UNSTABLE SLOPES

Most of the rules summarized below are simplified and are not complete. All of the chapters are hyperlinked for the reader's convenience to review rules in their entirety if desired. Please note, rules marked with an asterisk (*) pertain to water quality protection and have been adopted by the Forest Practices Board with agreement from the Department of Ecology per WAC 222-12-010

Chapter 222-10 WAC, State Environmental Policy Act Guidelines

WAC 222-10-010 Policies and authorities.

- A forest practices application or notification that requires a threshold determination will be conditioned when necessary to mitigate specific adverse impacts identified in environmental documents prepared under SEPA.
- An application or notification will be disapproved when the proposal would result in significant adverse impacts identified in a final or supplemental environmental impact statement prepared under SEPA, and reasonable mitigation measures are insufficient to mitigate the identified impacts and denial is consistent with all provisions of (the authority granted in RCW 76.09.010 and the SEPA law and rules.)

WAC 222-10-030 *SEPA policies for potentially unstable slopes and landforms.

- In addition to the SEPA policies established elsewhere in this chapter, the following policies apply to forest practices described in WAC 222-16-050 (1)(d) relating to construction and harvest on potentially unstable slopes and landforms.
  (1)To determine the likelihood of probable significant adverse impact, the applicant must submit materials prepared by a qualified expert, as defined in (5) below, that describes the potentially unstable landforms in and around the site and analyses the likelihood that the proposal will cause or contribute to movement on those slopes, the likelihood of delivery to a public resource or threaten public safety, and any possible mitigation.
  (2) The department's threshold determination must evaluate whether the proposal will increase the probability of mass movement, deliver sediment or debris to a public resource or threaten public safety, and movement or delivery is likely to cause significant adverse impacts. If yes to all these, the proposal is likely to have a probable significant adverse impact which requires an EIS.
  (3) The department must consult with other agencies and Indian tribes.
  (4) Mitigation must be designed to avoid accelerating mass wasting.
  (5) A qualified expert means a person licensed as an engineering geologist or hydrogeologist with at least three years of field experience on forested lands.

Chapter 222-12 WAC, Policy and Organization

The policies in this section all apply to biomass harvest. These may be of particular interest:

WAC 222-12-010 Authority: Promulgation of all forest practices rules shall be accomplished so that compliance with such forest practices rules will achieve compliance with the water quality laws.
WAC 222-12-040 Alternate plans—Policy: All forest practice operations must comply with both the act and the rules promulgated pursuant to the act, unless an alternate plan has been approved by the department.
WAC 222-12-0401 *Alternate plans – Process. Alternate plans must contain a map showing the locations of any unstable slopes, etc.
WAC 222-12-045 Adaptive Management Program: (1) **Purpose:** The purpose of the program is to provide science-based recommendations and technical information to assist the board in determining if and when it is necessary or advisable to adjust rules and guidance for aquatic resources to achieve resource goals and objectives. The board may also use this program to adjust other rules and guidance. The goal of the program is to affect change when it is necessary or advisable to adjust rules and guidance to achieve the goals of the forests and fish report or other goals identified by the board. There are three desired outcomes: Certainty of change as needed to protect targeted resources; predictability and stability of the process of change so that landowners, regulators and interested members of the public can anticipate and prepare for change; and application of quality controls to study design and execution and to the interpreted results.
WAC 222-12-050 Notices to comply—stop work orders and WAC 222-12-070 Enforcement policies *These WACs explain enforcement policies – see detail under Chapter 222-46 WAC in this document.*
WAC 222-12-090 Forest practices board manual. These manuals serve as an advisory technical supplement to the rules. Unstable slopes and landforms are covered in Board manual section 16 Guidelines for evaluating potentially unstable slopes and landforms and section 11 Standard methodology for conducting watershed analysis.

Chapter 222-16 WAC, Definitions

WAC 222-16-010, *General Definitions.
"Bedrock hollows" (colluvium-filled bedrock hollows, or hollows; also referred to as zero-order basins, swales, or bedrock depressions) means landforms that are commonly spoon-shaped areas of convergent topography within unchannelled valleys on hillslopes. (See board manual section 16 for identification criteria.)
"Convergent headwalls" (or headwalls) means teardrop-shaped landforms, broad at the ridgetop and terminating where headwaters converge into a single channel; they are broadly concave both longitudinally and across the slope, but may contain sharp ridges separating the headwater channels. (See board manual section 16 for identification criteria.)
"Debris" means woody vegetative residue less than 3 cubic feet in size resulting from forest practices activities which would reasonably be expected to cause significant damage to a public resource.
"Full bench road" means a road constructed on a side hill without using any of the material removed from the hillside as part of the road. This construction technique is usually used on steep or unstable slopes.
"Identified watershed processes" means the following components of natural ecological processes that may in some instances be altered by forest practices in a watershed:

Mass wasting, …

"Inner gorge" means canyons created by a combination of the downcutting action of a stream and mass movement on the slope walls; they commonly show evidence of recent movement, such as obvious landslides, vertical tracks of disturbance vegetation, or areas that are concave in contour and/or profile. (See board manual section 16 for identification criteria.)

"Public resources" means water, fish, and wildlife and in addition means capital improvements of the state or its political subdivisions.

"Threaten public safety" means to increase the risk to the public at large from snow avalanches, identified in consultation with the department of transportation or a local government, or landslides or debris torrent caused or triggered by forest practices.

"Watershed analysis" means, for a given WAU, the resource assessment completed under WAC 222-22-050 or 222-22-060 together with the prescriptions selected under WAC 222-22-080 and shall include resource assessments completed under WAC 222-22-050 where there are no areas of resource sensitivity and the ongoing reviews and reanalyses competed under WAC 222-22-090.

WAC 222-16-050, *Classes of forest practices.

(1) "Class IV-Special." These forest practices require SEPA review, except as provided in WAC 222-16-051. Additional information or an Environmental Impact Statement may be required.

(d) Timber harvest, or construction of roads, landings, gravel pits, rock quarries, or spoil disposal area, on potentially unstable slopes or landforms described in (i) below that has the potential to deliver sediment or debris to a public resource or that has the potential to threatened public safety, and which has been field verified by the department (see WAC 222-10-030 SEPA policies for potential unstable slopes and landforms).

(i) For the purpose of this rule, potentially unstable slopes or landforms are one of the following: (See board manual section 16 for more descriptive definitions.)

(A) Inner gorges, convergent headwalls, or bedrock hollows with slopes steeper than thirty-five degrees (seventy percent);

(B) Toes of deep-seated landslides, with slopes steeper than thirty-three degrees (sixty-five percent);

(C) Groundwater recharge areas for glacial deep-seated landslides;

(D) Outer edges of meander bends along valley walls or high terraces of an unconfined meandering stream; or

(E) Any areas containing features indicating the presence of potential slope instability which cumulatively indicate the presence of unstable slopes.

(ii) The department will base its classification of the application or notification on professional knowledge of the area, information such as soils, geologic or hazard zonation maps and reports, review of approved watershed analysis mass wasting prescriptions according to WAC 222-22-090(6) or other information provided by the applicant.

(iii) An application would not be classified as Class IV-Special for potentially unstable slopes or landforms under this subsection if:

(A) The proposed forest practice is located within a WAU that is subject 6to an approved watershed analysis;

(B) The forest practices are to be conducted in accordance with the approved prescriptions from the watershed analysis; and

(C) The applicable prescriptions are specific to the site or situation, as opposed to a prescription that calls for additional analysis. The need for an expert to determine whether the site contains specific landforms will not be considered "additional analysis", as long as specific prescriptions are established for such landforms.

(e) Timber harvest, in a watershed administrative unit not subject to an approved watershed analysis under chapter 222-22 WAC, construction of roads, landings, gravel pits, borrow pits, and spoil disposal areas on snow avalanche slopes within those areas designated by the department, in consultation with the department of transportation and local government, as high avalanche hazard where there is the potential to deliver sediment or debris to a public resource, or the potential to threaten public safety.

Chapter 222-22 WAC, Watershed Analysis

Per WAC 222-22-010 Policy, subsection (3) states "The long-term objective of this rule is to protect and restore these public and cultural resources and the productive capacity of fish habitat adversely affected by forest practices while maintaining a viable forest products industry. For public resources, the board intends this to be accomplished through prescriptions designed to protect and allow the recovery of fish, water, and capital improvements of the state or its political subdivisions, through enforcement of against noncompliance of the forest practices rules in this Title 222 WAC, and through voluntary mitigation measures. For cultural resources, with the exception of sites registered on the department of archaeology and historic preservation's archaeology and historic sites database and all resources that require mandatory protection under chapters 27.44 and 27.53 RCW, the board intends that this be accomplished through voluntary management strategies. This system also allows for monitoring, subsequent watershed analysis, and adaptive management."

WAC 222-22-030 Qualification of watershed resource analysts, specialists, field managers, and qualified experts.
*(1) A reanalysis of mass wasting prescriptions requires a qualified expert as defined in WAC 222-10-030 (5).

WAC 222-22-050 Level 1 watershed resource assessments.
WAC 222-22-060 Level 2 watershed resource assessments.
Both levels of assessments require the resource analyst team to assess the likelihood that identified watershed processes will be adversely changed by one or more forest practices and, as a result, a material amount of water, wood, sediment, or energy may be delivered to a public resource. "For example, the team will address the likelihood that road construction will result in mass wasting and a slide that will in turn reach a stream."

Chapter 222-24 WAC, Road Construction and Maintenance

WAC 222-24-010 Policy.

*(2) To protect water quality and riparian habitat, roads must be constructed and maintained in a manner that prevents mass wasting.

WAC 222-24-020 Road location and design.
*(8) All new road construction on side slopes that exceed 60 percent, which have the potential to deliver sediment to any typed water or wetland must utilize full bench construction techniques.
WAC 222-24-030 Road construction.
*(8) End haul or overhaul construction is required where the department determines there is a potential for mass soil failure from overloading on unstable slopes.

WAC 222-24-040 Water crossing structures.
Per subsection *(3), the department may require a larger permanent culvert in type Np and Ns waters if it determines that because of unstable slopes the culvert size in board manual 3 *Determining culvert size method A* would be inadequate to protect public resources.

WAC 222-24-051 *Large forest landowner road maintenance schedule.
Per subsection (3)(b), basins containing, or road systems potentially affecting, sensitive geology/soils areas with a history of slope failures are presumed to be one of the highest priorities based on a "worst first" principle.
Per subsection (6), priorities for road maintenance work within plans include:

> (b) preventing or limiting sediment delivery, with the highest priority given to areas where sediment delivery or mass wasting will most likely affect bull trout habitat, and
> (c) correcting drainage or unstable sidecast in areas where mass wasting could deliver to public resources or threaten public safety.

WAC 222-24-052 Road maintenance.
Per subsection *(1)(e), drainage structures and road surfaces must be left in a condition which prevents mass wasting, etc. before the first winter rainy season following termination of operations.

WAC 222-24-060 Rock quarries, gravel pits, borrow pits, and spoil disposal areas.
Per subsection *(2)(d), spoil disposal areas shall be located where the risk of delivery from soil erosion and/or mass soil movement is minimal.

Chapter 222-30 WAC, Timber Harvesting

WAC 222-30-021 Western Washington riparian management zones.
Per subsection (1)(c)(ii)(A)(V), the clumping strategy for outer zone leave trees in and around sensitive sites includes small unstable, or potentially unstable, slopes not of sufficient area to be detected by other site evaluations. Refer above to WAC 222-16-050 (1)(d).

WAC 222-30-080 Landing cleanup.
Per subsection (2), exposed soil that is unstable or erodible and may be reasonably expected to cause damage to a public resource shall be seeded with grass, clover or ground cover or compacted, riprapped, water barred, benched or mulched, or be treated by other means approved

by the department.

Chapter 222-46 WAC, Consultation and Enforcement

WAC 222-46-090 Financial assurances.
Per subsection (6), the base dollar amounts listed in this rule can be increased or decreased depending on the application specific factors including but not limited to proximity to unstable soils.