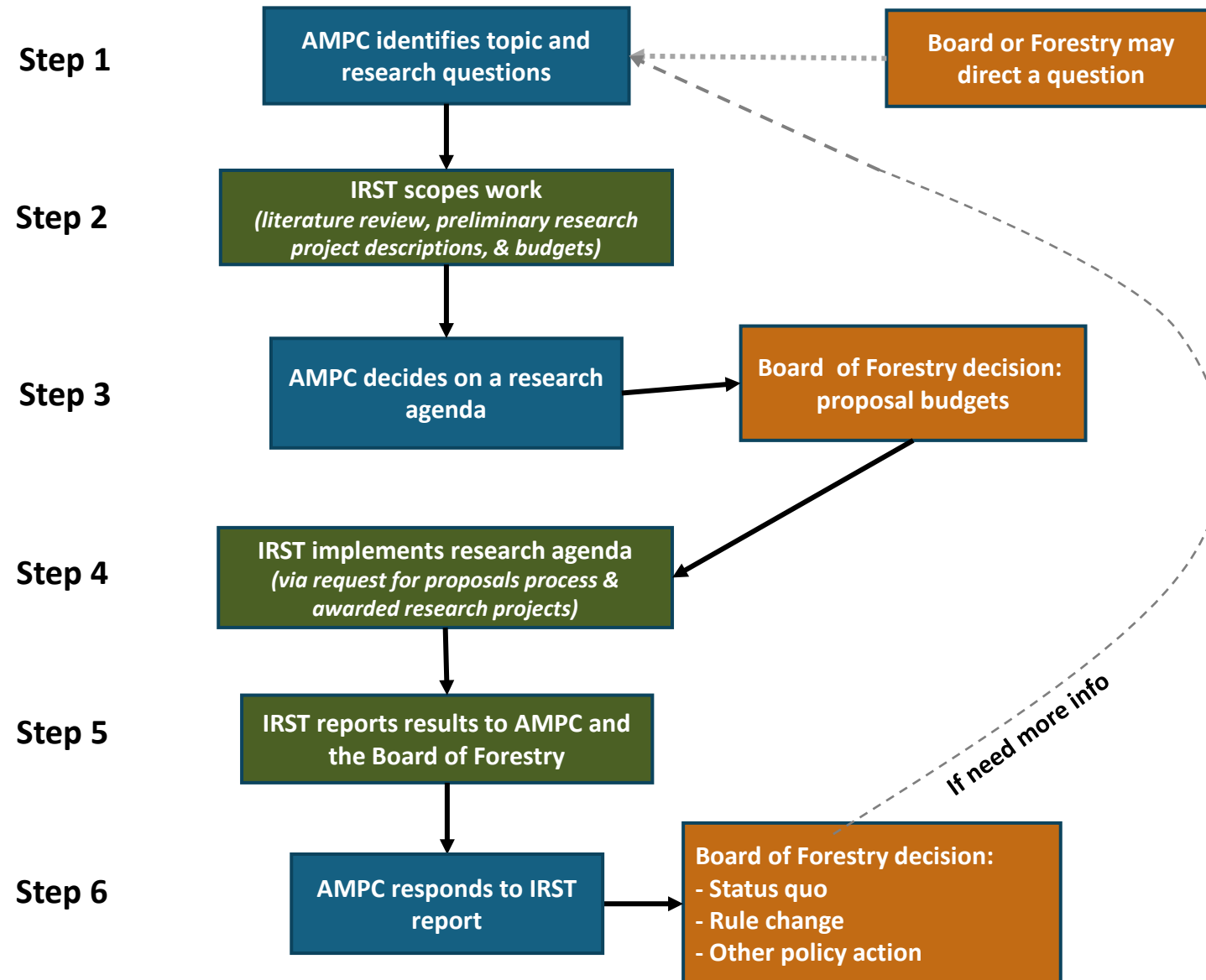


IRST Duties, Tasks, and Timeline

Delivery of Roads and Steep Slopes Research Proposals

Adaptive Management Process Steps



IRST Duties in Rule (Step 2) for both Research Topics

The IRST shall develop, or direct through a third party the development of, **a research proposal for each finalized research question**. Each research proposal shall include:

- **A literature review** that specifies the need for or the type of monitoring, research, commissioned studies, or other means of scientific inquiry necessary to answer the finalized research question;
- **A preliminary estimate of the budget for each year of the research and a timeline** to complete the research project with specific deliverables; and,
- **A preliminary description of research project requirements**, scope of work including an estimate of the timeline and key milestones, and an estimate of the degree to which knowledge may be improved if the research proposal is implemented.

Definitions (not in rule)

Research proposal

A **research proposal** is a detailed document describing what will be investigated, why it is important, and how the researcher will conduct the research. Generally, it includes:

- Introduction
- Background/review of literature
- Rationale (the questions the researcher is examining)
- Methods (design, procedure, analysis, timeline)
- Significance and conclusion
- Budget
- References

The purpose of a research proposal is to convince readers that the research is worthwhile, credible, and practical.

Scope of work

A **scope of work** is an agreement describing the work to be performed and focuses on deliverables and how the deliverables are to be completed. In addition to project objectives, scopes of work typically include:

- Individual tasks
- Schedule
- Milestones
- Deliverables and other end products

that are expected to be provided by the performing party. How the project will be paid for is often included.

Request for Proposal

A **request for proposal** announces and describes a project, outlines specific application requirements, and solicits bids to engage in the work.

AMPC Roads-Stream Connectivity Research Questions

Baseline Report

1. What is the baseline status of hydrologic connectivity of roads prior to the implementation of the OFPA road rules effective Jan 1, 2024?
2. How does the status of hydrologic connectivity differ based on landowner type and East/West region?
- 3a. How does road surface type, geology, soils and other factors affect the status of hydrologic connectivity?
- 3b. How do particular elements, such as undersized culverts or road location, in the regulatory framework contribute to hydrologic connectivity?

Trend Monitoring

1. What are the trends in the status of hydrologic connectivity of roads over 5-year intervals? These trends should be assessed for the same variables in question 1.

Determination of Rule Effectiveness

1. Within 25 years, to what extent are road rules associated with hydrologic disconnection effective at achieving biological goals and objectives?

AMPC Eastern Oregon Steep Slopes Research Questions

These questions apply east of the crest of the Cascades in Oregon and are to be answered via literature reviews. In addition to overview of literature, the review should provide an assessment of how robust the conclusions from the literature are and where there may be need for additional research.

Overarching Question

- What impacts do hillslope processes have on the covered species in the draft HCP and their habitats in Eastern Oregon?

Primary Focus

- What does the literature say about upslope initiated shallow rapid slides and how timber harvesting may impact these in Eastern Oregon environments?

Secondary Focus

- Are there hillslope processes other than upslope initiated shallow rapid slides that may affect covered species within the draft HCP and are these processes changed by forest practices?

Primary Deliverable

Research Proposals (per research question)

Elements: literature review | description of research | est. budget

- A **literature review** that specifies the need for or the type of monitoring, research, commissioned studies, or other means of scientific inquiry necessary to answer the finalized research question;

Literature Reviews: Purpose and Focus

Roads-Stream Connectivity

Purpose

To serve, not as a comprehensive literature review, but rather as a means to facilitate the development of research proposals and ultimately requests for proposals (RFPs).

Focus

Monitoring methods rather than the effects of road-stream connectivity. More specifically, we will look for monitoring strategies that can be applied to small and large private landowners in the eastern and western regions of Oregon.

Eastern Oregon Steep Slopes

Purpose

To serve, not as a comprehensive literature review, but rather as a state-of-the-science compilation that highlights research gaps that will be used to facilitate the development of requests for proposal (RFPs).

Focus

To gauge whether sufficient literature exist to justify a full literature review.

Literature Review

Roads and Stream Connectivity

- Literature search: What we have to date
 - Search strategy
 - Piloted keyword search strings
 - Database of articles
- Literature review: Draft structure

Eastern Oregon Steep Slopes

- Literature search: What we have to date
 - Search strategy
 - Piloted keyword search strings
 - Starting a database of articles
- Literature review: Draft structure


Literature Review Structure

QUESTION

How do you want the literature review structured?

IRST MEMBER TASK

Look in the road rules (in the [fpa-rule-book-2024.pdf](#) section 625) to determine the elements in the Oregon regulatory framework.



Introduction

- Objectives of the review
- Past reviews

Methods

- Search period
- Literature filters/constraints: years, types
- Databases searched
- Keywords
- Other sources searched & methods

Results

- Descriptive statistics of results by sources
- How is hydrologic connectivity defined?
- How is hydrologic connectivity measured?
- Which landowner types are covered in each study and were there differences in methods or results?
- Which studies included dry vs wet (Oregon East/West) environments? How do methods/results differ?
- What other explanatory factors (road surface type, geology, soils) were included in other studies, how were they measured, and how did they affect hydrologic connectivity?
- What elements included in the Oregon regulatory framework (e.g. undersized culverts, road location) are included in the literature, how were they measured, and how did they affect hydrologic connectivity?
- Which studies included trend monitoring and how did they structure it? What variables were included?
- What biological goals and objectives were included in the studies?
- Which studies demonstrated effectiveness monitoring by comparing road status to biological goals? How were these measured?

Discussion & Conclusions

- Overall summary of information found, major gaps, and suggestions on how this might influence RFP development

Primary Deliverable

Research Proposals (per research question)

Elements: literature review | description of research | est. budget

- A **preliminary estimate of the budget for each year of the research and a timeline** to complete the research project with specific deliverables; and,
- A **preliminary description of research project requirements**, scope of work including an estimate of the timeline and key milestones, and an estimate of the degree to which knowledge may be improved if the research proposal is implemented.

Example: CMER Budget

Table 4 presents information on ongoing and new CMER projects for the 2023-2025 biennium, organized by rule group. Project budgets are categorized as either Tier 1 or Tier 2 projects. Tier 1 projects are those projects CMER is certain to implement in 2023-2025. Tier 2 projects are those projects that CMER may initiate in 2023-2025...

Table 4. 2023-2025 Biennium CMER Projects and Budget

	Tier 1	Tier 2
Stream Typing Rule Group		
Evaluation of physical features that define fish habitat in forested landscapes (PHBs)	635,600	
Default Physical Criteria (DPCs) Assessment Project	0	
LiDAR Based Water Typing Model	0	
Fish/Habitat Detection Using eDNA	0	
Type N Rule Group		
Type Np Hard Rock Phase III – Amphibian Demographics	398,600	
Temperature and Amphibians in discontinuously flowing Np reaches		
Type N Experimental Buffer Treatment in Soft Rock Lithologies	80,000	
Eastside Type N Riparian Effectiveness Project (ENREP)	1,238,073	
Extensive Monitoring: Type F/N Stream Temperature	100,000	
Extensive Riparian Status and Trends Monitoring- Vegetation, Type F/N- Westside and Eastside	0	
Riparian Characteristics and Shade Response Study	320,231	
Type F Rule Group		
Eastside Timber Habitat Evaluation (ETHEP)	322,521	
Westside Type F Riparian Effectiveness Prescription Monitoring Project	197,272	
Unstable Slopes Rule Group		
Unstable Slope Criteria Project	90,000	
Deep-Seated Landslide Research Strategy Project	500,000	
Roads Rule Group		
Road Prescription-Scale Effectiveness Monitoring Project	1,212,194	
Wetlands Rule Group		
Forested Wetlands Effectiveness Project	338,328	
Wetland Management Zone Effectiveness Monitoring	0	
Subtotal Projects (by Tier 1 and Tier 2)	\$5,432,819	0
Total Project (both Tier 1 and Tier 2)	\$5,432,819	

Estimated budgets

Budgets

- Per research project
- Per year
- Overall research topic

Budget categories to consider

- Personnel (*Salaries, wages, benefits*)
- Equipment
- Travel
- Participant support
- Other direct costs (*materials & supplies, computer services, publication costs, other*)
- Tuition
- Subcontracts
- Indirect costs

Enter data in Yellow Boxes Only

ESTIMATED BUDGET FOR DURATION OF RESEARCH PROJECT

Agency:	submitted to AMPC	Start Date:	
Principal Investigator:	IRST	End Date:	
Proposal Title:	Roads-Stream Connectivity: Proposed Research Package		

Example of detailed budget for internal IRST use to help estimate costs

BUDGET CATEGORIES	YEAR 1			YEAR 2			YEAR 3			YEAR 4			YEAR 5			TOTALS			
	FTE	Months	Cost	FTE	Months	Cost	FTE	Months	Cost	FTE	Months	Cost	FTE	Months	Cost	FTE	Months	Cost	
SALARY & WAGES																			
Base Salary (monthly)																			
Total Senior Personnel			-			-			-			-			-			-	
Total Other Personnel			-			-			-			-			-			-	
<i>Subtotal Salary & Wages</i>			-			-			-			-			-			-	
OTHER PAYROLL EXPENSES	Rate			Rate			Rate			Rate			Rate						
Total Senior Personnel			-			-			-			-			-			-	
Total Other Personnel			-			-			-			-			-			-	
<i>Subtotal OPE</i>			-			-			-			-			-			-	
Total Salaries, Wages, & OPE			-			-			-			-			-			-	
EQUIPMENT			-			-			-			-			-			-	
Total Equipment			-			-			-			-			-			-	
TRAVEL			-			-			-			-			-			-	
Total Travel			-			-			-			-			-			-	
PARTICIPANT SUPPORT			-			-			-			-			-			-	
Total Participant Support			-			-			-			-			-			-	
OTHER DIRECT COSTS			-			-			-			-			-			-	
Other			-			-			-			-			-			-	
Total Other Direct Costs			-			-			-			-			-			-	
Total Tuition			-			-			-			-			-			-	
SUBCONTRACTS	included	excluded		included	excluded		included	excluded		included	excluded		included	excluded		included	excluded		
Total Subcontracts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TOTAL DIRECT COSTS			-			-			-			-			-			-	
MTDC Method																			
MTDC BASE			-			-			-			-			-			-	
Total Exemptions			-			-			-			-			-			-	
INDIRECT COSTS			-			-			-			-			-			-	
TOTAL COSTS TO SPONSOR			-			-			-			-			-			-	

Example: Brief description of anticipated work (from an SOI)

The project design will utilize available aerial photographs, on-the-ground global positioning and current, standard plant and animals keys at the John Day/ Willow Creek Project to complete a comprehensive inventory of most, if not all terrestrial species of flora and fauna on 13,600 acres of project lands and delineate the ecological communities. Additionally, the inventory will identify the presence, locations, coverage and habitat quality of terrestrial state and federal threatened and endangered species (special status species) and invasive, nuisance and noxious species within delineated ecological communities. Data will be entered into a pre-formatted GIS database, Spatial Data Standards for Facilities, Infrastructure and Environment (SDSFIE database with ESRI software), to be provided by the John Day/ Willow Creek Project. GIS maps will be generated to show a detailed, scaled overview of Project ecosystems, species habitats, and habitat conditions.

The objectives of the proposed research effort include:

- **Objective 1** - Implement scientifically rigorous surveys to inventory and identify to species, resident wildlife and plants and their habitats, including native and non-native and invasive, threatened and endangered, noxious and nuisance plants and wildlife on 13,600 acres of project lands.
- **Objective 2** – Delineate and identify dominant ecological communities, including abiotic components on 13,600 acres of project lands;
- **Objective 3** - Assess the status, health, and viability of resident wildlife, plant populations, and their habitats, including special status species, as well as biological diversity, and environmental health of ecological communities on 13,600 acres on the John Day/ Willow Creek Project;
- **Objective 4** - Provide qualitative and quantitative information about the identity, location, and abundance of state and federal classified invasive and noxious species within dominant ecological communities;
- **Objective 5** – Utilizing metrics, develop an integrated pest management plan / strategy.

Example: CMER Project Proposal

CMER PROJECT PROPOSAL

Mid-Year Project Proposals 2015-16

TITLE: WETLAND MAPPING TOOL

SPONSOR: WETSAG

WORKPLAN: YES

COST: \$ 80,000

Rule Group: Wetland Rules

WAC 222-30-010 *(4)
WAC 222-30-020 *(7)

Schedule L-1 Proposed project is associated with:
Wetlands performance target: No net loss in the hydrologic functions of wetlands

Master Project Schedule: yes on list

Forested Wetlands Effectiveness Project critical questions:

- How do the magnitude and duration of forest practices in forested wetlands affect water regimes, water quality, plant and animal habitats, and aquatic resources in those wetlands and linked (via surface or subsurface flow) downstream waters?
- How well do current forest practices rules in forested wetlands meet the Forest and Fish aquatic resource objectives and performance targets, and the goal of no-net-loss of functions of those wetlands by half of a timber rotation cycle?

Study/Project Objectives:

- Develop a wetland delineation model that would interface as an ArcMap tool.
- Calibrate wetland delineation model to predict the probability of wetlands by type (including forested wetlands) on forest lands of western Washington.

Problem Statement:

A GIS analysis by WETSAG of existing wetland mapping data showed that available tools to identify wetland location and extent are poor, especially for forested wetlands. Therefore, the WetTWIG needs more information about forested wetlands concerning: their location, distribution, size, and probability of occurrence in each region and geophysical landscape. These data are essential to provide context for: 1) focusing research on forested wetlands and associated typed-waters that may be vulnerable to harvest and road impacts, and 2) assessing the spatial applicability (inference) of study findings to other landscapes.

Project Summary

The proposed project is the first phase of a two-phase project. Phase 1 would develop a GIS-based toolset to systematically compare and test different approaches and data types for remote mapping of wetlands. This toolset will serve to:

- determine the optimal methodology to identify wetlands for a particular region and for particular wetland types,

4

CMER PROJECT PROPOSAL

Project Title: Wetland Mapping Tool

- determine the accuracy and precision to which different data sources (e.g., LiDAR versus NED DEMs, spectral imagery versus DEM) can resolve wetlands, and
- create maps delineating probable wetland locations and types that can be calibrated and validated to local conditions.

Phase 2 would conduct the training and verification of the toolset using reliable field data from the Olympic Experimental State Forest (OESF). Phase 2 would be performed in collaboration with WDOE as part of the EPA-funded field-based effort.

A collaborative research team headed by Dr. M. Moskal (UW Precision Forest Unit), Dr. (TerrainWorks), and Dr. Amy Yahnke (SEA Program, WA Dept of Ecology) would perform collaboration with the OESF will be facilitated by Dr. Teodora Minkova (Research & Mon

Project Execution & Schedule

The project would combine results from automated pattern-recognition (object-based) te imagery (e.g., NAIP), with process-based (wetness index) and empirical techniques (e.g topographic, geologic, soils, land cover, and climate information. Project tasks include:

- Identify a set of remote sensing data that will be combined to best identify wetland would include indices indicative of wetland occurrence from published literature indices that incorporate the complexities of Washington's forest lands.
- Apply a suite of software tools that will use the available remote sensing data to
- Provide open-source capacity within ArcGIS to use the constructed indices to cr wetland occurrence. The maps will be evaluated, calibrated, tested, and revised as field-mapped wetland locations.

The project would be performed over a five month period (February – June 2016)

Outcomes/Deliverables:

- An ArcGIS toolset. This toolset will provide capabilities to
 - Generate wetland-index maps derived from a suite of analysis techniques and da hypotheses to test against field observations. They can be used to predict wetlan to predict the sensitivity of these attributes to physical controls, such as changes predictions can guide field efforts, and the degree to which predictions are succes different analysis techniques and data sources.
 - Combine other available data (e.g., field surveys) with the wetland-index maps to probabilities of wetland occurrence.
 - Compare maps of wetland occurrence to other data on wetland locations to asse maps.
 - Derive statistics on the spatial density of wetlands, and on the distribution of wetl
 The toolset will include help files illustrating its use, and describing the techniques ar
- A report describing the model that is suitable for submission to a peer-reviewed jour
- Leverage of CMER research funding through collaboration with UW, WDOE, WDNR, and TerrainWorks.

CMER PROJECT PROPOSAL

Project Title: Wetland Mapping Tool

TIMELINE, EFFORT, COSTS

Tasks	UW Precision Forestry Unit	Subcontractor TerrainWorks
1) Identify a set of remote-sensing data and analysis techniques to best identify wetlands in forested landscapes. a) Catalog existing options. b) Identify promising new analyses and combinations of existing approaches.	1 wk	1 wk
2) Apply a suite of software tools to construct wetland indices. a) Assemble available software and models. b) Develop computer models to implement new indices. c) Write computer programs to enable model interactions.	4 wk	6 wk
3) Capacity within ArcGIS to use the constructed indices. a) Development of a user interface. b) Technical documentation and user instructions.	1 wk	4 wk
4) Report	1 wk	1 wk
Totals	7 wk	12 wk
Total Cost	\$30,000	\$50,000

Total Cost (\$): \$80,000

Total Effort (FTE): 19 wk

Total \$80,000

Timeline

To deliver roads and steep slopes research proposals

