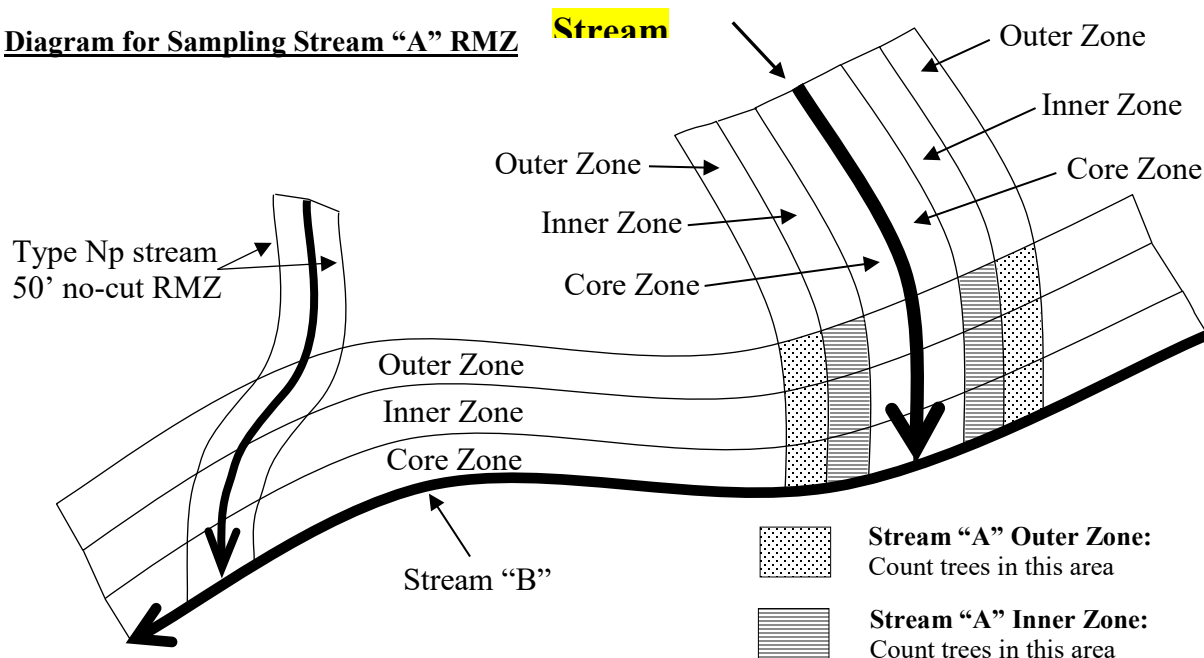
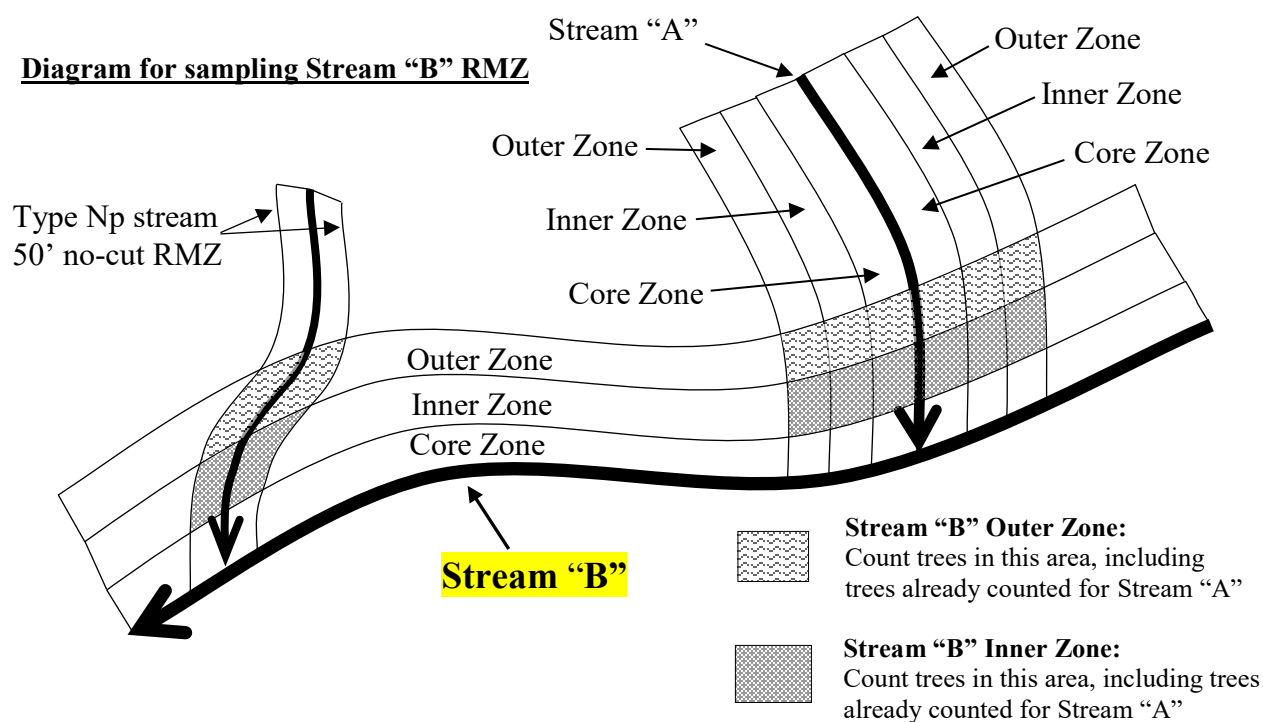


Diagram for sampling Stream “B” RMZ







2. Field notes template example for Inner/Outer Zone positions:

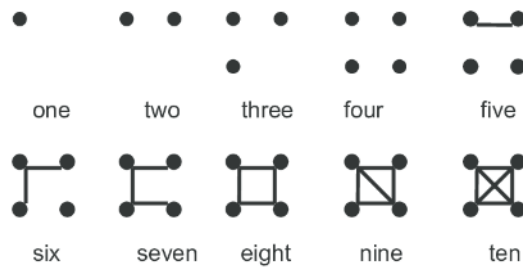
**Segment ID:**

**Note Taker:**

## DATA COLLECTION

[illegible]

3. A dot grid system is recommended for use in field notes for any prescriptions which require trees to be tallied of various size classes or in different upland zones:



4. Deviation Rating Suggested Guideline Tables:

Core Zone

	<b>LOW</b> 1-10 yard(s) sediment 1-2 trees	<b>MODERATE</b> 11-20 yards sediment 3-7 trees	<b>HIGH</b> >20 yards sediment >8 trees
SHORT-TERM 1-2 years	Small Impact	Mod. Impact	High Impact
MOD-TERM 3-5 years	Small Impact	Mod. Impact	High Impact
LONG-TERM >5 years	Mod. Impact	High Impact	High Impact

Inner and Outer Zones

	<b>LOW</b> 1-10 yard(s) sediment 1-5 trees	<b>MODERATE</b> 11-20 yards sediment 6-10 trees	<b>HIGH</b> >20 yards sediment >10 trees
SHORT-TERM 1-2 years	Small Impact	Mod. Impact	High Impact
MOD-TERM 3-5 years	Small Impact	Mod. Impact	High Impact
LONG-TERM >5 years	Mod. Impact	High Impact	High Impact