The Unstable Slope Criteria Project

PROJECT CHARTER

January, 2024

PROJECT CHARTER OVERVIEW

The purpose of the Project Charter is to describe the project and give the Project Manager and the Project Team the authority to begin utilizing program resources and spending allocated project funds (CMER Protocols and Standards Manual (PSM) Chapter 7, Section 4). In general, Project Charters should be brief and updated as needed as the project is implemented to accurately, reliably, and concisely communicate the projects' basic elements and objectives. When substantive changes are considered necessary, which amend the scope of the project (i.e., study design, budget, or schedule), the charter should be updated (version #2, #3, etc.) to communicate those changes.

PROJECT CHARTER APPROVAL DATES

CMER – February 24, 2015
*update May 24, 2022
*update January 23, 2024
Policy – April 9, 2015

OVERSITE COMMITTEE

Upland Processes Science Advisory Group (UPSAG)

PROJECT TEAM* MEMBERS

Name, Title, Affiliation, Contact Info	Roles and Responsibilities
Elise Freeman, CMER (NWIFC) efreeman@nwifc.org	Principal Investigator
Theryn Henkel, DNR theryn.henkel@dnr.wa.gov	Project Manager
Dan Miller (M^2 Environmental Services) dan@m2environmentalservices.com	Scientific Advisor
Ted Turner (Weyerhaeuser) ted.turner@weyerhaeuser.com	Scientific Advisor
Julie Dieu (Rayonier) julie.dieu@rayonier.com	Scientific Advisor
Jeff Keck (DNR) Jeff.keck@dnr.wa.gov	Scientific Advisor
Janelle Black (NWIFC) jblack@nwifc.org	Scientific Advisor
Tiffany Justice (Weyerhaeuser) Tiffany.justice2@weyerhaeuser.com	Scientific Advisor
Susan Shaw (Weyerhaeuser) Susan.shaw2@weyerhaeuser.com	Scientific Advisor

* *The Project Team was formerly organized as a Technical Writing and Implementation Group (TWIG)*

PROBLEM STATEMENT

It remains unclear whether the unstable slope criteria are "adequate" for identifying features potentially susceptible to slope instability from forest practices. This includes associated hazards as well as sites that should receive review by a Qualified Expert. If the unstable slopes criteria are not adequate, some potentially unstable slopes will not be identified or reviewed and the Forest Practices Rules will not have their intended effect.

PURPOSE STATEMENT

Washington Administrative Code (WAC) Section 222-16-050(1)(d)(i) lists the five rule-identified landforms (RIL) and directs the reader to Section 16 of the board manual where the RIL and their criteria are described in detail. Those five RIL are utilized by DNR's FPA approval process to determine if timber harvest has the potential to deliver sediment or debris to a public resource or in a manner that would threaten public safety (WAC 222-10-030(2)(b), SEPA policies for potentially unstable slopes and practices). The 2015 CMER Work Plan states that the Unstable Slope Criteria Project will evaluate the degree to which the landforms described in the unstable slopes rules and board manual identify potentially unstable areas that are likely to impact public resources or threaten public safety.

Current RIL definitions and criteria are based on landforms and processes that are inferred to yield relatively high landslide densities, are influenced by forest management, and are likely to have a probable significant adverse impact (WAC 222-10-030(2)(c)). They were developed from field observations, regional research, and watershed analysis data collected from various sources and methods. Observations of storm-induced landslides that have occurred since the current rules were implemented have shown that a sizable proportion of delivering hillslope landslides may originate from terrain that does not meet RIL criteria. Likewise, while models have been built that predict maximum runout potential, there are no explicit criteria for assessing delivery to public resources or risk to public safety.

DNR's threshold determination under SEPA includes an evaluation of whether proposed forest practices are likely to increase the probability of a mass movement on or near the site (WAC 222-10-030(2)(a)(b)). This project will evaluate the degree to which the landforms described in the unstable slopes rules identify potentially unstable areas that are likely to impact public resources or threaten public safety. The project will be designed to evaluate the original Forests & Fish Report Schedule L-1 research topic: "Test the accuracy and lack of bias of the criteria for identifying unstable landforms in predicting areas with a high risk of instability." The project replaces the Testing the Accuracy of Unstable Landform Identification Project, based on feedback from Policy at their November 2010 meeting. At that meeting, UPSAG presented two interpretations of the original Forests & Fish Report Schedule L-1 topic and asked for direction as to how to proceed and prioritize efforts. UPSAG understood Policy's direction was to evaluate the landslide susceptibility of different slopes/landforms in the interest of evaluating current rule-identified landforms and identifying/characterizing additional potentially unstable landforms.

PROJECT OBJECTIVES

The studies included in the Unstable Slopes Criteria Project use lidar-based landslide inventories and landform mapping, and assessment of vegetation and precipitation history to calculate shallow landslide susceptibility. The goal is to evaluate and potentially improve the current unstable slope criteria based on rule-identified landforms (RIL) (WAC 222-16-050) for identifying areas where public resources may be impacted, or public safety threatened by landslides.

To meet the goal, the Unstable Slopes Criteria Project will model landform type and spatial distribution, inventory shallow landslide initiation and runout volume, associate the topographic characteristics of the failure locations to different landforms, and evaluate the landslides in the context of forest practices activities. Landslide Hazard Zonation project data (Project 1) may be utilized in subsequent projects; however, it will not be a standalone project. The landform mapping study (Project 2) seeks to develop reliable methods to automate the mapping of landforms, including the current RILs, across a variety of physiographic settings. The next project objective is to develop methods to use lidar differencing to map shallow landslides and runout areas across the landscape accurately and to derive the topographic elements from digital surface models associated with location of the landslide (Projects 3 and 4, these have been combined). The landslide locations can then be associated with different landforms and terrain elements and the relative density of slope failures by landform can be calculated. The landslide density will be associated with measures of storm magnitude to develop a relationship between the landslide rate and the storm return interval. The third objective is to use the relative landslide density to evaluate landslide susceptibility of different landforms and the terrain elements used to describe and define the landforms. The final project objective is to evaluate shallow landslide susceptibility and runout in the context of potential forest practice activities (Project 5).

CRITICAL QUESTION

2023 – 2025 Biennium CMER Work Plan Critical Question

- Are unstable landforms being correctly and uniformly identified and evaluated for potential hazard?

Unstable Slope Criteria Project – Research Alternatives Document Critical Question

- What modifications to the unstable slopes criteria and delivery-assessment methods would result in more accurate and consistent identification of 1) unstable slopes and landforms, 2) unstable slopes and landforms sensitive to forest-practices-related changes in landslide processes, and 3) unstable-slope and landform conditions where landslide runout would likely have an adverse impact to public resources or a threat to public safety is possible?"

CMER RULE GROUP AND PROGRAM

PROJECT DELIVERABLES AND PROJECT TIMELINE

The Unstable Slope Criteria Project consists of five distinct studies approved by Policy in April 2017:

1. Compare/Contrast Landslide Hazard Zonation (LHZ) Mass Wasting Map Units with RIL (this project may be incorporated into subsequent projects per ISPR review comments).
2. Object-Based Landform Mapping with High-Resolution Topography
3. Empirical Evaluation of Shallow Landslide Susceptibility and Frequency by Landform
4. Empirical Evaluation of Shallow Landslide Runout
5. Models to Identify Landscapes/Landslides Most Susceptible to Management

The Project Team is currently working on the Final Report for Project 2, Object-Based Landform Mapping with High-Resolution Topography Study. The results from Project 2 are needed during the later stages of Projects 3 and 4. The report is scheduled to be presented to CMER in 2024.

Study designs for Empirical Evaluation of Shallow Landslide Susceptibility and Frequency by Landform (Project 3) and the Empirical Evaluation of Shallow Landslide Runout (Project 4) were combined. They were developed using information learned in the Object-Based Landform Mapping with High-Resolution Topography Study. These Study Designs completed ISPR in the summer of 2023. Implementation is expected to begin in 2024.

Task	Deliverable	Responsible Team Member	Estimated Completion Date
Completed ISPR review for Project 2 Study Alternatives	Final Report with ISPR Comments	Greg Stewart (former PI)	2020 - completed
Develop Project Management Plan	Project Management Plan	Project Manager	2020 - completed
Complete draft final report for Project 2	Final Report	Elise Freeman	FY2024
Develop Study Designs for Projects 3 & 4	Study Design	Dan Miller/ Lori Clark (Former PM)	FY2023 - Complete
Complete ISPR review of Study Designs for Projects 3 & 4	Study Design (Projects 3 & 4)	Lori Clark (Former PM)	FY2024 - Complete
Initiate work on Projects 3 & 4	Project Management Plan and Updated Timeline	Dan Miller Elise Freeman Theryn Henkel	FY2024
Develop Study Design for Project 5	Study Design (Project 5)	Dan Miller	FY2025

Complete ISPR review of Study Designs for Projects 5	Study Design (Project 5)	Theryn Henkel	FY2026
Final reports for Projects 3 & 4	Final Report (Projects 3 & 4)	Dan Miller Elise Freeman	FY2025
Finalize Study Design for Project 5	Study Design (Project 5)	Dan Miller Elise Freeman	FY2026
Begin implementation of Project 5	Project Management Plan and Updated Timeline	Theryn Henkel	FY2026
Completion of work on Project 5	Project Management Plan and Updated Timeline	Dan Miller Elise Freeman Theryn Henkel	FY2027
Development of Final Report for Project 5	Final Report for Project 5	Elise Freeman	FY2027

BUDGET

Breakdown by Project	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	Total Budget
	Actual	Actual	Budget	Budget	Budget	Budget	
Project 2			$14,800				$14,800
Projects 3 and 4	$33,437	$26,138	$40,145	$49,210			$148,930
Project 5					$75,000	$25,000	$100,000
Total Budget	**$33,437**	**$26,138**	**$54,945**	**$49,210**	**$75,000**	**$25,000**	**$263,730**

PROJECT TEAM ROLES AND RESPONSIBILITIES

Position	Roles and Responsibilities
Project Manager (PM): Theryn Henkel	• Monitors project activities and the performance of the Project Team. • Communicates progress, problems, and problem resolution to the Adaptive Management Program Administrator (AMPA), CMER, and UPSAG. • Works with UPSAG and Project Team to help develop Project Charter and other managing documents, and keeps them updated. • Develops proposals, RFPs or RFQQs, reviews contractor proposals, monitors contract performance, develop contract budget, schedule, scope changes, and contract amendments. • Develops project budget and schedule with input from the Project Team and UPSAG. • Works with UPSAG and Project Team to develop interim and final draft reports. • Ensures coordination between UPSAG, CMER, and Project Team.

	• Coordinates all technical reviews and responses in a timely fashion. • Facilitates archiving of all data and documents. • Ensures that contract provisions are followed. • Provides direction, support and oversight to the Project Team to achieve clear and specific scopes of work, schedules, and budgets within approved contracts. • Coordinates and/or authorizes communication with all project-related contractors. • Maintains sole responsibility for all aspects of project management even if other individuals are completing or helping complete parts of the project.
Principal Investigator (PI): Elise Freeman (CMER Staff)	• Works with the PM and UPSAG to identify additional technical expertise and time commitments needed to complete scoping, study design development and implementation. • Provides materials needed by the PM • Principle investigator Object-Based Landform Mapping with High-Resolution Topography study. • Provides scientific and object-based image analysis (OBIA) support to the Empirical Evaluation of Shallow Landslide Susceptibility and Frequency by Landform study. • Prepares quarterly summary and progress report of project status. • Presents technical findings to UPSAG, CMER, and TFW Policy as necessary. • Communicates project status and issues to the PM and Project Team. • Lead author of prospective answers to 6 questions document.
Project Team members: Julie Dieu, Rayonier Ted Turner, Weyerhaeuser Dan Miller, M2 Environmental Services Janelle Black, NWIFC Tiffany Justice, Weyerhaeuser Susan Shaw, Weyerhaeuser Jeff Keck, DNR	• Assist with finding solutions to technical issues that arise during scoping, study design development and project implementation. • Provide expertise needed for successful completion of scoping, study design and implementation. • Assist with writing technical documents such as: project charter, communication plan, scoping document, study design, prospective 6 questions document, project management plan, and interim and/or final findings reports. • Provide constructive and timely feedback on project documents. • Assist as needed with communicating project information to UPSAG and CMER. • Participate in project meetings and conference calls as needed. • Assist as needed with implementation tasks at the direction of the Principal Investigator.

The Washington Forest Practices Board (Board) has empowered the CMER committee and the TFW Policy committee to participate in the Adaptive Management Program (AMP) (WAC 222-12-045(2)(b)). CMER is responsible for completing technical information and reports for consideration by TFW Policy and the Board. CMER has been tasked with completing a programmatic series of work tasks in support of the AMP; these tasks are outlined in CMER's biennial work plan approved by TFW Policy and the Board. This project listed under the Unstable Slopes Rule Group, Mass Wasting Effectiveness Monitoring Program.

Recognition of Support for Charter

Committee	Date of Acceptance	Reference
CMER	February 24, 2015	meeting minutes
TFW Policy	April 9, 2015	meeting minutes
UPSAG	Update: May 16, 2022	by email; recorded in June 7 meeting minutes
CMER	Update: May 24, 2022	meeting minutes
UPSAG	Update: January 2, 2024	meeting Minutes
CMER	Update: January 23, 2024	meeting minutes

References

Cooperative Monitoring Evaluation and Research (CMER) Committee. (January 2023), 2023 - 2025 Biennium CMER Work Plan. https://www.dnr.wa.gov/publications/fp_cmer_2023_2025_wrkplan.pdf

Protocols and Standards Manual (PSM). (2017), CMER Review5 06_19_2017 Final Draft, Chapter 7.

Unstable Slope Criteria Technical Writing Implementation Group (Julie Dieu, Dan Miller, Gregory Stewart, and Ted Turner). 2017. Unstable Slope Criteria Project – Research Alternatives. 47pp.

WAC 222-12-045. April 2013. http://apps.leg.wa.gov/wac/default.aspx?cite-222-12-045.

Washington Forest Practices Board (WFPB), (May) 2016. Board Manual Section 16. Guidelines for Evaluating Potentially Unstable Slopes and Landforms. Accessible from: https://www.dnr.wa.gov/publications/bc_fpb_manualsection16.pdf?mcolf