

Primer on forming research question(s) for the research topic: Requirements of baseline and trend monitoring of road rules

The purpose of this document is to inform the AMPC’s development of research questions related to forest roads and to clearly articulate the direction to the AMPC and IRST as established under the Private Forest Accord (PFA) Report.

1. Distinguishing Research Topics from Research Questions

Research Topics	Research Questions
<p><u>Research topics</u> are a broad research theme either in rule (the three in OAR 629-603-0100(7)) or raised by an AMPC member for consideration to conduct research.</p> <p>Research topics will regularly be prioritized for 1) focusing on in the near term; and, 2) a “parking lot” to regularly revisit (e.g., annually or biennially) to assess if sufficient resources are available to address them in your prioritized order.</p> <p>EXAMPLE: “The impacts of timber harvest along nonfish streams on downstream, fish-bearing streams”</p>	<p><u>Research questions</u> are policy questions that the AMPC deems important to research, can be implemented in a research project, and are refinements of Research Topics.</p> <p>The FPA rules require specific elements when sending these questions to the IRST:</p> <p>OAR 629-603-0200 (3) Step 1: The AMPC shall develop preliminary research question(s).</p> <p>(a) The AMPC shall succinctly specify preliminary research questions that include the following:</p> <ul style="list-style-type: none"> (A) The type of research and monitoring per OAR 629-603-0100(1)(a) or (b); (B) The rule, biological goals and objectives, or other issue being studied; (C) The objective of the research; (D) A brief description of the context of the research question; and (E) Other information the AMPC deems necessary for the IRST’s work per section (4) of this rule. <p>(b) The board may direct the AMPC to develop additional preliminary research questions.</p> <p>(c) The AMPC shall send the preliminary research questions to the IRST annually on a date specified in the AMPC charter developed pursuant to OAR 629-603-0300(2).</p>

2. Configuration of a “Research Question” (Summarized from OAR 629-603-0200(3)(a))

According to the FPA, a “research question” developed by the AMPC must include the following components when it is sent to the IRST:

- The **type** of research and monitoring
- The **rule, biological goals and objectives, or other issue** being studied
- The **objective** of the research
- Brief discussion of the **context** of the research question
- **Other information** that AMPC deems necessary

3. Direction to AMPC and IRST from the PFA Report regarding the forest roads research topic

In Chapter 4, the PFA Report (p. 67) provides the following direction related to the IRST and AMPC:

“4.3.10 Development of Monitoring Requirements

The Independent Research Science Team (IRST) created under the PFA shall design and oversee baseline and trend monitoring for hydrologic disconnection. Compliance monitoring will be conducted through the Department’s process.

- 1. Baseline and Trend Monitoring for Hydrologic Disconnection:** *The methodology for the monitoring shall be based off of Dube et al. (2010) and Martin (2009). The purpose of the monitoring for hydrologic disconnection is to establish a baseline and to monitor and report the change in hydrologic connectivity over time as the FRIA is implemented. The overarching goal is to ensure that all forest roads and landings shall be hydrologically disconnected to the maximum extent feasible from waters of the state. The Adaptive Management Program Committee shall use the results of the baseline and trend monitoring to develop regional goals consistent with that monitoring. All hydrologic connectivity data should be public and shared as it becomes available to help focus goals, identify accomplishments, and inform statewide learning.”*

Key components of this provision of the PFA Report include:

- IRST Role:
 - *“IRST...shall **design and oversee baseline and trend monitoring for hydrologic disconnection.**”*
- Methodology:
 - *“The methodology for the monitoring shall be **based off of Dube et al. (2010) and Martin (2009).**”*
- Purpose of baseline and trend monitoring:
 - *“The purpose of the monitoring for hydrologic disconnection is **to establish a baseline and to monitor and report the change in hydrologic connectivity over time as the FRIA is implemented.**”*
- AMPC role:
 - *“The Adaptive Management Program Committee shall use the results of the baseline and trend monitoring to **develop regional goals consistent with that monitoring.**”*

4. Examples of questions from Dubé et al. (2010)

The following research questions, from Dube et al. (2010), provide examples to spur the AMPC members’ thinking.

Monitoring Question 1: What is the condition of forest roads at each sample event, specifically those attributes management can change relative to sediment production and delivery?

Monitoring Question 2: Have road attributes that affect sediment production and delivery improved over time?

- Hypothesis 2a: No reduction in road drainage connectivity to streams has occurred since the previous sampling event(s).
- Hypothesis 2b: No improvement in road attributes that affect sediment production and delivery has occurred since the previous sampling event(s).

Monitoring Question 3: What is the status of road performance measures for drainage connectivity and sediment delivery to streams at each sample event?

Monitoring Question 4: What is the status of road performance measures relative to their targets, by performance target region, at each sample event?

Monitoring Question 5: Have measures of road sediment performance improved over time?

- Hypothesis 5a: No reduction in the road drainage connectivity performance measure has occurred since the previous sampling event(s).
- Hypothesis 5b: No reduction in the road sediment delivery performance measure has occurred since the previous sampling event(s).

Monitoring Question 6: Will roads judged to meet FFR road standards meet the performance targets?

- Hypothesis 6a: There is no direct relationship between the percentage of the road system that is judged to meet road standards and the reported road drainage connectivity performance measures.
- Hypothesis 6b: There is no direct relationship between the percentage of the road system that is judged to meet road standards and the reported road sediment delivery performance measures.

5. Discussion Questions for AMPC to Consider

The following questions are intended to help the AMPC members think through developing the research question(s). Note that the AMPC may request additional input from the IRST to address any or all these considerations.

1. Based on the constraints and focus established in the PFA Report, what is the decision space to develop a research question(s)?
2. Elements to consider in the discussion include:
 - a. Scope and scale of the research
 - b. Time and spatial scale of the research
 - c. Outcomes of the research (e.g., regional specificity, high confidence)
 - d. Specific parameters (e.g., suspended sediment, hydrologic disconnection)
3. What does the AMPC think about requesting several different scoping studies from the IRST that vary based on rigor, spatial and temporal scales, confidence in results, number of parameters, etc.?

References

Dubé, K., A. Shelly, J. Black, and K. Kuzis. 2010. *Washington road sub-basin scale effectiveness monitoring first sampling event (2006-2008) report*. Cooperative Monitoring, Evaluation and Research Report CMER 08-801. Washington Department of Natural Resources. Olympia, Washington.

Martin, D. 2009. *Forest road runoff disconnection survey for private timberlands in Washington*. Olympia, WA: Washington Forest Protection Association.